Proceedings of the 2nd Sacro Occipital Technique Research Conference

New Orleans, Louisiana

October 28, 2010

Sacro Occipital Technique Research Conference

New Orleans, Louisiana
October 28, 2010

Hosted by:

Sacro Occipital Technique Organization – USA

CONFERENCE PROCEEDINGS

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Publisher

Sacro Occipital Technique Organization – USA

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New Orleans, Louisiana - October 28, 2010

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Acknowledgements:

It is with the utmost gratitude I wish to thank all the various authors of these submitted abstracts and papers. Only with their selfless efforts can we share what we are finding in clinical practice and help build our evidence base of literature. I also wish to thank those who have donated to the Sacro Occipital Technique Organization – USA Research Fund which has helped pay for the printing of this conference's proceedings. Thanks also goes to Christine Benner, DC, LAc, Curtis Langer, DC, and Robert Monk, DC for their help with the editing of some of these abstracts.

Proceedings of the Sacro Occipital Technique Research Conference

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Introduction

For Major Bertrand DeJarnette, DO, DC, research was an essential part of being a chiropractor and essential to the future of the chiropractic profession. As early as July 1935 Major Bertrand DeJarnette was a featured speaker at the 40th Anniversary Convention 1895-1935 of the National Chiropractic Association presenting clinical research. Always research was his passion and in an interview in 1982 DeJarnette reiterated, "as far back as chiropractic college, I saw the need for a more scientific basis for chiropractic theory. My own personal physical problems had not been solved by medicine, osteopathy, or chiropractic; so I began experimenting on myself. I'm still at it, and I can see no end of the need for continuous research in chiropractic [1]."

Dr. DeJarnette saw the importance of sharing clinical experience through case report and self-analysis. This started as he first began to find that things he instinctively did for a patient would disappear from his memory if he did not outline them carefully. So before our day and age of computers, he recommended that to begin the first step in research, you would need to buy a notebook, an eraser and long pencil. He emphasized that, "those would be your first three pieces of research equipment. You use your notebook because it is not expensive. You use a pencil because it can be erased, and of course mistakes will be made so you must own an eraser [2]." With those three pieces of equipment he sat down one evening and wrote his first case report of an unusual patient presentation and his treatment rendered. He recollected that he did not sit down to write until perhaps three months after that patient's presentation. Dr. DeJarnette could not believe how much he had forgotten about the details. The lesson he learned was "write the unusual down now [2]".

When Dr. DeJarnette began to study the treatment he had rendered he realized that if any meaningful information were to evolve from his experience, he would have to resolve it himself. Dr. DeJarnette suggested that research has to be a free agency. Basically he saw a need and worked to fulfill that need. He realized that explaining how his discoveries evolved was more difficult than the process of developing new diagnostic and therapeutic interventions [2].

Chiropractic techniques, innovative integrative collaborations, and methods such as sacro occipital technique, temporomandibular disorder co-management, chiropractic manipulative reflex technique, and cranial techniques need an arena to share clinical and other forms of research. Critical study of techniques and innovative methods are what will help propel healthcare forward in this era of evidence informed practice and best practice research.

The SOT Research Conference looks to offer a venue for research papers; specifically those, which investigate sacro occipital technique, dental chiropractic co-treatment, cranial techniques, viscerosomatic/somatovisceral, reflex techniques, and new ground-breaking creative ways of helping humanity without necessarily the use of drugs or surgical intervention. This year's proceedings of the second annual SOT research conference will be shared with the chiropractic profession, for review, dissemination, and in-depth study.

> *"Research is a study of what you have, and what you need to make it better, and how to make it better is the final research step. S.O.T. never wants to be just good. It always wants to be better and best and greatest and most dependable* [3]*."*

As a parting comment for his chiropractic colleagues Dr. DeJarnette said, "We must respect each other's beliefs. We must support our colleges and associations. We must work together and unite as a profession. And we must at all times be proud of chiropractic and proud of our calling as chiropractors [1]."

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1. DeJarnette MB. **Cornerstone**. *The American Chiropractor*. Jul/Aug 1982; 82: 22,23,28,34.

2. DeJarnette MB. **The Sacro Occipital Technique Bulletin**. Mar 1975.

3. DeJarnette MB. **The Sacro Occipital Technique Bulletin**. Mar 1978: 2-3.

Evidence-Based Practice

Evidence-based practice (EBP) refers to a decision-making process which integrates the best available research, clinician expertise, and client characteristics. EBP is an approach to treatment rather than a specific treatment.

Evidence-based practice (EBP) involves complex and conscientious decision-making which is based not only on the available evidence but also on patient characteristics, situations, and preferences. It recognizes that care is individualized and ever changing and involves uncertainties and probabilities [1].

EBP develops individualized guidelines of best practices to inform the improvement of whatever professional task is at hand. Evidence-based practice is a philosophical approach that is in opposition to rules of thumb, folklore, and tradition. Examples of a reliance on "the way it was always done" can be found in almost every profession, even when those practices are contradicted by new and better information [1].

> "*It's about integrating individual clinical expertise and the best external evidence* [2]."

However, in spite of the enthusiasm for EBP evinced over the last decade or two, some authors have redefined EBP in ways that add other factors to, the original emphasis on empirical research foundations. For example, EBP may be defined as treatment choices based not only on outcome research but also on practice wisdom (the experience of the clinician) and on family values (the preferences and assumptions of a client and his or her family or subculture) [1].

---

1. Buysse V, Wesley PW. **Evidence-based practice: How did it emerge and what does it really mean for the early childhood field?** *Zero to Three*. 2006;27(2), 50-55.

2. Sackett DL, Rosenberg WMC, Muir Gray JA, Haynes RB, Richardson WS. **Evidence based medicine: what it is and what it isn't.** *BMJ.* 1996;312:71-72.

Evidence Based Practice: The Hierarchy of Evidence:

In biomedical science there is general agreement over an evidence based hierarchy: the higher up a methodology is ranked, the more robust and closer to objective truth it is assumed to be. The orthodox hierarchy looks something like the following table:

Rank:	Methodology	Description
1	Systematic reviews and meta-analyses	Systematic review: review of a body of data that uses explicit methods to locate primary studies, and explicit criteria to assess their quality. Meta-analysis: A statistical analysis that combines or integrates the results of several independent clinical trials considered by the analyst to be "combinable" usually to the level of re-analyzing the original data, also sometimes called: pooling, quantitative synthesis.
2	Randomized controlled trials	Individuals are randomly allocated to a control group and a group who receive a specific intervention. Otherwise the two groups are identical for any significant variables. They are followed up for specific end points.
3	Cohort studies	Groups of people are selected on the basis of their exposure to a particular agent and followed up for specific outcomes.
4	Case-control studies	"Cases" with the condition are matched with "controls" without, and a retrospective analysis used to look for differences between the two groups.
5	Cross sectional surveys	Survey or interview of a sample of the population of interest at one point in time
6	Case reports.	A report based on a single patient or subject; sometimes collected together into a short series
7	Expert opinion	A consensus of experience from the “good and the great.”
8	Anecdotal	An interesting story.

The Case Report: How the Doctor in Practice Communicates to the Research Community

While low on the evidence-based practice hierarchy of evidence the case report is an extremely valuable manner for doctors in clinical practice or "in the trenches" to communicate what is taking place in their practices. Until the doctors in clinical practice publish their case reports, researchers in a college setting can only attempt to guess what is taking place out there in the field.

There are significant limitations to case reports, such as no control subjects, the doctor and subjects are not blinded to the study, and the doctor's bias may cloud the study. So while the case report is an important tool for communication, the doctor authoring these studies needs to exercise caution to not over-interpret his or her findings. Dr. Robert Ward of Southern University of Health Sciences and past editor of *The Journal of Chiropractic Education* answers the question:

"Why it is important to write a case report?"

"Most persons believe that the case report is used to describe unique, or at least highly rare, clinical presentations or diagnostic entities (e.g., "prostatic hypertrophy mimicking as ingrown toenail"). This is the most common use of the case report. However, equally important is the use of the case report to describe novel management approaches to more ordinary conditions.

"Another aspect of why case reports are written involves the audience. Case reports are generally considered as a communication from clinicians to scientists. The pointy-headed ivory tower population doesn't get to see the interesting things that happen in clinical practice. They often rely on case reports from the field in deciding what sorts of pilot studies to run, and those often lead to real full-scale clinical trials (the sort of research that field clinicians generally don't have the time, resource or interest to undertake).

"Case reports are a vital aspect of our literature base, and more of our practitioners need to write them. Until you write up that wonderful method that works in your office, the rest of the world cannot share in its benefits. Without publication, when you die or retire, your discoveries die with you [1]."

1. Ward RW. **Why it is Important to Write a Case Report**. *Dural Connection Internet Edition*. 2006;3(3). [http://www.sotousa.com/wp/?page_id=716] Last accessed September 26, 2010.

2010 SOT Research Conference

October 28th, 2010 · New Orleans, Louisiana

2010 SOT Research Conference Schedule

1:00 – 1:50 PM **Dental Chiropractic Co-treatment**

TMD: Dental and chiropractic co-treatment: Three case reports. ***Dental Perspective***
David Shirazi, DC, LAc,

TMD: Dental and chiropractic co-treatment: Three case reports. ***Dental Perspective***
Richard C. Gerardo, DC

Bruxism and temporal bone hypermobility in patients with multiple sclerosis.
G. Dave Singh DDSc, PhD, BDS

Integration of SOT cranial therapy with an occlusal splint for the treatment of obstructive sleep apnea: A case report.
Thomas Bloink, DC

2:00 – 2:50 PM **Integrative Inquiry and Healthcare**

Sleep apnea and anemia, is there a relationship?
Jeffrey A. Mersky, DC

Evidence Based Healthcare – Pitfalls and Bumps in the Road.
Charles L. Blum, DC

A novel approach to testing foot mechanics and dysfunction utilizing SOT blocks: A case report.
William J. Boro. MAT, DC

Utilizing sacro occipital technique chiropractic methodologies on an equine: A case report.
Jean E. Thompson, DC, Heidi Bockhold DC

3:10 – 4:00 PM Pediatrics: SOT and Cranial Applications

SOT treatment of a 2 ½ year old female with a 35° scoliosis and two hemivertebra: A case report.
Martin G. Rosen, DC

Chiropractic care of pediatric nonmusculoskeletal conditions: A retrospective patient survey.
Martin G. Rosen, DC

A pilot study investigating the incidence of chiropractic care in learning disorders: A case series.
Catherine Bouchet, DC

4:10 – 5:00 PM Integrative Inquiry and Healthcare

Integrating SOT and acupuncture for the treatment of asthma: A case report.
Christine D. Benner, DC, LAc

Cranial treatment for a patient presenting with Down syndrome: A case report.
David Simmons, DC

SOT and ART treatment of a 73 year old male post stroke with L4/L5 foraminal stenosis: A case report.
Jeffrey A. Mersky, DC

Investigating new bonds in patient care to develop an engineering platform for the health care sector: A case report.
Laura Hopkins, James Countryman, DC,

Treating Rabbits with Sciatica

Does evidence support treating sciatica with traction?

By Ron Feise, DC

A chiropractic colleague sends you a research study that was published in *Spine*.[1] This friend says he has used the findings in this paper to select a new treatment scheme and is now using a spinal traction apparatus with many of his sciatica and low-back-pain patients. The clinical results are outstanding, and he has drastically increased his income. He wants you to attend a free weekend seminar with him that is hosted by the manufacturer of the traction device.

Your first impression might be:
I really respect this colleague. This study was published in *Spine*, a prestigious journal. So how can I go wrong following the advice? I have had a few sciatica patients lately who have not responded to spinal manipulation as well as I hoped. Plus, a little extra income never hurts!

Other factors you may want to consider:
A closer look at the study shows that its subjects were 32 white New Zealand rabbits! The study seems to be appropriately designed and implemented (prospective randomized trial design, with well-described research methods and valid, reliable and relevant outcome measures), but you wonder whether the results can be generalized to a human population.

You talk to a colleague who has had training in analyzing research. He tells you that although there is debate over the best research design, researchers agree that it is unwise to apply the conclusions from animal studies to patients.

Animal studies test biological plausibility and hypothetical models for clinical researchers. They represent a “first step” in the research process and can provide a rationale for conducting human research. But patient therapy decisions cannot be based on animal research.

Your colleague also tells you that one systematic review investigating the relationship between treatment effects in animal experiments and clinical trials showed that the benefits of treatment options in animals sometimes do not translate into benefits in humans.[2] For example, corticosteroids did not show any benefit in clinical trials for the treatment of head injury in humans, but they did show a benefit in animal models. Bisphosphonates increased bone mineral density in patients with osteoporosis. However, in animal models, the bisphosphonate alendronate increased bone mineral density in the hip region and lumbar spine, but not in the forearms.

Your friend recommends that you do a literature search to locate studies with patient populations that closely mirror your clinical practice. These studies will be more likely to provide valid and useful information than basic science studies or studies using very select populations.

What does the literature show?
After doing a search of the literature, you find some studies on treating sciatica. A clinical trial randomized 102 patients with acute back pain and sciatica with disc protrusion to active and simulated manipulation.[3] Spinal manipulations were delivered five days per week by experienced chiropractors with a maximum of 20 sessions. After six months of therapy, manipulation compared with placebo yielded a large effect size* (estimated effect size for low-back pain and leg pain was greater than 0.8) with no adverse events.

These findings are supported by a systematic review. In this review, Chou et al. conducted a well-defined search of electronic databases that was supplemented by hand-searching reference lists and additional citations suggested by experts. The researcher then assessed the quality of each qualified paper and concluded that spinal manipulation was the most effective non-pharmacological therapy.[4]

In contrast, research findings do not support the benefits of traction. Researchers conducted a systematic review to determine if traction is more effective than reference treatments, placebo or sham traction, or no treatment for low-back pain.[5] At least two reviewers independently performed study selection, methodological quality assessment and data extraction. This research team found that for patients with sciatica, there is conflicting evidence of benefit. They concluded that based on the current evidence, intermittent or continuous traction as a single treatment for low-back pain cannot be recommended. Another review supported the conclusions about the lack of evidence demonstrating traction as beneficial.[4]

Based on the above information, what should you do?

- Attend the free seminar.
- Purchase the traction device, which costs $38,795.
- Go to the manufacturer's Web site for more information.
- Talk to other colleagues.
- Apply the research information from human studies.
- Do nothing. Your patient results are satisfactory.

Recommended strategy:
Practitioners always have high expectations for outcomes and want to deliver the best care to their patients. But they cannot expect to provide benefit for all of their patients. It is recommended that you measure patient results using validated outcome measures and review your findings regularly. It is a good idea to look at both short-term (on the last visit) and long-term (one year from the last visit) outcomes by inputting your data into a spread sheet. Then you can compare your data with data from research studies. Also, consider including clinical research for all clinical decisions. Discordance between animal and human studies is common. Next time you read about a treatment's effectiveness in animals, don't assume that the benefit will translate to your patient population, unless you are a veterinarian!

** Effect size is a commonly used statistic in health care research. A positive effect size number favors the study treatment. Following are benchmarks for effect size: 0.2 means there is a small treatment effect; 0.5 means there is a medium treatment effect; and > 0.8 means there is a large treatment effect.*[6]

Ron Feise, DC, is an ACA member and president of the Institute of Evidence-Based Chiropractic, an organization that helps chiropractors achieve optimal patient outcomes through the use of evidence-based strategies. Dr. Feise can be reached at www.chiroevidence.com.

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2. Perel P, Roberts I, Sena E, Wheble P, Briscoe C, Sandercock P, Macleod M, Mignini LE, Jayaram P, Khan KS. Comparison of treatment effects between animal experiments and clinical trials: systematic review. *BMJ* 2007;334:197.

3. Santilli V, Beghi E, Finucci S. Chiropractic manipulation in the treatment of acute back pain and sciatica with disc protrusion: a randomized double-blind clinical trial of active and simulated spinal manipulations. *Spine* J 2006;6:131-7.

4. Chou R, Huffman LH; American Pain Society; American College of Physicians. Nonpharmacologic therapies for acute and chronic low back pain: a review of the evidence for an American Pain Society/American College of Physicians clinical practice guideline. *Ann Intern Med* 2007;147:492-504.

5. Clarke J, van Tulder M, Blomberg S, de Vet H, van der Heijden G, Bronfort G. Traction for low back pain with or without sciatica: an updated systematic review within the framework of the Cochrane collaboration. *Spine* 2006;31:1591-9.

6. Cohen J. *Statistical power analysis for the behavioral sciences.* New York: Academic Press, 1977:1–27.

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Sacro occipital technique (SOT): A survey of SOT practitioner's practice management.

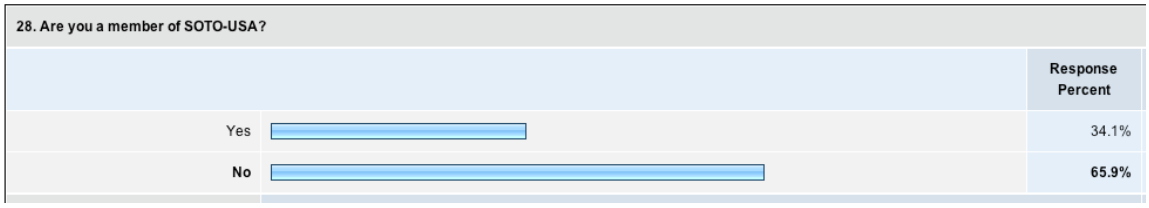
J. Rodney Shelley, DC

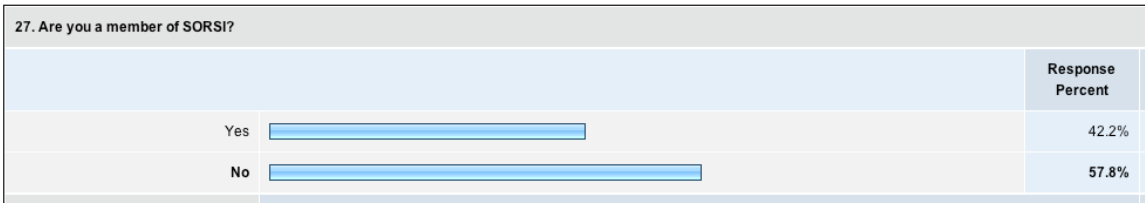
Introduction:

The purpose of this study was to better understand any trends in a sacro occipital technique (SOT) [1-4] practitioner's practice. SOT is an unusual chiropractic method since it has been found to be closely associated with wellness patient behaviors [5]. It may be of value to better understand some characteristics of some typical SOT chiropractic practices, which would include: Practice volume by case type, patient visits, scheduling of new patients visits and of ongoing patients, complementary services rendered, SOT techniques or methods utilized, measurements of success, level of debt, number of years in practice, and involvement in any mentoring process.

This survey was posted on the internet In July of 2008. Fifty-nine individuals made responses anonymously to the survey questions. One qualifying question asked regarded with which SOT organization they held membership, the overlap of responses may relate to doctors with dual member or no organizational membership. Other than that one qualifying question the remaining questions were use to gain insight into specific practice trends with the goal of helping doctors improve their practices with the goal of improving patient outcomes.

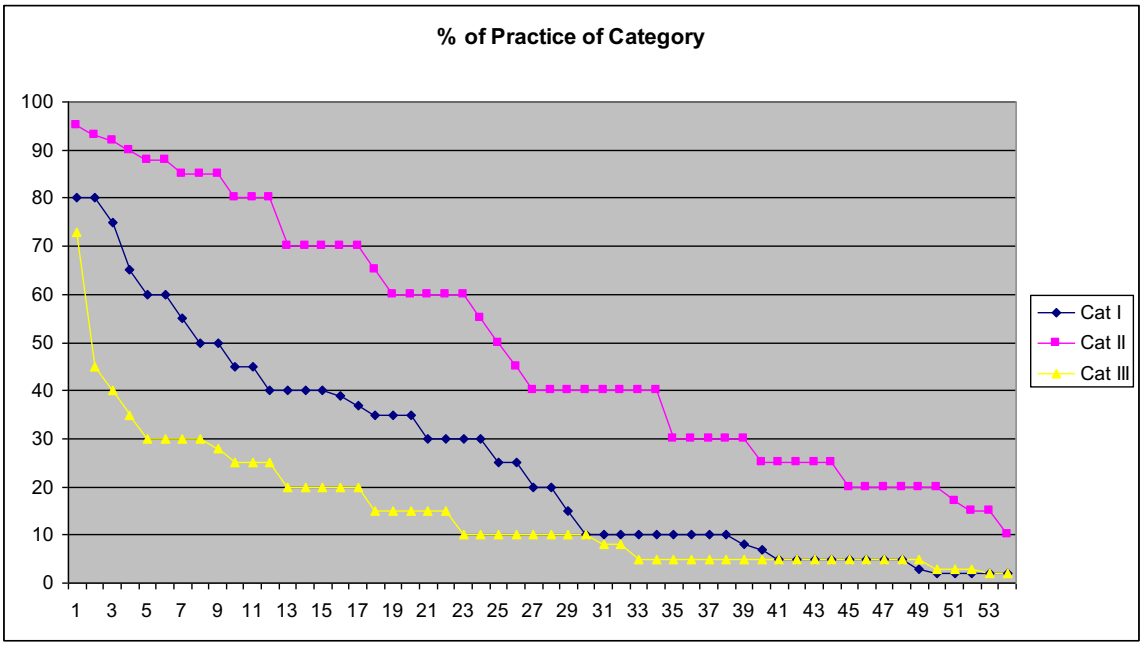
AFFILIATION





% of Practice Volume by Case Type

Of the three SOT categories [1-4] what category do the respondents commonly treat (total percentage needs to reach 100%)? This survey found category II (sacroiliac joint hypermobility syndrome) is clearly the most prevalent category. Interesting note was that some doctors handle very few of one category or another. Seeming to specialize in one category or another.



Patient Volume Survey

All respondents had time in their schedule for new patients.

New patient levels in some cases may be an indicator of patient education. An educated patient is more capable of explaining the reasons their contacts should seek care. Experience has shown that patient response alone does not cause referrals as much as the knowledge of the patient on the value of SOT care, wellness behavior, and preventative healthcare.

5. How many New Patients do you have per week?										
Click drop down menu										
	1	2	3	4	5	6	7	8	9	10+
==========>	17.9% (10)	16.1% (9)	**19.6% (11)**	17.9% (10)	16.1% (9)	3.6% (2)	0.0% (0)	3.6% (2)	0.0% (0)	5.4% (3)

Patient Visits

Patient visits are commonly the result of practice structure and organization. When patients understand their reason for coming in for the visits, they understand the need to follow recommendations more completely. By creating a patient driven practice where patient seek care the SOT doctor case management skills become an important factor in the patient visit levels. Doctor confidence, level of knowledge, and skill development is directly reflected in their patient volume. Uncertain or untrained doctors do not encourage confident with new patients or lead to return office visits.

6. How many Patient Visits do you have in an average week?										
Click drop down menu										
	5-25	25-50	50-75	75-100	100-125	125-150	150-200	200-300	300-400	400+
==========>	14.0% (8)	21.1% (12)	**22.8% (13)**	15.8% (9)	14.0% (8)	1.8% (1)	5.3% (3)	3.5% (2)	0.0% (0)	1.8% (1)

60% of the respondents had less than 75 patient visits per month with 3 or less new patients.

Scheduling New Patients

Over 80 % of respondents note that they schedule 1 hour or less for new patients, 25% 30 minutes or less. Interestingly the quality of care may be negatively impacted both by short examination times AND long examination times. The flow of examinations can be

7. How LONG do you schedule for a new patient exam?						
Click drop down menu						
	15 Minutes	20 Minutes	30 Minutes	45 Minutes	1 hour	1+ hours
==========>	5.3% (3)	3.5% (2)	17.5% (10)	22.8% (13)	**42.1% (24)**	8.8% (5)

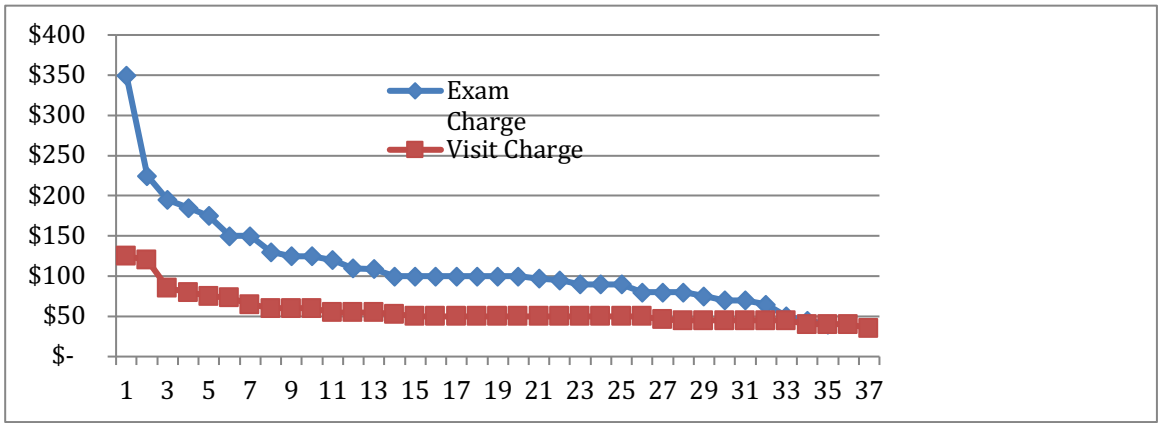
an important process to master. The examination is a learning experience for the new patient. Patients need to walk out of the office on the first visit believing that their doctor is organized and focused on their health concern. The doctor needs to effectively build a rapport with the patient, properly diagnose and assess the patient's presenting condition, as well as preparing the patient for the report of findings.

Patient Visit Scheduling

50% of the respondents schedule 15 minutes or less for a follow up visit. The multifactorial nature of SOT care, from myofascial influences, neurological, musculoskeletal, viscerosomatic, extremity, TMJ, and cranial care lends itself to ongoing wellness and preventative care [1-5]. It therefore suggested that SOT could be effective in case management due to the layout of the SOT category system of analysis.

8. How LONG do you schedule for a follow up (regular treatment) visit?						
Click drop down menu						
	3-6 min	7-10 min	11-15 min	16-20 min	21-30 min	30+ min
==========>	7.0% (4)	14.0% (8)	**33.3% (19)**	24.6% (14)	17.5% (10)	3.5% (2)

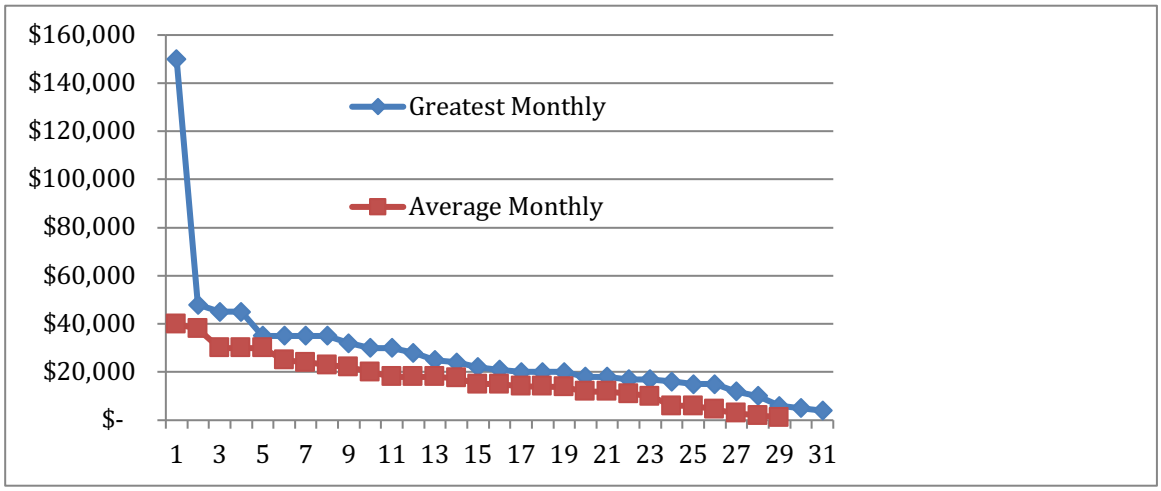
Fees



Examination charges are shown in the upper line above and follow up visit charges on the lower line. The average new patient charge was $125 the average visit charge was $50.

Putting the statistics together

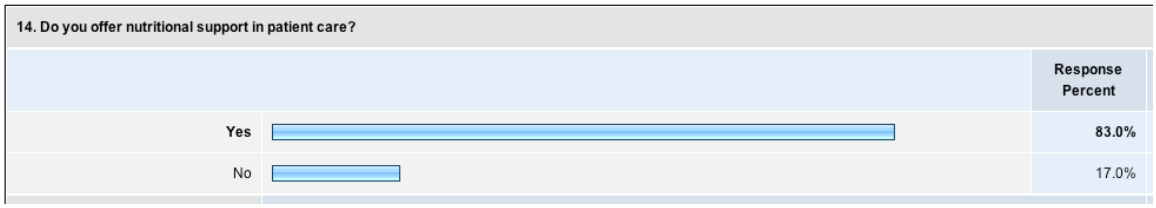
New patients, patient visits, scheduling and fees result in an average collections of the respondents of under $20,000 per month.



Complimentary Services

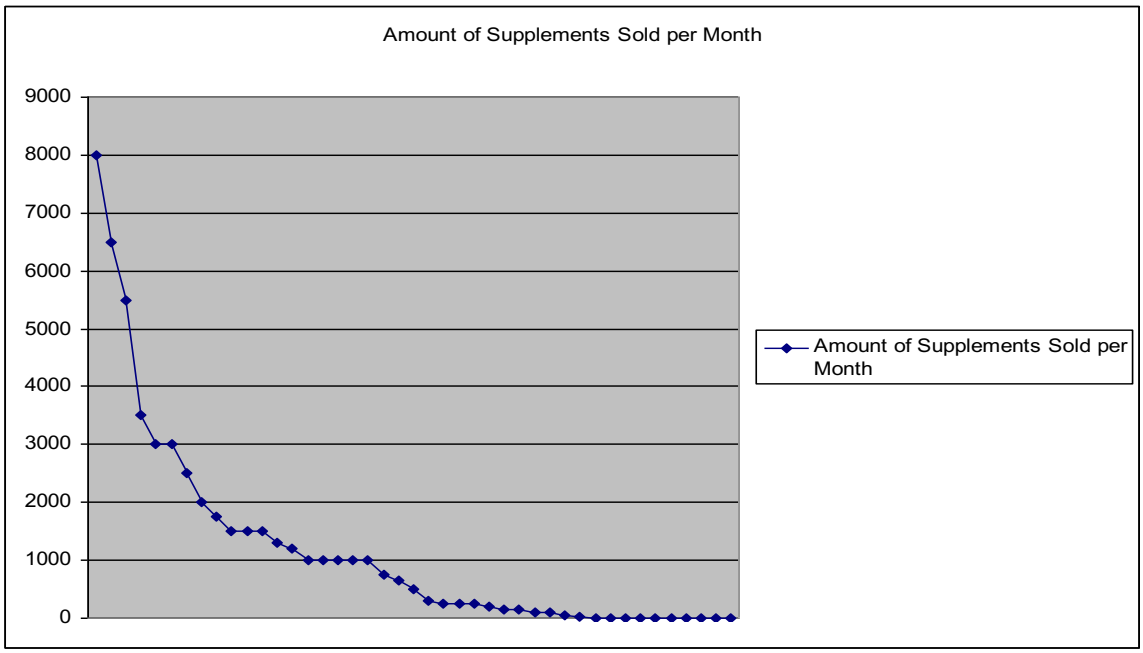
For some patients and practices nutritional support from a health care professional is an important complementary service. Patients who are interested in wellness or preventative behavior [5] want alternatives to pharmaceutical driven alterntive which tend to offer risk for side effects. In some instances it does appear that patients may want nutrition support more then they want chiropractic care.

Therefore if the doctor is going to incorporate nutritional or dietary advice and guidance into their practice they will intially need trusted professional advice and receive adequate postgraduate education.



83% of the respondents integrate nutrition in their practice. SOT's founder Dr. De Jarnette often discussed the need for nutrition and since the 1920s had integrated nutrition into his chiropractic practice. Some of these nutritional aspects were discussed in his manual on chiropractic manipulative reflex technique (CMRT) [3,4] however in private practice he apparently used nutritional supplements quite commonly.

Of the various nutritional companies 85% of the respondents include Standard Process in their patient recommendations.



From this survey it was revealed that most offices sell less than $1,000 per month of supplements. Based on patient's desire for preventative care and alternative therapy to pharmaceutical intervention this may be an under realized service. Greater study needs to investigate whether SOT chiropractors may be not fully offering patients the full range of care they may need and want.

Chiropractic Manipulative Reflex Technique: CMRT

The integration with whole food nutrition perfectly dovetails with the CMRT. The number of respondents who integrate CMRT in their practice is:

19. Do you do CMRT? Chiropractic Manipulative Reflex Technique	
	Response Percent
Yes	82.0%
No	18.0%

The treatment of the organ systems were always integrated with whole food nutrition by De Jarnette. Foods, dietary modifications, and nutrition can be important parts of treating patients with viscersomatic condition unresponsive to CMRT alone or when a condition does not resolve.

Measurements of Success

As may be expected success is measured in as many ways as there are people measuring it. In general, the greatest measure of success is the internal weights and measures of the individual not by an outside source.

50. Success for me: (order these according to what you believe are the most important)						
	1	2	3	4	5	6
Family	**62.2% (23)**	16.2% (6)	2.7% (1)	2.7% (1)	5.4% (2)	10.8% (4)
Patient response	15.4% (6)	**38.5% (15)**	23.1% (9)	12.8% (5)	2.6% (1)	7.7% (3)
Paying all my bills	7.7% (3)	17.9% (7)	**28.2% (11)**	17.9% (7)	23.1% (9)	5.1% (2)
Personal fitness	10.3% (4)	23.1% (9)	**25.6% (10)**	20.5% (8)	7.7% (3)	12.8% (5)
Savings to live on in retirement	7.7% (3)	5.1% (2)	10.3% (4)	20.5% (8)	**38.5% (15)**	17.9% (7)
Free time from work	10.5% (4)	7.9% (3)	10.5% (4)	13.2% (5)	13.2% (5)	**44.7% (17)**

In this survey, 62% chose their family life is the first measure of success.
39% patient response as second measure of success.
Paying the bills and savings to live on are 3rd and 4th most important.

Paying the Bills

49. How much unpaid debt do you currently have? (not including your residence)								
	0	2,500-7,500	7,500-15,000	15,000-30,000	30,000-75000	75,000-150,000	150,000-250,000	greater than 250,000
Click drop down menu for choices ---->	13.5% (5)	5.4% (2)	10.8% (4)	10.8% (4)	**18.9% (7)**	**18.9% (7)**	13.5% (5)	8.1% (3)

Of interest the survey revealed only 19% had less than $7,500 in debts.

48. Do you have your debts paid off?		
	yes	no
Student loans	**51.2% (22)**	39.5% (17)
Equiptment loans	**50.0% (22)**	29.5% (13)
Business loans	**43.2% (19)**	31.8% (14)
Car loans	31.8% (14)	**54.5% (24)**
Home loans	16.3% (7)	**69.8% (30)**

Average Years in Practice

The average years in practice of the respondents were 18. The earliest respondent began practice in 1973. 60% of the respondents began practice before 1990. 18 years in practice is certainly long enough to have achieved material success. Yet the respondents, while striving for it, (after family) had not yet realized their goals.

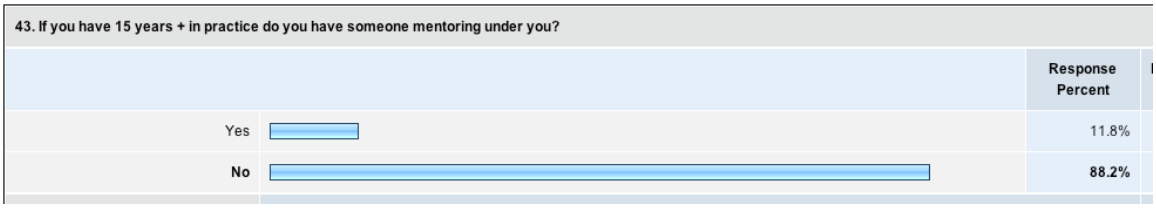
SOT Practice Building

What solutions may there be to help improve the financial status of doctors in practice and what steps can we take for the now and in for the future generations of SOT practitioners?

Mentoring

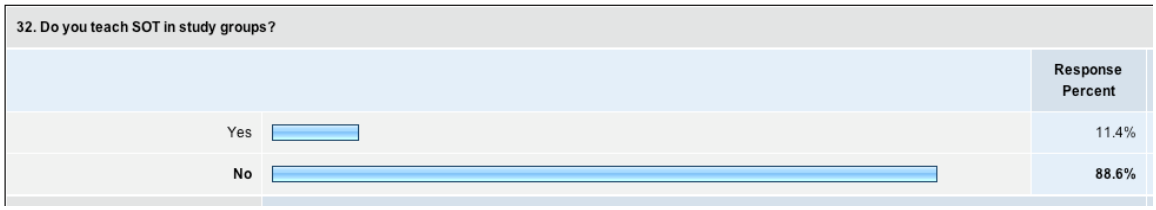
The author graduated in 1976 and mentored under Drs. Dave Denton and Major B. DeJarnette. DeJarnette worked at the author's office over a 9-year period. During that time mentoring was common. It is suggested that the culture of mentoring may be "dying out." The survey found that while 38% mentored under an SOT doctor only 12% are now involved in the process.

42. Have you worked with an elder (15 years + in SOT specialty) in SOT at one time or another?		Response Percent
Yes		38.1%
No		**61.9%**



One reason for the lack of mentoring maybe the economy in SOT practice which could be characterized as "anemic". Some chiropractors apparently feel there is "not enough" to go around. There are too few new patients and not enough money. It is possible that one solution could be reestablishing a culture of mentoring as the norm in SOT practices.

Mentoring in Study Groups



A buddy system of teaching in small groups in the office could be an important step. In my practice I commonly held study groups at my office for groups of 10 or less students and doctors.

SOT Practice Building Procedures

Like most businesses a healthy chiropractic practice needs to be built on fundamentals. The fundamentals of health care are patient communication, rapport, case management, follow-up examinations, treatment goals and patient education. Every practice will succeed or fail missing one or more of these steps. However few of these vital building blocks of practice are taught in undergraduate colleges or at postgraduate seminars.

Mission

Ultimately as ethical caring doctors we must see practice as a mission for the good of everyone; the patient, the doctor, their families and community.

What a doctor believes – so it is he/she achieves.

We have heard this hundreds of times. We need to ask if we are the right person for the job? Are you doing the right things for the right reasons?

Office Procedures Should Reflect the Mission

Too often we reflect to the patients something other than our true mission.

1. We take a patients case too lightly, don't listen well, try to convince them of our truth. Our paperwork does not reflect our mission.
2. Our examinations do not reflect our mission
3. Our report of findings does not communicate commitment to the vision.
4. Our case management is not clear, directed and focused.
5. We need greater training in how to transition patients from active care to supportive care and wellness care.
6. We have a lack of enthusiasm, which does not translate into patient motivation toward improving their health status.
7. We need to live our mission by example so the patient feels proud and comfortable to refer other patients to their doctor's office.

45. Rank these according to what your Patients think is most important:

	1	2	3	4
Doctor confidence	**34.1% (14)**	24.4% (10)	19.5% (8)	22.0% (9)
Doctor knowledge	7.3% (3)	**34.1% (14)**	24.4% (10)	**34.1% (14)**
Patient response	**41.5% (17)**	22.0% (9)	19.5% (8)	17.1% (7)
Affordability	19.5% (8)	14.6% (6)	26.8% (11)	**39.0% (16)**

44. Rank these according to what You think is most important:

	1	2	3
Patient compliance	**43.9% (18)**	41.5% (17)	14.6% (6)
Patient response	**48.8% (20)**	43.9% (18)	7.3% (3)
Patient affordability	4.9% (2)	14.6% (6)	**80.5% (33)**

Conclusion:

A group of patients will seek care solely for help with their symptoms – but for their best interests we need to share with them a vision of holistic health care.

- We need to give them the SOT Health Building message.
- We need to be an organizing influence in their life.
- We need to teach them that no matter what their health concern they need to make their way to your office to ask you your opinion of what they should do.
- From aspects of diet, exercise, cigarette use and other life style choices to health behaviors and optimal body functioning for longevity, an SOT paradigm can help create a framework for the doctor patient interaction.

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Sacroiliac Joint Hypermobility Syndrome: A Chiropractic Perspective Survey
Charles L. Blum, DC

Introduction:

Sacro occipital technique (SOT) has long discussed that the anterior and posterior aspects of the sacroiliac (SI) joint are completely different in both their anatomy and function. The posterior aspect has hyaline cartilage and is a weight bearing joint which should not have much, if any, motion. On the other hand the anterior aspect has a synovial bed, which allows for the joint nutation and whose motion purportedly aids in cerebrospinal fluid (CSF) mixing in a cranialward direction.

One aspect of the SI joint when mobile would be dysfunctional (e.g., SOT's category two) and one aspect of the SI joint when too "stable" would be dysfunctional (e.g., SOT's category one). A small sampling survey was taken of SOT practitioners (N=53) and some practitioners not familiar with SOT (N=11). The goal was to see if preconception of a possible syndrome might influence a doctor's method of treatment.

Questions were asked of internet chiropractic groups related to just SOT [1.2] and others not technique based [3-5]. Those who stated they used SOT as a technique in their office were separated from those who did not use SOT. While there were problems with the questions, which will be discussed, the goal was to get a brief overview that might generate discussion, but not to reach any conclusions at this time.

From this preliminary survey [Table 1], it was found that chiropractors, like most manual therapy healthcare practitioners, more commonly treat the SI joint as being fixated. Since philosophers have said, "We create the universe we live in by what we pay attention to," it is interesting to determine what is taking place in clinical practice. Are practitioners looking for a syndrome and then find what they are looking for? Is it possible that technique jargon creates a degree of confusion so that practitioners outside the technique's guidelines are actually treating similar syndromes under different perceived names? [6]

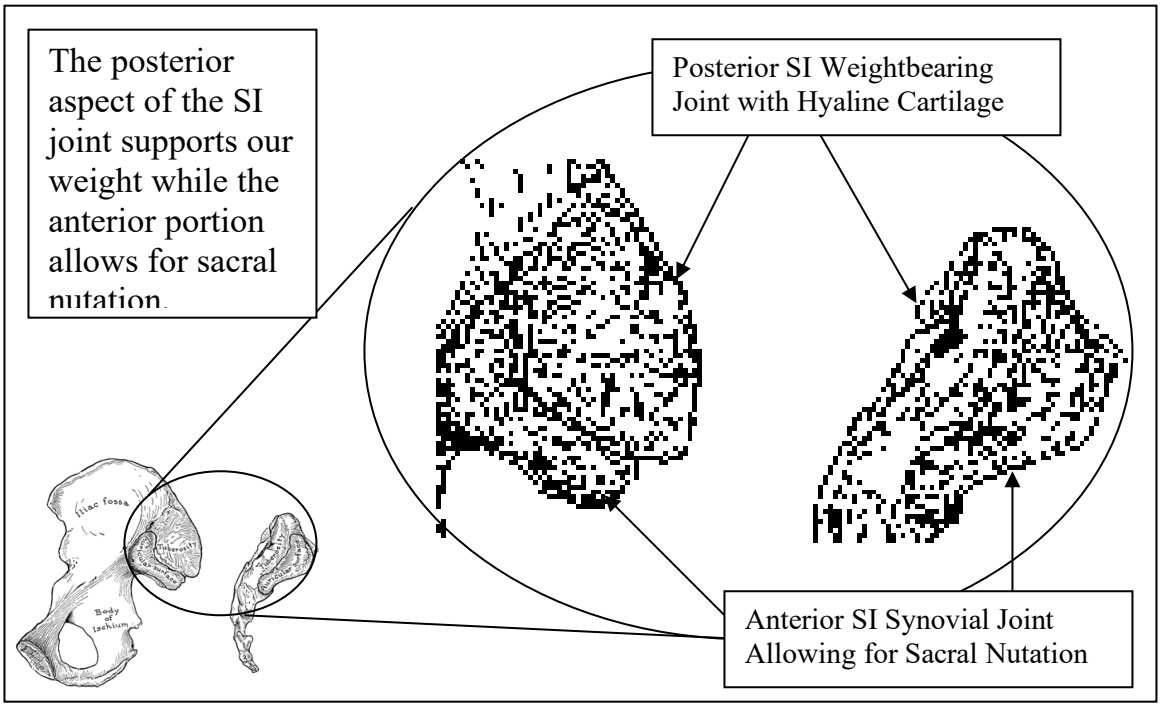
Discussion:

To explore some of these questions, it might be helpful to investigate SOT's perspective on SI joint dynamics and treatment. Examining this joint's dynamics from a different point of view would be the first step in differentiating between a hypermobile SI (category two) and a fixated one (category one). A question might be, "Is the dysfunction associated with the posterior weight bearing aspect or the anterior portion associated with normal nutation?" (Figure #1)

The second step is differentiating between a fixated SI joint secondary to a anterior joint dysrelationship, such as a pelvic torsion, [7] or a fixated SI joint secondary to a posterior hypermobile joint causing neuromuscularly induced a "splinting." The mechanism of this

splinting could be due to increased nociception and local muscle hyperfaciliation leading to increased myofascial tension. [8] This increased tension will simulate an actual osseously fixated joint but is fixated muscularly as a guarding and protective mechanism.

Figure #1: This illustrates the difference in anatomical structure of the



anterior and posterior aspects of the sacroiliac joint.

SOT is an indicator based system, which uses the patient's report of pain and tension at specific locations to guide treatment. If the "indicators" worsen the treatment would need to be modified and if they improve then the doctor knows they are going down the right path. The indicators help guide the doctor to realize the patient's progress independent of the patient's subjective assessment. When the indicators and symptoms are not congruent then that suggests the need for more extensive diagnostic protocols. [9]

A concept that DeJarnette, the developer of SOT, determined was that there can be aspects of both an anterior and posterior dysfunction in a SI joint. However, if there is even a small aspect of posterior hypermobility, then that would usually be the focus of treatment prior to addressing any anterior SI joint fixation with the purpose of ultimately increasing anterior SI joint motion. In essence, DeJarnette determined that body stability associated with weightbearing stresses generally supersede the need to maintain normal sacral nutation.

SOT treatment of the SI joints involves eliminating myofascial influences that might be affecting pelvic torsion or rotation as well as any possible confounder associated with a leg length discrepancy. With treating SI joint fixation or hypermobility, there is a specific manner of determining leg length inequality, which will guide treatment.

Generally with SOT, the treatment uses pelvic blocks, but that is mostly due to doctor preference, perceived effectiveness, and its inherent low force. As long as the doctor can balance the indicators associated with anterior or posterior SI joint dysfunction, then DeJarnette didn't really care what method of treatment was rendered.

Most category indictors are related to areas of increased muscle tension, increased pain in specific regions associated with each individual category, and related altered body function. One way of evaluating whether appropriate treatment is being rendered is to notice the lessening of pain or tension at those specific points as well as balanced function of the indictors. Both posterior SI joint hypermobility (category two) and anterior SI joint fixation (category one) will have their own sites pain and tension, which resolve with appropriate care.

Specific palpatory pain indicators:

Generally there are some ways to differentially diagnose joint fixation versus hypermobility. With posterior joint hypermobility, you will tend to find increased sensitivity anywhere along the inguinal ligament (located bilaterally between the ASIS and the pubic bone) along with either medial knee (sartorius insertion) or lateral knee (tensor fascia lata insertion) pain on either or both legs. With an anterior joint fixation, there are commonly places of pain at the region where the piriformis and gluteus medius cross as well as at the lumbodorsal fascia just lateral to the L4/5 region. Category one pelvic torsion tends to cause whole body axial torsion while category two SI joint dysfunction will have aspects of whole body torsion as well as lateralized dysfunctions. Category two SI joint instability tends to be unilateral and the body's kinematic chain, in its inability to translate gravity, will accommodate by having multiple lateral postural unlevelings, from the pelvis to the head.

Category two presentations can have radiating pain along the anterior lateral thigh and multiple related joint dysfunctions at the knees, shoulders, and TMJ. Category one tends to cause symmetrical joint accommodations and is more commonly associated with generalized neurological dysfunction, lowered pain and body function thresholds, and somatovisceral/viscerosomatic (mimicry) involvement.

1st rib – scalenus muscle tension:

The 1st rib is different then all other of the other 11 ribs in that its joint is based in hyaline cartilage while the other ribs are synovial type joints. While the other 11 ribs move with respiration, the 1st rib is supportive and does not. Since the body is a holographic kinematic chain, dysfunction in the SI joint will be represented throughout the body. One place offering information is the 1st rib costovertebral junction. Increased motion in the 1st rib will tend to lead to increased scalenus muscle tension as the muscle attempts to maintain support and splint in the affected area. DeJarnette found that a category one tends to affect the 1st rib/scalenus bilaterally and a category two affects the 1st rib/scalenus unilaterally. SOT postulates that the scalene/first rib [10] area relates to category 2 due to visual and vestibular righting reflexes [11,12], an attempt of the body to

maintain an upright posture when challenged by the asymmetrical joint loading of one SI joint in the category 2 patient.

Treating SI Joint Hypermobility (Category Two)

Category two SI joint hypermobility is treated predominately in a supine position [8,13] with pelvic blocks placed according to pelvic torsion presentation. Pelvic torsion can be determined by multiple methods, but evaluation is not performed until all related myofascial influences affecting the pelvis have been released. Most commonly the main compensatory factors affecting pelvic torsion is imbalance are the iliopsoas/quadratus lumborum muscles, piriformis/gluteus medius muscles, and upper cervical vertebra. SOT uses various methods to diagnose this restriction relating to palpation of the tissues and evaluating muscle function (such as the "over the head arm check", which evaluates the ability of the rib cage to lift from the pelvis). SOT treatment first addresses the myofascial issues. Once there is balanced flexibility, strength, and function of the specific muscles, then the doctor can proceed to the direct treatment of the SI joint.

Category two leg lengths are determined by having the patient abduct their legs (15 inches apart) against resistance. After a few seconds of doctor resistance, the patient relaxes while the doctor maintains traction on the legs while determining if one medial malleoli is superior or inferior to the other. If the pelvis is imbalanced, then pelvic blocks will be used to reduce pelvic torsion and compress the posterior hypermobile SI joint.

Traditionally, the main test of a category two is the arm fossa test. This tests for a patient's ability to respond by holding their arm in a consistent position as the doctor contacts the inguinal ligament. While the test has had some degree of acceptance as a SI joint evaluative test, [14] it does take time to learn and perfect in order to get consistent results. For that reason, this presentation will mostly focus on tests that are easy to monitor and test indicators such as palpation for pain and increased tension. If the patient is determined to have a category two presentation and the blocks are placed properly, then inguinal ligament sensitivity or medial/lateral knee pain (if present) will begin to subside within 30-60 seconds of block placement. Within 1-2 minutes the anterior scalenus muscle tension tends to become more symmetrical and less sensitive.

Sometimes it will take a couple visits but the standing sway pattern will begin to balance and anterior/lateral thigh pain will begin to subside. When the patient's indicators are not resolving, then there are a few possibilities such concomitant SI sprain with sacral segment posterior translation, piriformis muscle syndrome secondary to anterior sacral translation, L4/L5 discopathy secondary to iliolumbar ligament dysfunction, or descending TMJ dysfunctional righting mechanisms. [15-8]

Conclusion:

There are varying levels of category two syndromes associated with significant joint and articular capsule spraining and others less serious related to posterior joint increased

proprioception irritation and decreased nociception thresholds. Generally the less severe condition will respond relatively quickly, but the patient will need to be cautioned to resist the temptation to do too much joint motion or joint loading. Healing the joint is usually around 4- 6 weeks but with less traumatized joints it can heal more quickly. With chronically sprained joints, it can take a longer time. Treatment of a chronically sprained SI joint will usually require the patient to perform rehabilitative exercises such as prone straight leg raises, swimming, walking, and other types of activities that can stimulate posterior joint circulation to increase ligamentous strength and healing.

If there is an entity such as a hypermobile SI joint, it would behoove chiropractic and manual therapy healthcare providers to be cognizant of this syndrome and see if appropriate tools can be developed to further help differentiate between a hypermobile and a fixated SI joint. Since patients have varying levels of threshold regarding ligament strength, myofascial support, and pain, it is not unlikely that more than one type of treatment might prove efficacious for their care. However, it seems reasonable that greater accuracy and precision in diagnosis and treatment would likely lead to less iatrogenesis and greater patient response to treatment. [19]

The survey was an extremely small sample particularly of the chiropractors not practicing SOT. Many practitioners, SOT included, complained that it was difficult to place all their presenting patients into just those three categories and noted that patients came to their office for extremity problems, head and neck pain, and other conditions not fitting into their understanding the three categories offered. Even so, from a casual overview of research related discussions, it appears that the majority of chiropractors, who do not practice SOT, see more patients with fixated SI joints then chiropractors who do practice SOT. More investigation into this phenomena could offer greater understanding into whether: (1) a greater proportion of patients who seek SOT chiropractors have hypermobile SI joints, (2) SOT chiropractors are looking at patients with an assumption that the patient will likely have a hypermobile SI joint, or (3) is it possible that SI joint hypermobility syndromes are an overlooked syndrome in chiropractic?

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Table 1: Survey of Chiropractors – Condition Estimation of Patient Presentation

Chiropractors Practicing Sacro Occipital Technique				
Country	**Years in Practice**	**% Category I**	**% Category II**	**% Category III**
Australia	30	3	95	2
Australia	25	6	24	70
Australia	22	1	95	4
Australia	14	67.7	23	9.3
Australia	14	2	68	30
Australia	13	1	80	19
Australia	9	10	75	15
Australia	7	5	75	20
Australia	5	1	90	10
Brazil	1	55	37	8
Germany	7	1	79	20
Germany	2	1	69	30
Germany	2	40	24	36
Great Britain	13	1	47	52
Great Britain	12	5	75	20
Great Britain	12	40	50	10
Hong Kong	40	35	50	15
Scotland	18	11	28	61
USA	45	10	86	4
USA	45	1	89	10
USA	32	30	47	23
USA	32	10	80	10
USA	30	20	75	5
USA	30	70	20	10
USA	28	1	34	65
USA	27	1.5	94	4.5
USA	25	0.5	97	2.5
USA	24	30	65	5
USA	23	5	45	50
USA	23	1.5	93.5	5
USA	21	15	82	3
USA	20	0.5	95	4.5
USA	20	0.5	98	1.5
USA	19	5	85	5
USA	19	5	55	45
USA	19	0.5	97	2.5
USA	18	1	80	19
USA	16	1	95	4
USA	15	5	80	15
USA	15	2	95	3
USA	12	60	20	20
USA	9	55	30	15

USA	8	10	80	10
USA	8	3	96	5
USA	7	5	85	10
USA	7	3	93.75	3.25
USA	7	5	80	15
USA	7	30	60	10
USA	5	12	85	3
USA	5	2	98	0
USA	5	1	94	5
USA	5	2	75	23
USA	1	5	90	5
USA	1	3	96	1
USA	1	1	95	4
Averages	**16.3**	**13.1**	**74.5**	**16.4**

Chiropractors NOT Practicing Sacro Occipital Technique

Country	**Years in Practice**	**% Category I**	**% Category II**	**% Category III**
Canada	16	65	10	25
Canada	12	19	6	75
Canada	2	40	30	20
Mauritius	5	5	5	90
USA	30	10	10	80
USA	30	25	50	25
USA	23	60	2	48
USA	20	50	15	35
USA	16	50	15	35
USA	15	75	10	15
USA	4	75	15	10
Averages	**15.7**	**43.1**	**16.6**	**40.3**

Does Asymmetry Matter? A Challenge for Sacro Occipital Technique?

Frank O. Pederick, DC, Charles L. Blum, DC

Introduction:

Clinically the chiropractic profession for years has considered the affects of body symmetry on health. However challenging this premise are two factors:

(1) Does symmetry matter and is asymmetry directly related to dysfunction, and

(2) How might we develop reliable and valid measurements to evaluate possible asymmetry?

Bilateral symmetry, in only one plane, the sagittal plane, will divide an organism into roughly mirror image halves, (with respect to external appearance). In humans it relates only to the musculoskeletal system. Variations in symmetry can be observed. One type is "fluctuating asymmetry," (FA) which measures around 1% of trait size and thus is not readily visible. The other type "conspicuous," is readily visible [1]. Most of the asymmetries chiropractors find clinically seem closer to the subtle variety. They need to be examined carefully using a defined process.

Background:

The spectrum of effects of FA is reflected by the literature. Papers discuss FA in terms of; effects of stress & illness [2], choosing mates, [3,4], sexual attraction [5,6], intelligence [7], thermal asymmetry may detect pain syndromes [8-11], biophoton emissions reflect disease in terms of loss of symmetry [12,13]. Women with infectious diseases during pregnancy tend to give birth to infants with high levels of FA who are later more susceptible to medical conditions [14,15]. Volkau et al, state the human brain symmetry reflected in radiological images may be affected by pathology [16]. ADHD has been associated with FA by Stevenson [17] and asymmetric brain structures also [18].

Asymmetry is one of the five diagnostic criteria for spinal dysfunction defined in 1993 by Bergmann in the PARTS joint assessment procedure [19], which was accepted by the Technique Committee of the ACC in 2004 [20]. "PARTS" is an acronym with P = pain/tenderness; A = asymmetry/alignment; R = range-of-motion abnormality; T = tone/texture/temperature of soft tissues; and S = special tests. "Asymmetrical qualities on a sectional or segmental level are noted, that would include observation of posture and gait, as well as palpation for misalignment of vertebral segments. Findings of asymmetry are identified through observation, (posture and gait analysis), static palpation, and static X-ray[19] ." Asymmetric findings of pain and tenderness, range of motion and tissue tone and texture could also be significant and be included in such an assessment. Restricted motion appears to be intimately linked with asymmetry and is also a part of medical and osteopathic examinations.

Approaches similar to PARTS have been made by the medical and osteopathic professions and assessment of various aspects of body asymmetry have been included in several chiropractic techniques. In general this involves ways to detect body asymmetries and procedures to restore body symmetry and motion, and have been part of the chiropractic armamentarium for several decades. Despite controversy over the relevance, accuracy and reliability of methods used to detect changes in symmetry these procedures have continued in use and have gained a measure of acceptance.

Is there a relationship between homeostasis and symmetry?

A theory of dysfunction has been suggested diagrammatically by Pederick [21], by imagining a football ground as the possible area within which homeostatic function is possible. The area is limited in reality by factors some of which are reversible and some irreversible and indicated by the size of arrows. These include age, congenital and genetic factors, lifestyle, history of trauma, disease and toxins. Subluxations (including spinal, extremity, cranial and restrictions in muscles, fascia and associated reflexes) are major reversible factors, which may enable rapid improvement in homeostatic capacity. From the preceding and following paragraphs it is clear there is an implied relationship between symmetry and health, (or homeostasis).

There are many papers examining particular aspects of asymmetry. For example, pelvic obliquity, leg length inequality (LLI) [22-6], side-to-side weight bearing [27,28], range of movement [29], asymmetric cross section of psoas and multifidis muscles [30], asymmetry of lateral abdominal muscles [31], have been the subject of papers. Childs found iliac crest and weight bearing symmetry improved immediately after spinal manipulation [32]. Sacroiliac dysfunction as a source of back pain has been investigated by Tullberg and others [33-6] with favorable effects of restoration of sacroiliac asymmetry on scoliosis, .pelvic obliquity and LLI was examined by Timgren and Soinila [25]. Low back pain has been investigated for association with LLI [37-9].

While LLI is accepted as related to pelvic unleveling and spinal scoliosis the relationship to low back pain is not clear from these studies. ”Finally, the ubiquity of coupled motion asymmetry suggests that symmetry must be re- evaluated as a criterion normal for spinal function.” according to Haas [40]. Using a consensus panel process Mootz et al [41], agreed that: “The role of posture asymmetry, such as functional leg length inequality, is worthy of continued study in chiropractic.”

Discussion:

While symmetry logically could be assumed to have a biomechanical preference over asymmetry, hence methods of reliably and validly determining this asymmetry and its reduction need to be developed in the chiropractic profession.

Where can we start?

SOT is well placed to develop and assess a global means of a detecting and correcting functional asymmetries because the technique addresses key elements involved as possible causes of such asymmetries and their correction; (e.g. spinal, extremity, and cranial subluxations, aberrant muscular and fascial tensions, and associated reflex effects).

There is little point in repeating the experiments such as those on pelvic obliquity and torsion. Correcting those types of asymmetries by whatever means has been shown to have beneficial effects [23-40].

What is needed is the development of a set of clear readily accessible indicators, which will enable fairly rapid before and after checks to allow the detection of asymmetry, and after care, to confirm the correction and retention of those findings.

This could be a major step forward for SOT because if the indicators can be validated experimentally the use of SOT by the profession could be expanded. The PARTS procedures may be a starting point but there could be many other possibilities to be found in the chiropractic and osteopathic and possibly physiotherapy literature. SOT would need to look at the evidence and seek to move forward using current information rather than try to tie everything back to what has been documented in the past. Part of the problem is that there is no defined standard for symmetry in chiropractic terms.

One place could be related to pelvic torsion and leg length inequality, which has some support in the literature. While Cooperstein questions the use of leg lengths to test for pelvic torsion and prefers the pelvis directly [42], some degree of intra and interexaminer reliability has been found for both testing for prone [43] and supine [44] leg length inequality.

Pelvic torsion may also be associated with dominant handiness and the spiral whole-body stresses occurring with ongoing asymmetric use. In one study they found that in 69% of the cases [N=278], the pelvic torsion corresponded to the contralateral dominant handedness as an expression of the natural laterality [45].

In another study an attempt was made to see if pelvic torsion - the most common compensation for LLI - was correlated with back pain; according to Levangie it was not [46]. However Timgren and Soinila found (N=150) that the maintenance of symmetry showed a highly significant ($P < .001$) correlation with improvement in functional ability and reduction of pain [25]. Also Jull et al found a possible correlation between frontal plane asymmetry and low back pain in a case series investigating the prevalence of six types of pelvic postural asymmetry in a consecutive case series of 421 patients with low back pain [24].

Proposed Study Rational

Some studies have demonstrated the possible validity of a supine method of evaluation by correlating leg length asymmetry to increased rated pain visual analog scale (VAS) intensity and recurrent back pain [N=74] [47] and lower SF-12 general health scores [N=55]

[48]. Prone studies evaluating pelvic torsion found that with position of pelvic blocks a position preference could be determined based on pain provocation testing [49]. It is possible that pelvic wedges of blocks may offer a method to test for pelvic torsion or a functional pelvic asymmetry. Pelvic blocks successfully have been used in supine and prone positions for treatment of scoliosis [50,51] and herniated discopathy [52,53]. Cooperstein has suggested that various uses of pelvic blocks to deal with pelvic torsion and asymmetry could be expanded beyond the suggested traditional sacro occipital technique uses [54].

Since pain indicators seem to be the most accepted and reliable methods of evaluating pre and post changes to pelvic torsion and reversible pelvic asymmetry some methods suggested by DeJarnette [55] might be worthy of investigation. If specific points of increased pain diminish and improved function occurs with reversing the pelvic asymmetry then treatment might also be able to function as an evaluative test.

Purportedly supine pelvic block placement would be used to reverse pelvic torsion in patients with sacroiliac joint hypermobility [56,57]. Pelvic block placement in the prone position would be used to reverse pelvic torsion with patients presenting with sacroiliac joint fixation. Generally, there are some ways to differentiate between joint fixations versus hypermobility. Increased or decreased pain at specific "trigger point" locations may be associated with block placement and help differentiate between pelvic torsion that may have a component of SI joint hypermobility or fixation.

With SI joint hypermobility, DeJarnette found increased sensitivity anywhere along the inguinal ligament (located bilaterally between the ASIS and the pubic bone) [58], along with either medial (sartorius insertion) or lateral knee (tensor fascia lata insertion) pain on either or both legs. With a SI joint fixation, there are commonly palpatory regions of pain where the piriformis and gluteus medius cross, as well as at the lumbodorsal fascia just lateral to the L4/5 region.

The 1st rib is different than each of the other 11 ribs in that its joint is based in hyaline cartilage, while the other ribs are synovial-type joints. While the other 11 ribs move with respiration, the 1st rib is supportive and does not. Since the body is a holographic kinematic chain, asymmetry in the SI joint might be represented throughout the body. One place offering information is the 1st rib costovertebral junction. Increased motion in the 1st rib will tend to lead to increased scalenus muscle tension as the muscle attempts to support and splint. DeJarnette has found that a SI joint fixation tends to affect the 1st rib/scalenus bilaterally and a SI joint hypermobility affects the 1st rib/scalenus unilaterally [55].

DeJarnette postulated that the scalene/first rib [59] area relates to SI joint hypermobility due to visual and vestibular righting reflexes [60,61], in an attempt of the body to maintain an upright posture when challenged by the asymmetrical joint loading of a hypermobile SI joint. With a SI joint fixation there is no hypermobility and the asymmetric loading is believed to be bilateral causing a bilateral increase in scalenus tension.

A study similar to one by Lisi et al [49] could evaluate pain thresholds at the specific points postulated by DeJarnette in the inguinal ligament, medial/lateral knee, where the piriformis/gluteus muscles cross, lumbodorsal (lateral to L4-5), and unilateral versus bilateral scalenus muscle pain with pelvic block placement to reverse pelvic torsion in the supine or prone positions. Determinations might be made whether pain levels in these regions increased or decreased according to a positional preference in the supine or prone position and whether there were improved lasting functional outcomes with pelvic block placement used to reduce pelvic asymmetry.

In order to provide some validity to the results any of any of these procedures a means of assessing relative asymmetry before the procedure and relative symmetry afterwards may provide a way forward.. As mentioned above, pain findings provide one means and have been accepted in the PARTS evaluation.

However other tests could also be applied to test elements of postural and motion symmetry

For instance Pederick [62] developed from a range of sources , "BLAST" - Bi-Lateral Asymmetry/Symmetry Tests. His hypothesis is that if a patient complies with BLAST, mechanical, fluid dynamic and neurological effects are minimized and are less likely to impair other functions including cranial motion. The test are indicators of the causes of postural and motion asymmetries. In the interest of brevity the references and discussion of other tests and variations, possible causes and corrections have been omitted

Standing Analysis Tests
The tests start with the patient standing, their weight evenly distributed and feet directly under acetabular fossae. The examiner will check crest and posterior superior iliac spine (PSIS) position as a possible indication of sacral position.

a. Iliac Crests
To minimize parallax error check with the eyes at about the level of the crests & PSIS. Crests. The horizontal downwards palms are brought medially over crest area.

b. PSIS
Bilaterally hook fingers over the ilia with the thumbs horizontally under the PSIS to give a firm bony contact. Check for obliquity and rotation.

Upper Cervical Tests

a. Ist Rib Motion
The standing or seated patient nods head anterior to posterior to anterior as examiner contacts bilateral rib heads (costotransverse junction) firmly from behind with thumbs. Note any restricted 1st rib head motion (Usually unilateral, occasionally bilateral).

b. Derefield Checks
Prone patient turns head fully to one side and relaxes while examiner observes changes in leg length with head motion. Repeat to opposite side.
This is an occasional finding.

Hip Extension.
Patient prone as examiner applies firm pressure over sacrum while the patient extends one leg then the other. Note side of restricted extension.

Prone Leg Length.
Patient prone with ankles supported and knees slightly bent as examiner compares length at inferior medial malleoli.

Overhead Arm Extension.
Patient supine as examiner applies gentle overhead tension to both arms and compares arm length at finger creases

Alternate Auto-SLR Supine
Patient performs straight leg raises (Supine Goose Step) as examiner places heel of hands on anterior superior iliac spines (ASIS). (Note any slight upward "kick" felt on ASIS from fixation in opposite S/I joint during leg raises).

Supine Leg Length.
Examiner compares leg length at inferior medial malleoli.

Conclusion

Developing a method to evaluate pelvic torsion or asymmetry as well as determining possible reversal of this condition and associating it with improvement in function and reduction in pain may be one step towards improving chiropractic clinical outcomes. In order to begin this process some methods that have been used in chiropractic for years that are not invasive, and offer low risk, --such as pelvic block placement -- may offer a solution to evaluate pelvic asymmetry and varied treatment options. Since there has been a method of evaluation and treatment using pelvic block placement for treatment of supine and prone pelvic torsion for decades, using these (DeJarnette) indicators would seem to be a logical starting point for further investigation.

Asymmetry is an issue in patient health particularly based on historical manual healthcare widespread assumptions and their application for many years. Further study into frontal plane asymmetry is indicated since leg length inequality, pelvic torsion, and its treatment are deeply entrenched in the manipulative healthcare diagnostic and therapeutic interventions. Methods of assessment such as PARTS or BLAST could be used along with SOT symmetry analysis or as independent before and after checks on the desired change from asymmetry to symmetry of motion and posture before and after treatment.

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Investigating the Ability of Chiropractors to Advertise on Their Website an Expertise in the Treatment of Temporomandibular Joint Disorders.

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The field of chiropractic is attempting to encourage the concepts of evidence-based care to chiropractors in clinical practice. This desire is to help support the ethics and integrity of chiropractic while at the same time protecting the public from any harm physically or financially. One avenue of this concern involves what a chiropractor might advertise on their website [1,2].

There have been a few articles written about the level of evidence utilized by chiropractic national organizations', chiropractic colleges', and research organizations' in brochures and on websites [3,4]. For instance in the Grod and Sikorski study "web sites were reviewed for claims related to chiropractic theories and methods for which there is currently inadequate scientific evidence, to the best of our knowledge [4]."

The Canadian Chiropractic Association guidelines describes in the "Consultation and Examination (Item 13): The chiropractor will recommend only those diagnostic procedures deemed necessary to assist in the care of the patient, and treatment considered essential for the well-being of the patient [5]." The challenge becomes determining what are the international chiropractic standards for colleges, the scope of practice, and what does the evidence based literature reveal?

In this document it will investigate whether it is reasonable for a chiropractor to place on their website that they treat a specific condition such as temporomandibular joint (TMJ) disorders or jaw pain. Certain questions need to be posed as a means to come to an educated and reasonable conclusion.

1. **Is diagnosis and treatment of TMJ disorders part of chiropractic college curriculums and within the chiropractic profession?**

In chiropractic colleges world wide the study of the anatomy of the TMJ as well as diagnosis and treatment of TMJ related disorders is part of their undergraduate curriculum. It is quite common for post-graduate courses at colleges internationally to also teach various aspects of TMJ diagnosis and treatment, from direct hands on analysis or treatment to rehabilitative exercise. For related chiropractic research associated with chiropractic's involvement in TMJ diagnosis and treatment please see appendix.

2. Is diagnosis and treatment of TMJ disorders part of the chiropractor's scope of practice?

In the United States the issue of scope of practice regarding diagnosis and treatment of TMJ disorders was investigated in 2006 [8]. Essentially TMJ care is within the scope of practice of chiropractors in the United States. Of interest in this study is "that some states had no problem stating that TMJ care was within their scope while others struggled with wording and were extremely cautious with their communications. It would appear that this might be due to litigious activities occurring in that specific state or fear of reprisals from various entities directed toward that board of chiropractic examiners [8]."

However the issue is quite complex because the chiropractic scope or practice laws internationally have not been explicitly stated. The assumption is that if TMJ diagnosis and treatment are part of a doctor's curriculum, postgraduate studies, and with the profession's evidence base of literature that it would be within the doctor's scope of practice. For instance within the chiropractic literature, which describes the techniques chiropractors commonly use to diagnose and treat, care of the TMJ are always be found [9,10].

3. Does the chiropractor actually have training in the diagnosis and treatment of TMJ disorders?

Sacro occipital technique (SOT) [11] developed in the early 20th century in the United States by Major Bertrand DeJarnette, DO, DC is a specific method of chiropractic taught internationally for decades [12]. It has one focus, which involves care of TMJ related disorders and can involve interdisciplinary cooperative efforts with the dental profession. Postgraduate seminars are routinely held which help interested doctors gain greater education and skill in TMJ diagnosis and treatment.

Sacro Occipital Technique Organization – USA (SOTO-USA) [www.soto-usa.org] represents all the SOT organizations internationally at the American Alliance of TMD Organizations [www.tmdalliance.org]. The TMD alliance is an alliance of organizations that have as their focus the diagnosis, treatment, and care of patients suffering from TMJ related disorders. This alliance has a preponderance of dentists, approximately 18,000, and SOTO-USA represents the chiropractic profession as well as SOTO Europe in this arena.

Another arena where chiropractors treating TMJ related conditions are involved is the Cranio Group. The Cranio Group is an international study group of health care professionals who have a particular interest in the treatment of disorders of the cranio-mandibular-cervical system (once known as "TMJ"). Members are mainly Dentists and Orthodontists (65%) plus Osteopaths, Chiropractors, Physiotherapists, and other healthcare practitioners. The group was initiated in 1992 by Dr. Richard Dean and Dr. Noel Stimson. The membership now includes many internationally known professionals from all associated disciplines and from many countries including Britain, Ireland, Europe, USA, Canada and Australia. [http://www.craniogroup.com/]

4. Is there evidence in the published literature regarding chiropractic diagnosis and treatment of TMJ disorders?

What does the term "evidence" mean in the context of a chiropractic clinician? Evidence-based practice (EBP) aims to apply the best available evidence gained from the scientific method to clinical decision-making [13]. It seeks to assess the strength of evidence of the risks and benefits of treatments (including lack of treatment) and diagnostic tests [14]. While this seems quite benign and reasonable there are some issues that make EBP not so simple. EBP has been used as a tool by policy makers, insurers, and regretfully by opponents to complementary alternative healthcare to prevent professions such as chiropractic from exercising their best practice clinical decisions.

Evidence-based medicine categorizes different types of clinical evidence and ranks them according to the strength of their freedom from the various biases that beset healthcare research. For example, the strongest evidence for therapeutic interventions is provided by systematic review of randomized, triple-blind, placebo-controlled trials with allocation concealment and complete follow-up involving a homogeneous patient population and medical condition. In contrast, patient testimonials, case reports, and even expert opinion have little value as proof because of challenging obstacles such as the placebo effect and the biases inherent in observation and reporting of cases [13].

Anthony Rosner, PhD (past research director of the Foundation for Chiropractic Education and Research) notes that "in the space of just about a decade, health policy-makers have begun to move away from a base of only randomized clinical trials and meta-analyses to a triad of decision-drivers that also includes clinical judgment from experience [15] and the empowerment of the patient through their values, expectations and requests. This is precisely why the term evidence-based medicine has only recently fallen out of favor, being replaced by the moniker, evidence-informed medicine [16-8]."

Rosner has shared a quote from the American social scientist Donald Campbell, "More and more I have come to the conclusion that the core of the scientific method is not experimentation per se, but rather the strategy connoted by phrase,

'plausible rival hypotheses.' ... We should use those singular event case studies [which can never be replicated] to their fullest, but we should also be alert for opportunities to do intentionally replicated studies. ... I like to believe that this shift was facilitated by ... laboratory research on that most hard-to-specify stimulus, the human face, and that this experience provided awareness of the crucial role of pattern and context in achieving knowledge [19]."

It is important to remember that when we look at the evidence based practice or evidence informed medicine credo, it states that part of this evidence involves the biological plausibility of a therapeutic intervention, case reports, and clinical judgment of the practitioner. Based upon the published evidence based literature (see appendix) it is clear that there is an emerging evidence base of literature that encompasses various aspects of chiropractic involvement in TMJ diagnosis and treatment.

As chiropractic is developing a presence in the complementary alternative medical (CAM) field our agencies and governing organizations need to be aware of our presence in various arenas such as TMJ disorders (TMD). In a study in the Journal of Orofacial Pain they found "In general, respondents who used CAM for their TMD reported being most satisfied with the 'hands on' CAM therapies (massage, acupuncture, and chiropractic care) [20]." Another study from the same journal found that with CAM therapy for patients with myofascial TM disorders, "The most common type of CAM treatment was relaxation therapy (12.7%), followed by chiropractic treatment (9.5%) [21]." From these studies it is obvious that patients are looking for chiropractors for care of their TMJ disorders and that this care is offering them relief.

Conclusion:

1. TMJ diagnosis and treatment are part of chiropractic college curriculums and within the chiropractic profession.

2. Based on college curriculum, postgraduate studies, and the chiropractic evidence base the diagnosis and treatment of TMJ disorders is part of the chiropractic scope of practice.

3. Chiropractor's that have both undergraduate and postgraduate training in the diagnosis and treatment of TMJ disorders should be able to share on their website a description congruent with their expertise in a reasonable and ethical manner.

4. There is extensive evidence in the published literature regarding chiropractic diagnosis and treatment of TMJ disorders.

5. In the CAM field chiropractors have been an active part of TMJ related treatment and this care is patient driven. One way of communicating expertise and availability of care is on a doctor's website.

All the above clearly illustrate that a chiropractor who is trained, has experience in a specific method of analysis and care, and is part of a co-treatment arena should be able to accurately describe themselves on their website with regard to treating patients with jaw or TMJ related pain and disorders.

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Appendix (through 2010)

1. **Diagnosis and Evaluation of TMJ Disorders**
2. **Chiropractic Care of TMJ Disorders - Reviews**
3. **Treatment of TMJ Disorders in Chiropractic Peer Reviewed Literature**
4. **Chiropractic Treatment of TMJ Disorders in Related Healthcare Peer Reviewed Literature**
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Investigating the Ability of Chiropractors to Advertise on Their Website an Expertise in the Treatment of Pediatric Patients.

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The field of chiropractic is attempting to encourage the concepts of evidence-based care to chiropractors in clinical practice. This desire is to help support the ethics and integrity of chiropractic while at the same time protecting the public from any harm physically or financially. One avenue of this concern involves what a chiropractor might advertise on their website [1,2].

There have been a few articles written about the level of evidence utilized by chiropractic national organizations', chiropractic colleges', and research organizations' in brochures and on websites [3,4]. For instance in the Grod and Sikorski study "web sites were reviewed for claims related to chiropractic theories and methods for which there is currently inadequate scientific evidence, to the best of our knowledge [4]."

The Canadian Chiropractic Association guidelines describes in the "Consultation and Examination (Item 13): The chiropractor will recommend only those diagnostic procedures deemed necessary to assist in the care of the patient, and treatment considered essential for the well-being of the patient [5]." The challenge becomes determining what are the international chiropractic standards for colleges, the scope of practice, and what does the evidence based literature reveal?

When a chiropractor advertises that they can treat pediatric patients, infants and children, on their website what specific qualities make this appropriate. There are some reasonable and specific factors, which need to be considered:

I. What is evidence based literature and what are the challenges for alternative healthcare providers? Does the evidence solely rest upon randomized controlled studies (RCT)? Are there limitations or alternatives

to using RCTs as the prime determinant factor for allowing a doctor to advertise that they treat pediatric patients?

II. Are there studies that discuss the safety of chiropractic pediatric care?

III. Is there an evidence base accumulation of chiropractic pediatric literature?

IV. What are the commonly accepted chiropractic pediatric standards of care determined by the colleges and their accrediting organizations?

1. Evidence Based or Informed Practice

Evidence-based practice (EBP) aims to apply the best available evidence gained from the scientific method to clinical decision-making [6]. It seeks to assess the strength of evidence of the risks and benefits of treatments (including lack of treatment) and diagnostic tests [7]. While this seems quite benign and reasonable there are some issues that make EBP not so simple. EBP has been used as a tool by policy makers, insurers, and opponents to complementary alternative healthcare to prevent professions such as chiropractic from exercising their best practice clinical decisions.

Alternative Healthcare, Evidence, and RCT Hurdles

There are particular challenges in the pediatric chiropractic field that are shared by other healthcare disciplines as well. Most notably, how can the chiropractic research community perform high level "randomized, triple-blind, placebo-controlled trials with allocation concealment and complete follow-up involving a homogeneous patient population and medical condition" with its limited resources. Before this high level of chiropractic research for the care of children can be performed there are some hurdles that will need to be vaulted. They include:

1. Written consent is essential for studies and there is some question whether a child's consent can be superseded by the parent for the purposes of a research study [8].

2. Most alternative healthcare professional organizations do not have the research infrastructure that is properly funded or have secondary research monetary support (e.g., pharmaceutical industry) for the highly costly triple blinded randomized controlled trials, that involve extensive recruitment, elaborate study design, a group of researchers to perform the study, statisticians to interpret the study's results, and teams of researchers to write the study for publication [9].

3. In all forms of healthcare, chiropractic not excluded, there is a profound disconnect between the doctors in practice and their profession's researchers. Instead of an allied front each group tends to have an element of distrust as well as discounting what each has to offer. So, often times what clinicians find in

> practice is discounted by the research community as being biased, lacking in controls or sham comparative procedures, and ultimately anecdotal. On the other side of the fence the doctors in practice tend to see the "evidence" gathered by the research community to be out of touch with what is taking place in the clinical trenches [10].

Does the evidence solely rest upon randomized controlled studies (RCT)?

Alternative healthcare professions such as chiropractic have had a difficult time moving forward in the evidence based arena. In this climate the field of chiropractic is attempting to respond to its challengers. The Bronfort et al, study [11] is one such response. Other responses involve assessing risk benefit ratio of comparative interventions as well as what has been found in clinical practice. It is important to remember that when we look at the evidence based practice credo, it states that part of this evidence involves the biological plausibility of a therapeutic intervention, case reports, and clinical judgment of the practitioner.

Therefore it is not uncommon for chiropractic practitioners of pediatric care to be challenged by the statement that are there is no evidence to support chiropractic care of pediatric conditions. This is countered by stating that there is significant evidence, albeit not at the "high" level the challengers seem to require. So we come to a situation where both sides are highly selective and one might say, "biased" in the choice and application of the current research.

There has been a large reliance upon the recent Brantford et al study [11], which has stated, "In children, the evidence is inconclusive regarding the effectiveness for otitis media and enuresis, and it is not effective for infantile colic and asthma when compared to sham manipulation [11]." Their conclusions were solely based upon, "… the results of systematic reviews of randomized clinical trials (RCTs), widely accepted and primarily UK and United States evidence-based clinical guidelines, plus the results of all RCTs not yet included in the first three categories [11]." While RCTs are considered to have a higher degree of evidence relying on RCTs presents an inherent bias by not offering weight to case reports, expert opinion, and practitioner's clinical judgment.

Concato et al questioned the sole reliance upon RCTs to base clinical guidelines, and they concluded that, "… results of well-designed observational studies (with either a cohort or a case-control design) do not systematically overestimate the magnitude of the effects of treatment as compared with those in randomized, controlled trials on the same topic [12]." The issue with all research, RCTs included, is that they can only share guidance and all aspects of the field of "evidence" needs to be used to develop proper informed chiropractic clinical practice. For instance, Alcantara [13] gives an example challenging Bronfort, et al's study [11] relating to the effectiveness of manual therapies for various conditions. He stated,

> "I believe Bronfort and colleagues are wrong in their conclusion regarding the evidence for colic. If one closely examines the clinical trials on chiropractic spinal

manipulative therapy (SMT) and infantile colic, you will find that no study exists comparing chiropractic SMT versus sham therapy.

"Now, sham therapy has been defined as a procedure that closely mimics the active procedure, but remains inert with respect to the specific effects of the active treatment. Wiberg and colleagues compared the effects of chiropractic SMT versus simethicone, a common medication for infantile colic. Browning and colleagues compared the effects of chiropractic SMT and occipito-decompression in infantile colic. Finally, Olafsdottir and colleagues compared an unproven chiropractic technique versus "no treatment."

"Wiberg and colleagues found chiropractic superior to simethicone; Browning and colleagues found both techniques decreased the hours of crying compared to baseline; and Olafsdottir and colleagues found their chiropractic technique as ineffective. So, the bottom line is, there is some evidence in support of chiropractic care for infantile colic [13]."

The challenges to RCTs are occurring not because chiropractor practitioners want to perform care that is unethical or irresponsible, but because the emerging chiropractic literature has not yet caught up with what is commonly taking place in clinical practice. These chiropractic pediatric clinical studies have been routinely published within chiropractic pediatric journals [14, 15] for years.

Another challenge to the sole use of the RCT to reach an evidence-based determination has been made by Anthony Rosner, PhD (past research director of the Foundation for Chiropractic Education and Research).

Dr. Rosner notes that "in the space of just about a decade, health policy-makers have begun to move away from a base of only randomized clinical trials and meta-analyses to a triad of decision-drivers that also includes clinical judgment from experience [16] and the empowerment of the patient through their values, expectations and requests. This is precisely why the term evidence-based medicine has only recently fallen out of favor, being replaced by the moniker, evidence-informed medicine [17-9]."

Rosner has shared a quote from the American social scientist Donald Campbell, "More and more I have come to the conclusion that the core of the scientific method is not experimentation per se, but rather the strategy connoted by phrase, 'plausible rival hypotheses.' ... We should use those singular event case studies [which can never be replicated] to their fullest, but we should also be alert for opportunities to do intentionally replicated studies. ... I like to believe that this shift was facilitated by ... laboratory research on that most hard-to-specify stimulus, the human face, and that this experience provided awareness of the crucial role of pattern and context in achieving knowledge [20]."

2. Are there studies that discuss the safety of chiropractic pediatric care?

Before anyone can advocate a method of care it must be determined if it is safe and how it compares to other methods such as watching and waiting, medications, and surgical interventions. When we look at the various studies evaluating the risk of chiropractic treatment, we find the risk to be rare and infrequent.

The ICPA PBRN study by Alcantara et al, described how 264 "chiropractors reported on 512 children. An adverse event (AE) prevalence of 0.67% was calculated. In terms of risk estimates, 880 cases for a first AE, 141 cases for a second AE and 28 cases of a third AE would occur if we followed 1 million children under chiropractic care in one year. Four hundred forty nine parents independently reported on 449 children under chiropractic care. An AE prevalence of 4.45% was found. Risk estimates indicated that 978 cases of a first AE and 172 cases of a second AE would be expected if 1 million children under chiropractic care were followed for one year [21]."

They continued that their "findings confirm previous findings that children attend chiropractic care for wellness and to address dysfunctions of the neuromusculoskeletal system and conditions of childhood. With respect to safety, we found a relatively higher prevalence of (AEs) attributed to pediatric SMT than previously reported but confirm these AEs to be minor and self-limiting. This is the first reporting of risk estimates for AEs from pediatric chiropractic SMT and supports its safety. Parents indicated a high-perceived effectiveness with chiropractic care [21]."

Other studies exploring the issues of safety and risk of chiropractic care of children have found that chiropractors trained in pediatric care offer a significant low risk option [22-5] and that "serious adverse events are rare and much less than for medication commonly prescribed for these problems [26]." So with the risk from chiropractic care being very low and the safety therefore considered good the next step is to investigate if there is evidence to support its benefit.

3. Is there an evidence base accumulation of chiropractic pediatric literature?

We know that chiropractors have been successfully treating children for years [27] and a recent study in the Journal of Alternative Complementary Medicine supports this contention [28]. Reviewing the literature, it is noted that in 2009-2010 the Journal of Manipulative and Physiological Therapeutics [29] and the Journal of Chiropractic and Osteopathy [30] had journal issues dedicated predominately to chiropractic care of children. Additionally, two journals have the focus of their publications specifically on the chiropractic care of children: the Journal of Clinical Chiropractic Pediatrics [14] and the Journal of Pediatric, Maternal & Family Health [15]. A brief review of their table of contents will reveal hundreds of chiropractic pediatric published studies. Also a review of all the chiropractic peer review journals would similarly yield at least one hundred chiropractic pediatric studies.

What programs and conferences are taking place to build a chiropractic pediatric evidence base?

a. A practice based research network (PBRN) is defined as practitioners devoted principally to the care of patients and also affiliated with each other for the purpose of revealing the phenomena of clinical practice occurring in their communities. The development of such a network by the International Chiropractic Pediatric Association (ICPA) has taken place and is conducting research relevant to the pediatric chiropractic and develop evidence-based practice models for family based doctors of chiropractic [31].

b. All fields of healthcare have research conferences, which are venues where researchers and clinicians can come together to learn and share. Just as it is important for the doctors in practice to understand research and evidence based practice the research arena needs to hear the voices from the doctors in clinical practice. While there are other chiropractic research conferences, the two largest ones are the Research Agenda Conference (RAC)/ Association of Chiropractic Colleges (ACC) [32] or the World Federation of Chiropractic (WFC)/International Conference on Chiropractic Research (ICCR) [33]. At these conferences it is common to see many research presentations and posters that illustrate chiropractic care of children.

c. While there may be research protocols higher up the evidence based hierarchy, doctors in practice need some way of communicating what is commonly occurring in their clinical practice. A conference such as the ICPA Wellness Conference, taking place in Washington, DC, USA October 21st 2010 and its proceedings offers just such a venue. This is one way clinicians can share with the research community and hopefully help guide future research endeavors and studies.

4. What are the commonly accepted chiropractic pediatric standards of care determined by the colleges and their accrediting organizations?

The Council on Chiropractic Educational represents an organizational oversight for chiropractic colleges and so that the chiropractic profession can adequately monitor what is taught in the undergraduate programs and set minimum standards for participant member colleges. The Council on Chiropractic Educational International member groups include Australia, New Zealand, Canada, United States, and Europe at this time. Each of the following members have minimum standards which require that a college must teach pediatrics: Council on Chiropractic Education Australasia (CCEA) [34], Canadian Federation of Chiropractic Regulatory and Educational Accrediting Boards (CFCREAB) [35], Council on Chiropractic Education United States of America (CCE) [36], European Council on Chiropractic Education (ECCE) [37].

Conclusion:

Therefore within the chiropractic community chiropractic pediatrics is a mandatory course within the chiropractic undergraduate program. Doctors are exposed to

chiropractic pediatric post-graduate seminars and the majority of chiropractic published literature supports chiropractic care of children. Chiropractic care of children is safe and offers a conservative option to more invasive and higher risk alternatives. Parents and the public, in general, are looking for alternative care and chiropractic care is one of the large groups represented in the field of complementary alternative medicine (CAM). It is both reasonable and incumbent upon chiropractors trained in pediatrics to have a vehicle where they can share with the public their expertise, and their website should be an appropriate and acceptable venue.

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Integrating SOT and acupuncture for the treatment of asthma: A case report.
Christine D. Benner, DC, Charles L. Blum, DC

Introduction:
Asthma is a common chronic inflammatory disease of the airways characterized by variable and recurring symptoms, reversible airflow obstruction, and bronchospasm. Symptoms commonly include wheezing, coughing, chest tightness, and shortness of breath. Pharmaceutical treatment of acute symptoms is usually with an inhaled short-acting beta-2 agonist. Symptoms can be prevented by avoiding triggers, such as allergens and irritants, and pharmaceutically by inhaling corticosteroids. Because these pharmaceutical agents all have contraindications and risks conservative therapies are recommended in the initial phase of care starting with avoiding triggers to alternative therapies such as chiropractic [1] or acupuncture [2].

Asthma affects approximately 7% of the population of the United States, which leads to 4,000 deaths per year in the United States. In the United States asthma affected more than 22 million people including 6 million children in 2005. It accounted for nearly 1/2 million hospitalizations, and 14 million missed days of school annually. More boys have asthma than girls, but interestingly more women have it than men. Rates of asthma have increased significantly between the 1960s and 2008. For instance, 9% of United States children had asthma in 2001, compared with just 3.6% in 1980.
Since asthma is a multifactorial dysfunction of the respiratory system and nutritional, environmental, genetic, and emotional factors all play an important part in the etiology of this condition, conservative type therapies will need to vary in their treatment approach [3]. The purpose of this case report is to share a patient's response to chiropractic and acupuncture treatment of her longstanding asthma.

Case History:

The patient is a 63 year old female, 5'3", 112 lb. She is very active w/ yoga, weight lifting and bicycling. Originally presented in August of 2008 with "tight" shoulders, pelvic misalignment, right knee pain and left foot pain. She was referred by her massage therapist for chiropractic care and the patient rated her general health level as a 9/10, with her only discomfort being a long history of asthma. She took Advair as needed and reported that she hadn't had a bad attack in some time but was very often short of breath. This patient was treated at this office for the structural complaints up until September 2009, at which time she reported an increase in her asthma attacks and shortness of breath. At that time sacro occipital technique (SOT) treatment protocols were focused towards her breathing by incorporating chiropractic manipulative reflex technique (CMRT) and including acupuncture treatments.

Treatment/Interventions:

As of September 2009 a patient evaluation revealed a category 1 (pelvic torsion and reduced sacral nutation), left physiological short leg, with subluxation patterns found at

the sacrum, L4-5, T3-4 and the upper cervical region as well as in the left foot and right knee. Evaluation of her rib cage found a generalized costal torsion along with individual costovertebral subluxations at levels T3-6. In addition the patient's sternum was restricted in a superior position and her diaphragm needed to be released at the anterior inferior and lateral margins bilaterally. Cranial evaluation noted some vagal nerve involvement with occipitomastoid tension and reduced compliance. Some restricted motion and function was also noted along the cruciate suture and bilaterally along the intraoral inferior surface of the zygomatic bones.

Treatment was administered via standard SOT procedures utilizing pelvic blocks and manual adjusting. An activator instrument was utilized to adjust the costovertebral joints at T3-6. Specific SOT cranial procedures were used to balance cranial restrictions and lack of compliance. The first acupuncture treatment was focused on the lungs being able to "pull the air in;" some specific kidney acupuncture points were utilized to facilitate this activity of grasping the Lung qi. Specific acupuncture points to "open the chest" (facilitate breathing and expand anterior chest wall) as well as master empirical points for the head, neck and sinuses were also used. Constitutional level points were included to build qi and blood and to move the qi once it was ingested by the lungs, thus dispelling any stagnation that would be manifesting as asthmatic symptoms. Points needled included over the course of treatment included the following: Lung 1, Ren 6, 12 and 17, Large Intestine 4 and 20, Yin Tang, Ear Shen Men, Spleen 6, Stomach 36 and Kidney 3.

Results:

Response to treatment, according to the patient was "excellent," and she noted significant improvement in breathing, stamina, and function in all activities of daily living compared to how she felt before the treatment with the gradual worsening of her asthma condition. Prior to the treatment she needed to take more medication for breathing (Advair) and was finding it was becoming less helpful. Following the initial treatment she was able to reduce and discontinue its use for a period of time. The patient returned for 8 more treatments as above between September 2009 and July 2010. She alternated chiropractic and acupuncture treatments approximately every 2-3 weeks. As of July 2010 she reported that she was almost never short of breath even when the temperature was hovering at 100 degrees during the months of June and July 2010. Historically this would have been a trigger for her asthma but she found she almost never needed her inhaler this year.

The patient reports that she feels a treatment interval at every 2-3 weeks is her optimal maintenance level of care at this time and is hesitant to push the timeline out any farther other than when she is traveling and can't get in for treatment. She found the few weeks that she skipped treatment due to other obligations were the times in the past year when she found some mild asthmatic symptoms creeping up to the extent that she took the Advair again. When she was getting treated regularly with the combination of SOT and acupuncture she did not have any need of medication.

Discussion:

There have been some studies that have found positive effects of chiropractic and acupuncture treatment of asthma. Bronfort et al found in a randomized controlled study that "After 3 months of combining chiropractic spinal manipulative therapy with optimal medical management for pediatric asthma, the children [n=36] rated their quality of life substantially higher and their asthma severity substantially lower. These improvements were maintained at the 1-year follow-up assessment [1]." Zhang noted that "Acupuncture can improve clinical symptoms and pulmonary function and reduce the dose of anti-asthma agents, and has a certain long-term therapeutic effect [2]." One study that incorporated using chiropractic and acupuncture care for pediatric anorexia found that chiropractic "combined with acupuncture at Sifeng (EX-UE 10) had a better therapeutic effect on infantile anorexia [4]."

While one study failed to find a synergistic effect between craniosacral therapy and acupuncture the researchers did find that individually acupuncture and/or craniosacral therapy are potentially useful adjuncts to the conventional care of adults with asthma… [5]" It is possible that the reason for the success in this case report is because unlike the craniosacral therapy and acupuncture study where treatment was rendered by separate practitioners, in this specific case the patient was treated by the same practitioner. SOT does have some specific methodologies that allow for individualized treatment regimens for the varying nature of patients presenting with asthma. SOT expands the chiropractic armamentarium of techniques available, allowing methods putatively affecting the viscera, vertebra, post and preganglionic reflexes, as well as cranial and sacral influences on the primary respiratory mechanism [3].

This case is of particular interest because the patient was being seen for chiropractic care predominantly for structurally related conditions. At a point in the therapy she reported a worsening of her chronic asthma related symptoms and sought therapeutic options to medications and her gradually worsening condition. As chiropractic and acupuncture treatment were specialized to treat her asthma and presenting symptoms her response to care was dramatic. Of interest is that there appears to be a relationship between the care rendered and her ability to function without medication and to have limited difficulties breathing. When there are larger times between treatments her condition worsens and with treatment at 2-3 week intervals her condition is stable and she functions well without medication.

Conclusion:

As with all case reports that lack a control or sham procedure it is difficult to state what might be the prime factor in this patient's response to care. With the worsening of the condition prior to care and an improvement following care along with periodic lapses in stability occurring in conjunction with lapses in treatment, a correlation is nonetheless compelling. Though more research is needed to evaluate the efficacy of chiropractic care of asthma, the conservative nature of chiropractic and acupuncture care with its minimal

side effects, warrants patient and a health practitioner's consideration prior to embarking on any course of treatment that might have serious side effects. Interdisciplinary relationships may be a valuable tool for the conservative treatment of some complex conditions such as asthma.

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Integration of SOT cranial therapy with an occlusal splint for the treatment of obstructive sleep apnea: A case report.

Thomas Bloink, DC, Mamal Rahimi, DDS, Charles L. Blum, DC

Introduction:

Obstructive sleep apnea (OSA) relates to an obstruction to the continuum of airway expressed as sleep-disordered breathing. This spectrum ranges from slight vibration of tissues at its mildest to death from asphyxiation at its severe extreme. Between lies pathologic snoring and periods of complete airway closure and breathing cessation called "apnea". Some of the most serious chronic diseases of man have been associated with snoring and sleep apnea, including: stroke, hypertension (high blood pressure), myocardial infarction (heart attack), arteriosclerosis (hardening of the arteries), cardiac arrhythmias (irregular pulse), diabetes, gastro-esophageal reflux disorder (GERD), polycythemia vera (thickening of the blood) and others.

Sleep disordered breathing also disrupts the normal patterns of brain activity and relaxation, precluding restorative sleep. Overwhelming daytime sleepiness contributes to the risk of accident and injury from decreased attention span, judgment and reflex. The risk of automobile accident in the untreated sleep apnea patient is about 8 times as compared to that of a normal sleeper. Therefore as might be expected work productivity and safety suffer.

Common treatments for OSA usually start with a continuous positive airway pressure (CPAP) machine and can progress to surgery to facilitate airway expansion and/or increase function. Surgery is costly and invasive yet patient compliance with CPAP machines is estimated at only 40%. From a dental perspective oral apnea appliances (e.g., TAP, SOMNIMED, OAYSIS), which are based on the concept of mandibular advancement, have shown promise but are also expensive and may adversely affect occlusion or condylar position. The following is a case report of a patient presenting with symptomatology of sleep apnea and relates the treatment rendered to facilitate her recovery.

Case History:

A 56 year old female patient presented for chiropractic and dental care with symptoms of short term memory loss, foggy-headedness, temporomandibular joint (TMJ) pain, chronic myofascial neck and shoulder pain and fatigue. She also had a history of vertigo along with poor quality of sleep and significant excessive daytime sleepiness.

Methods/Intervention:

Cranial-dental exam revealed a dental class II with narrow arches and premature anterior contacts. Decreased translation of the right TMJ with crepiits and clicking upon opening

and lateral movements of the left TMJ. Pain was reported upon palpation to the medial ptyergoids, masseters, and temporalis muscles. Examination of the teeth showed evidence of clenching and bruxism. Cervical spine range of motion was limited and painful. The right temporal bone was subluxated in extension (internal rotation) and spheno-maxillary distortion pattern as described by Buddingh [1] was noted.

Following this evaluation a sleep study was advised to rule out sleep apnea, however her history and presenting symptoms were consistent with sleep apnea and the sleep study could help differentiate between OSA or if related to central nervous system dysfunction. The sleep study did reveal a Respiratory Disturbance (RDI) Index of 17.1 and an Apnea Hypopnea Index (AHI) of 16.3. Also it was noted that there was lowest oxyhemoglobin saturation (Sa02) of 89% during sleep.

Treatment consisted of six SOT chiropractic cranial-dental treatments incorporating SOT intra-oral cranial adjustments [2] and spheno-maxillary craniopathy [1] in conjunction with occlusal balancing by a lower flat plane splint [3] by Dr. Rahimi. The treatment was performed over a 3-4 week period of time.

Results:

Following treatment the patient reported significant reduction of all symptoms. Follow-up polysomnogram was performed one month following prior study and with the dental appliance in her mouth she showed improvement as RDI and AHI were both reduced to 2.9 and lowest Sa02 was 92% during sleep. The patient had significantly reduced TMJ pain and the chronic myofascial neck and shoulder pain had gradually resolved over the 3-4 weeks of care. Due to her increased ability to sleep and increased oxygenation, she was also less fatigued and functional during the daytime.

Discussion:

The combination of SOT cranial therapy with a flat plane lower GELB type occlusal splint not only resolved this patient's apnea and accompanied symptoms but was also minimally invasive, less costly, and only required a 3 to 4 week treatment program. Splint type therapy has been found to be helpful for OSA patients and one prospective randomized study found "that a dental appliance could be an alternative treatment for some patients with severe OSA [3]." In addition to the standard SOT cranial therapy a portion of the cranial therapy rendered was based on a method of adjusting the sphenomaxillary suture as developed by Buddingh, which essentially attempts to balance tensions of the pterygoid muscle and related cranial bones.

Buddingh has determined that "The sphenoid bone is influenced to the anterior by the pterygoid process at the maxilla suture, the occiput to the posterior at the sphenobasilar articulation. Hypertonicity of the pterygoid muscles occurs when the patient's body requires the pterygoid muscle to balance the reciprocation of the anterior falx to the

general dural tensions. The hypertonic pterygoid and the concomitant tension into the TMJ will purportedly be reduced via the spheno-maxillary adjustment. Clinical studies have noted that balancing the spheno-maxillary suture causes a reduction of the hypertonicity of the related muscles affecting occlusal relationships. This change appears to have an affect also on the dental cone, the curve of Wilson and the curve of Spee [1]."

Working together the dental and chiropractic profession can help determine if dysfunctional postural patterns or OSA have predominant descending or ascending influences. In an important study investigating this ascending and descending contribution of posture and TMD imbalance, Sakaguchi et. al., while evaluating 45 asymptomatic subjects, found that "Body posture was more stable when subjects bit down in centric occlusion. Changes in body posture affected occlusal force distribution. Altering body posture by changing leg length shifted the occlusal force distribution to the same side that had a heel lift [4]."

While for the sake of clarity and ease in clinical assessment we would prefer patients to have either an ascending or descending contribution to postural influence, more commonly, they present with a mixture of both patterns. It is in these "mixed" presentation patients that chiropractics and dentistry can offer improved patient outcomes. The typical patient, such as the patient in this case report, that may likely need chiropractic dental co-treatment will usually present with a low pain threshold, low physiological adaptive range, and a history of musculoskeletal pain or injuries. Patients with OSA will also tend to have general poor health due to the lack of rest and oxygenation, which will predispose them to various chronic presentations.

Future research may need to determine whether the patient could achieve improved function with only chiropractic care or dental care and whether the optimal care would be a co-treatment methodology. Clinically many chiropractors and dentists are realizing that the relationship between posture and the stomatognathic system makes collaborative efforts necessary [5].

Conclusion:

With any case report the finding however apparently significant need to be evaluated from a cautious perspective because of the bias of the research clinician, the lack of a control group, as well as comparative sham procedure. The pre and post sleep study findings do show some objective change and the patient did report significant clinical improvement relating to reduced pain and function. However follow up studies with this patient are indicated. Greater study is needed to identify the subset of apnea patients that could benefit from this approach.

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Sleep apnea and anemia, is there a relationship?

Charles L. Blum, DC, Jeffrey A. Mersky, DC

Introduction:

According to a national sleep foundation, 26% of study subjects had a high risk of obstructive sleep apnea [1]. Obstructive sleep apnea is the most common respiratory disorder of sleep. This related sleep restriction leads to a variety of adverse physiologic and long-term health outcomes including all cause mortality, diabetes, and cardiovascular disease. Consequences of sleep apnea include increased human errors, loss of productivity, and elevated risk of accidents. Conditions such as acute and chronic insomnia, excessive sleepiness, and sleep apnea warrant public health attention, since residual sleepiness during the day may affect performance of daily activities such as driving a car.

This study is questioning whether there may be a relationship between OSA and anemia. A pattern has been noted of OSA patients presented to this office that have been treated by dental appliance therapies, surgical interventions, and a continuous positive airway pressure device where upon a blood test have been found to have anemia. Whether this relationship has a causal or casual relationship has not been determined. Since this office is involved with dental chiropractic treatment of TMJ related dysfunction it is not uncommon to see patients also with OSA [2].

A review of the literature has found that there are various studies investigating a relationship between children with sickle cell anemia and OSA [3]. In our aging population a relationship between anemia of aging (AOA) and OSA has been found. "World Health Organization defined anemia of aging (AOA) when men and women greater than 65 years, respectively, have unexplained hemoglobin (Hgb) less than 13 and 12 g/dl [4]." It has been suggested that AOA and OSA may share common inflammatory processes and that OSA inflammatory processes may interact with OSA hypoxia-induced erythropoiesis [4]. In another study that treated anemia in patients with OSA, congestive heart failure, and breathing disorders, they found that "Hemoglobin level improvement correlated with improvement in OSA+CSA (central sleep apnea), CSA, minimal SaO2, Epworth Sleepiness Scale score, and New York Heart Association class (all $P < .001$) [5]."

Due to recently finding clinical relationships between sleep apnea and (prior undiagnosed) anemia, patients presenting with apnea to this office are evaluated for anemia by laboratory blood tests when indicated. The following case represents characteristic similar to a subset of patients seen in this office who have presented with history of sleep apnea.

Case History:

A 66-year-old female presented with chronic fatigue (5 year duration), cervical spine and temporomandibular joint (TMJ) dysfunction. She presented with sleep apnea, which was moderately treated by a continuous positive airway pressure (CPAP). The patient had obesity issues, was pre-diabetic, and thyroid imbalance. Her medications included Levothyroxin (thyroid), Propanolol HCL (hypertension), and Simvastatin (cholesterolemia).

Methods/Treatment:

Due to the complex nature of her presentation laboratory analysis was performed to determine if there were any other issues contributing to her ongoing symptomatology. Of significance the blood test revealed: elevated glucose levels, elevated hemoglobin A1C, low RBC count, low hemoglobin, and low hematocrit, iron levels were on low side, low neutrophils, and elevated lymphocytes.

Sacro occipital technique (SOT) cranial TMJ care were utilized which included category two treatment to reduce sacroiliac joint hypermobility, balancing of TMJ function by cervical stairstep and manual cervical adjustments of the cervical spine, and cranial sutural technique as described by DeJarnette. The patient was being seen concurrently by a dentist who specializes in TMJ dysfunction and sleep apnea. The patient was using both a day and nighttime dental appliance, which she was using along with the CPAP.

Specific dietary protocols were utilized to facilitate balancing her blood chemistry. These consisted of Blood Type Diet A (vegetarian diet) and specific nutrients to address the anemic issues and other issues such as iron citrate (25 mg/day), sublingual B12/Folic Acid (2,000 mcg/twice a day), ginger/curcumin (to reduce generalized inflammation), fish oil EPA/DHA (720/480 mg/day), laucricidin (to help her immune function), and vitamin C (1,000 mg/4 times a day).

Results:

Patient's fatigue improved significantly within two weeks of beginning treatment. While the cervical spine and TMJ dysfunction improved at the two week mark she did not have resolution until one month. She was seen at intervals of twice a week for three weeks, then once a week for 3-4 weeks, and then once a month until the present. She took the recommended supplements for 4 months and the laboratory analysis revealed ongoing anemia issues however the blood values were improving though her glucose and hemoglobin A1C had worsened. Upon discussion with the patient she indicated that she was not following the recommended diet but noted that she would take the nutrients.

Ultimately her anemia improved showing increased RCB production, hemoglobin, and hematocrit findings. Her fatigue had lessened and her myofascial and skeletal pain had significantly decreased particularly with regard to her cervical spine and TMJ regions.

All of her activities of daily living increased due to reduced pain and increased energy. However she realizes her condition is complex and will need long term care to prevent reoccurrence of prior symptoms. While the laboratory analysis indicated improved blood chemistry trends, it still appears she will also need long term care and monitoring for optimum rehabilitation. She is currently compliant with monthly chiropractic care, utilizing a TMJ nighttime appliance, CPAP, and is regular with her nutrients (based upon laboratory analysis), however she is not compliant regarding her diet, which at this time includes too much sugar, carbohydrates, and processed foods.

Discussion:

While there is a relationship between TMJ disorders and OSA [2] what is not clear is whether there is a clear relationship between OSA and anemia. A suggested relationship has been associated with possible hypoxic effects related to apnea and its affect on the erythropoietin (EPO) feedback loop. Essentially a feedback loop involving erythropoietin helps regulate the process of erythropoiesis so that, in non-disease states, the production of red blood cells is equal to the destruction of red blood cells and the red blood cell number is sufficient to sustain adequate tissue oxygen levels but not so high as to cause sludging, thrombosis, or stroke. Erythropoietin is a glycoprotein hormone that stimulates red blood cell production and is produced in the kidney and liver in response to low oxygen levels. In addition, erythropoietin is bound by circulating red blood cells; low circulating numbers lead to a relatively high level of unbound erythropoietin, which stimulates production in the bone marrow.

SOT chiropractic and cranial techniques commonly involve treatment of multifactorial conditions, which can involve secondary non-musculoskeletal conditions. This case report described a patient who presented to this clinic with musculoskeletal issues, TMJ dysfunction (co-treated with dentist), sleep apnea (treated with CPAP), and laboratory tests suggesting various conditions such as anemia. In this clinic there has been a pattern of patients presenting with OSA and subsequently anemia found on laboratory blood analysis. Since OSA has overlapping symptoms with anemia it is possible that a clinician may not anticipate that the fatigue in a patient's presentation may be related to anemia and not just the patient's OSA.

Conclusion:

The purpose of this case report is to illustrate a subset of patients seen in this clinical practice, which involves dental co-treatment of TMJ disorders, OSA, and secondary effects or associations with anemia. It is unclear what the exact relationship may be between OSA and anemia and this may related to hypoxia and erythropoietin feed back loop. Greater study into the relationship of TMJ disorders, OSA, and anemia is suggested to determine if the findings presented in this case report have a causal or coincidental relationship.

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A Novel Approach to Testing Foot Mechanics and Dysfunction Utilizing SOT blocks: A Case Report.

William J. Boro. MAT, DC, Charles L. Blum, DC

Introduction:

Manual muscle testing (MMT) used within chiropractic, orthopedic, and neurological practices has been found to have "evidence for good reliability and validity … for patients with neuromusculoskeletal dysfunction. The observational cohort studies demonstrated good external and internal validity, and the 12 randomized controlled trials (RCTs) that were reviewed show that MMT findings were not dependent upon examiner bias [1]." However a challenge to this review was made by Haas et al. They noted that the "evidence to date does not support the use of MMT for the diagnosis of organic disease or pre/subclinical conditions [2]." A response to Haas et al by Cuthbert noted that there are studies that show improvements in muscle strength and function after manipulative therapy and a consistent relationship between a clinical condition and muscle inhibition. They concluded that "if MMT is reliable and valid for NMS diagnosis then logically this reliability and validity remains when a chiropractor uses MMT [3]."

This case report discusses a novel use of MMT to evaluate postural challenges to the foot and its arches. A method of using sacro occipital technique (SOT) pelvic blocks to stress the foot in various positions is described. MMT will be used to reproducibly evaluate the orthopedic and neurological integrity of the foot and its arches to weight-bearing stress in various functional states. Low technological and risk procedures for conservative care are preferred. When patients present with conditions worsened by weight-bearing pedal dynamics or related to foot/ankle joint dysfunction, the method presented in this case report may offer viable information.

Case History:

69-year-old female patient presented to this office for left hip pain since early 2010. Radiographs revealed mild arthritis and degenerative changes. Prior to her initial office visit, she was directed to try hot and cold, rest, and muscle relaxers by her allopathic physician. She had a history of multiple surgeries including a colostomy (March 2005) with removal of 1/3 of descending colon, reversal of the colostomy (June 2005), and a rotator cuff surgery (2003). She also had a history of some disorders, which included fibromyalgia (1990s), asthma (1988), acid reflux, urinary incontinence, and she uses a dental nighttime appliance. Medications that she was taking at the initial office visit were Flonase, Ranitidine, Allegra, Detro, ASA, Triazolam, Advair, and Albuterol.

Methods/Interventions:

The patient was examined and treated on August 16, 2010. At that office visit she was treated for an SOT category two (sacroiliac joint hypermobility) syndrome. At a follow

up treatment 10 days later, she reported that 90% of her chronic hip pain had resolved. Following that treatment the patient traveled for a week's vacation. At her next visit, she reported that she did “a lot of tourist walking" (more than two hours at a time) and the pain in her hip returned. Because the reappearance of her left hip pain seemed to coincide with increased walking and standing weight-bearing activity, an ascending component to her hip pain was considered. She was subsequently evaluated for a possible foot dysfunction. A specific evaluation protocol (covered in the discussion section) was utilized on September 8, 2010 (entitled "Standing Foot Dysfunction Testing Protocol Utilizing DeJarnette Blocks.") This evaluation demonstrated issues of bilateral rear-foot eversion with concurrent forefoot inversion.

Evaluation of this patient found dysfunction along the medial and lateral longitudinal arch. To challenge medial rear-foot and lateral forefoot torque, the blocks were placed to accentuate eversion of the rear-foot and inversion of the forefoot. The rear block was placed with high side of the block on the lateral aspect of the calcaneus and front block was placed with the high side of the block on the medial aspect of the navicular (see step 8a and figure 8a in discussion section). Various regions of the body were challenged and evaluated with MMT to determine if a change in a joint or bone could help facilitate the patient’s ability to stand in a position with the block stress upon their foot while sustaining balance.

The patient’s feet were treated separately while the patient was standing. The right foot dysfunction correction involved treating the craniofacial bones following Van Rumpt anterior cranial pattern. The sphenoid and temporal bones were adjusted towards the posterior and inferior directions whereas the mandible was corrected to the posterior and superior direction. The anterior intercostals (costal 1-4) were adjusted bilaterally at mid-clavicular line. The thrust was angled 45 degrees lateral to medial and anterior to posterior, localizing the effect of the force toward the thoracic disc space.

The left foot correction involved adjusting C2 and C5 with a thrust anterior to posterior and lateral to medial. Additionally adjustments were made to the thoracic (T1-4) and lumbar (L2-5) areas from the posterior utilizing an activator instrument. Contact areas were the transverse processes near the costo-transverse junction in the thoracics and the mammillary processes in the lumbars.

Results:

The patient was treated on September 8th and asked to "test" the correction by walking for a two hour period over the weekend. On September 14, 2010 patient reported that there was no pain in her left hip with walking for 1 3/4 hours and also having taken a yoga class, which was a prior trigger for her hip pain. The patient continued with care through the month of September for other conditions. Her left hip pain has not returned even with increased activity and stress levels.

Discussion:

Producing good evaluation outcome assessment tools that yield valuable functional information is of value for healthcare practitioners. The field of chiropractic is aware of the need to evaluate the stabilization properties of pedal dynamics and optimal foot function [4]. There has been a study that suggested a relationship between postural related pedal instability from a behavioral perspective and its relationship to vertebral subluxations and possibly even hip related dysfunction. Smart et al noted that "Evidence linking behavioral and health research has emerged from the study of posture and postural dynamics [5]." Therefore developing a pre and post assessment tool for evaluation of foot or postural dynamics could be of value as was demonstrated with the patient in this case report.

The analysis procedure is performed by performing a MMT of a patient in standing posture while they rest one or both of their feet on SOT blocks positioned in a variety of spatial configurations. The following are examples of protocols used with the patient in this study:

A. Testing Both Feet Simultaneously:
   1. blocks (acute angle) facing each other perpendicular to feet;
   2. blocks facing away from each other perpendicular to feet;
   3. both blocks facing left perpendicular to feet;
   4. both blocks facing right perpendicular to feet;
   5a. blocks perpendicular to each other, one facing forward bisected by block facing left;
   5b. switch block positions for testing condition in other foot;
   6a. blocks perpendicular to each other, one facing forward bisected by block facing right;
   6b. switch block positions for testing condition in other foot;
   7a. one block facing forward other block facing backward;
   7b. reverse directions of 7a to test condition in other foot.

B. Testing One Foot at a Time:
   8a. blocks facing opposite directions perpendicular to foot with rearfoot brought into eversion on rear block and, conversely, the forefoot brought into inversion on front block;
   8b. same as 8a, but with blocks facing in opposite directions; (Repeat 8a & 8b with other foot.)
   9a. rear block facing forward bisecting front block perpendicular facing left;
   9b. rear block facing forward bisecting front block facing right;
   10a. front block faces back bisecting rear block facing left;
   10b. front block faces back bisecting rear block facing right.

C. Test Focus and Explanation:

With numbers 1-10, when blocks are pointed right or left, the patient stands on the blocks with the middle of the arch resting on the block. However, when blocks are pointed forward and backward, the full foot rests on the block. The block positioning is designed to not only test/challenge the "neutral" integrity of the arches of the foot, but to also test/challenge their integrity mimicking conditions encountered in normal walking (e.g., walking on a slant, downhill, irregular surfaces, etc.).

In general it is believed that the test(s):

1-2	Evaluates pronation and supination.
3-4	Tests feet positioning on a slanted surface or situation such as skiing.
5-6	Functionally assesses one foot when on a flat surface and the other foot is pronated or supinated (e.g., similar to a sprained ankle of one foot).
7	Evaluates gait dynamic (e.g., toe off/heel strike). The blocks will need to be spaced apart forward/back to simulate walking.
8	Evaluates transverse arch functional integrity.
9	Challenges fore-foot torque (varus/valgus).
10	Challenges rear-foot torque (varus/valgus), particularly of the calcaneus.

While clinically these tests have been used successfully with many patients, this is the first case report written to share this with other healthcare practitioners. Greater study across patient population groups is indicated along with determining specific subsets of patients who would benefit from this type of care is indicated.

Conclusion:

It is unclear whether the patient's response to care was a coincidental regression to the mean, or if it represents a clear indication of the treatment rendered and patient outcome. In case reports with no control group or comparative sham procedure used, developing a strong relationship between the care rendered and patient's response is not possible. However, the methodology of the evaluation process does have good biological plausibility and therefore good face validity. Also, since the procedure represents a low risk functional assessment tool that could be of value, further research and study into this method of pre and post analysis and its ability to direct treatment is indicated.

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A pilot study investigating the incidence of chiropractic care in learning disorders: A case series.

Catherine G-O Bouchet, DC

Introduction:

Learning disorders constitute a public health concern.[1] The international prevalence of ADD/ADHD has risen to 5%. Recent studies show that the incidence of learning difficulties, including dyslexia, dyscalculia, dyspraxia, dysphasia, range around 15% within the scholar population in the western countries.[1] The objective of this study was to determine the efficacy of specific chiropractic types of care for children presenting an issue within a panel of learning troubles and related symptoms.

The primitive reflexes—instinctive, involuntary reactions that newborn babies present with certain stimuli—arise during embryonic life. The primitive reflexes at the same time result from the rising neurological function and participate in its development. Their presence is for the emergence of the functional capacities of the nervous system. As the cortex develops, under normal maturation, the primitive reflexes tend to fade away between the ages of 4 to 12 months. It has been found that that children with learning difficulties usually present with neurosensory integration disorders, and often it has been observed that the subcortical primitive reflexes are still present.[2] Therefore, in a concommitant way, we may be able to observe posture, balance and visual coordination deficit.[3]

Methods and Intervention:

This retrospective pilot study was performed in France, involving more than 30 children within a range of 6 to 16 years of age who received chiropractic care for a period of 12 months. Selection criteria focused on 10 cases of children who received only chiropractic care. For each of the 10 children selected, case histories with specific evaluation for sensory integration was performed to offer a visual picture of the degree of sensory involvement, as well as to establish a sensorial-intellectual profile chart of the child.

Primitive reflex evaluation included the Moro reflex, asymmetric tonic neck reflex and spinal Gallant reflex for the presence of sustained primitive reflexes.[4] To assess balance, one-leg-stand and tandem-walk evaluations were performed on each visit, along with postural analysis and vision coordination testing. All findings were computerized in order to report the evolution of each parameter**.** Low-force full spine and cranial adjustments were given with a prevalence of upper-cervical corrections. The treatments were based on the assessments of subluxation distortion patterns diagnosed by parameters within different chiropractic techniques.

When evaluating meningeal tension distortions, the techniques used included sacro-occipital technique (SOT) and Logan Basic Technique. The SOT cranial techniques included: occipital pump, sphenoid release, frontal release, cranial suture work, and

balancing of cranial CSF pulsations. Releases and unwinding technique were used on the thoracic and pelvic diaphragms, and Logan Technique was applied from the sacral to occipital regions.

When there was more primary structural involvement, common treatments involved: (1) A sustained toggle at the level of C1-C2, (2) Pierce technique drop adjustment (very slight), usually for C3 or C5 posteriorities, (3) Thompson technique drops for thoracic, lumbar, sacral areas and pelvis, and (4) Extremity adjustments of the appendicular skeleton made commonly to the clavicle, humerus, wrist and hand, as well as lower extremities, which could be source of structural instability. Viscerosomatic reflex works was treated in a few cases with chiropractic manipulative reflex technique (CMRT).

Results:

While positive changes to the treatment rendered was demonstrated following treatment, the changes associated with reduced retention of the primitive reflexes will be found over time measured in years. Aside from improved clinical findings and activities of daily living, the decrease of primitive reflexes to a level below expression and stabilization tended to occur around the 10^{th} adjustment**.**

In conjunction with the diminishing of the patient's primitive reflexes, balance, posture and visual coordination also appear to have improved simultaneously, in the following phase relationships: (a) Phase 1 was associated with a rapid improvement, occurring during the 1^{st} to 4^{th} adjustment, (b) Phase 2, a slower decrease in improvement with the primitive reflexes reducing below the level of expression around the 5^{th} to 9^{th} adjustment, and (c) Phase 3, a stabilization of balance, activities of daily living, and without exhibiting prior primitive reflex patterns, occurring around the 10^{th} to 12^{th} adjustment.

Aside from the doctor's perspective, the parents reported signs of progress in child awareness and attention behavior as the child entered Phase 2 (usually around the 5th adjustment). Clinically it appeared that the children in this study had to reach stage 3 stabilization before increased learning capabilities were noted. The majority of the children improved their reading, writing and communication skills and related better to each other socially. As they were more balanced structurally, neurologically, and behaviorally, improvement of their schoolwork was remarked upon by their parents and teachers.

By the 12^{th} office visit the "retained primitive reflexes" progressively diminished to full extinction, their posture improved verticality in both sagittal and coronal planes, and visual coordination improved significantly. The treating doctor, parent, relatives and teachers corroborated these findings.

Discussion:

From many studies, we know that primitive reflexes in utero are fundamental for birth and the first months of life. As the baby's development progresses, and according to cortical maturation, these primitive reflexes will or should progressively disappear to allow the "normal" development postural reflexes to take place However, purportedly physical hormonal emotional trauma may interfere at any time from conception through birth and up to the first year, which may affect the normal progression of the reflex.

Therefore it has been suggested that children with learning difficulties may present with sustained primitive reflexes with associated lack of balance.[5] In this study we tried to evaluate what was the role of the chiropractic care may play in these patterns and more specifically how chiropractic adjustment could re-initiate more effective and coordinated neural function. As a means to understand the patient's response to care, it is theorized that Phase 1 and 2 of the treatment facilitated the nervous system's ability to return to an allostasic physiologic state. Yet not until Phase 3 did the patient stabilize and reach a level of functional homeostasis.

While the results from this retrospective case study were promising, it being a retrospective study without controls or sham procedures limits its broad extrapolation. It is also difficult to determine whether one or more of the treatments rendered may not have been therapeutically necessary, without comparison studies. Without controls it is also difficult to determine whether the patient may not have achieved the positive developmental progress without the chiropractic interventions. However due to the chronicity of the symptoms and the relationship between improved signs and symptoms following treatment, some relationship could be considered likely. Therefore it is hoped that this pilot study may serve to suggest further investigation into chiropractic treatment of children who present with retained primitive reflex patterns, sensory integration dysfunction, and postural balance compromise.

Conclusion:

From this retrospective analysis of 10 pediatric patients, it does appear that chiropractic adjustments may act to contribute or as a catalyst for proper neural function and maturation. It could be postulated that chiropractic care may contribute to the normal postnatal development of the nervous system by facilitating specific connections from primitive to postural reflex. Further study needs to be performed to determine which children with learning and developmental disorders may be best candidates for chiropractic care, since in these 10 cases these children were able to increase their potential and become more capable of being part of the learning process. Greater study with low-risk options such as chiropractic may be warranted for a subset of patients with child delayed development, retained primitive reflexes, and learning disabilities.

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Chiropractic care in a 5-month-old female with vomiting, gastro-esophageal reflux, fussiness, frequent colds, and poor weight gain: A case report.

Tara Buchakjian, DC

Introduction:

The purpose of this case report is to investigate whether there is a possible correlation between chiropractic care and a reduction of fussiness and vomiting in an infant. Gastro-esophageal reflux disease (GERD) is found in as many as 18 percent of healthy children.[1] Treatment options for gastro-esophageal reflux include formula changes, thickening formula with rice cereal, positional changes, parental education, medication, and surgery.[2] About half of healthy infants between 3 and 4 months of age will vomit at least once per day.[3] The use of rice cereal to thicken formula and changes in formula are not shown to be of any benefit in reducing reflux,[1] although thickened formula continues to be recommended for uncomplicated recurrent regurgitation in infants in order to reduce vomiting.[2] The type and composition of formula also does not reduce reflux.[1] Research supports that positional changes, specifically lying prone with or without head elevation, reduces acid reflux in infants.[2] Regurgitation appears to spontaneously resolve by 12-14 months of age in most healthy infants.[2]

Case Presentation:

A 5-month-old female was presented to a chiropractic office by their parent for treatment gastro-esophageal reflux, diagnosed at age 2 months by her pediatrician. The patient was born 6 pounds 7.5 ounces and 20 inches long by emergency c-section. Mother was taking medication (Paxil) during her pregnancy and 5 ultrasounds were performed over the course of gestation. Symptoms as described by her parents included vomiting more than once per day, reflux, fussiness, poor weight gain, constipation, and frequent colds.

Parents were both mentally challenged and had a child against the advice of family and friends. The parents were concerned that their child was not reaching age-appropriate developmental milestones. Parents sought chiropractic care for their child because current medical treatment had not been effective for the treatment of gastro-esophageal reflux.

The patient was diagnosed with gastro-esophageal reflux at 2 months old and a medical diagnosis of failure to thrive was considered at the time of presenting for chiropractic treatment. The parents were concerned about frequent vomiting associated with gastro-esophageal reflux, poor weight gain, constipation, and reaching age-appropriate developmental milestones. Previous medical treatment by the pediatrician and/or specialist for gastro-esophageal reflux included 4 different prescription medications between 2 months and 4 months old. Medications included Zantac (Rantidine) at 2 months old, then Reglan (Metoclopramide) a short time later, Prilosec (Omeprazole) at 3 months old, and Prevacid (Lansoprazole) at 4 months old. The pediatrician also recommended rice cereal, which the parents began adding to the formula at 2 months old. Five changes in formula were also made between birth and 5 months of age. Formulas

used since birth are as follows: Similac Ready To Feed, Similac Advanced Powdered, Similac Isomil Soy, Similac Alimentum (began at 5 months old), Similac Sensitive RS, and Enfomil AR Lipil. Minimal to no perceived improvements by her parents with medication, formula changes, or rice-cereal-thickened formula.

Method and Intervention:

At the time of evaluation at this office the patient's weight was 12 pounds 1 ounce and length was 24 inches as reported by parents at a recent check-up. Examination revealed palpatory tenderness indicated by patient squirming or crying upon palpation at C2, T6 and the sacrum. Spinal subluxations were also noted at the right sacrum T12, T6, T5, and C2, associated with local hypertonicity, tenderness and decreased intersegmental motion. Overall muscle tone was slightly flaccid and poor eye contact was noted. Muscular hypertonicity was noted at the mid-thoracic paraspinal region. Normal gross cervical and lumbar ranges of motion were found. Cranial examination revealed right temporal-parietal bone overlap.

The patient was treated 19 times over the course of 2 months, with combinations of "light-force" activator instrument and manual diversified techniques to the regions of the spine determined to be subluxated by palpation associated with reduced spinal intersegmental ranges of motion and increased muscle tension, which was also congruent with perceived tenderness by the patient. Frequent areas that were adjusted localized to the 2nd cervical and 6th thoracic vertebra, and the right sacral base. Localized ileocecal valve massage was also used on some visits to improve elimination. Using the fingertips over the lower right quadrant of the abdomen, gentle pressure was applied in a circular motion for up to 2 minutes over the ileocecal valve. Chiropractic cranial assessed some sutural compression at the left temporo-parietal suture and treatment consisted of using light manual separation forces/distraction. Home recommendations included changing formula to an organic form, discontinuation of rice cereal added to the formula, and belly massage to aid digestion and reduce constipation.

Results:

The patient had a reduction of vomiting, improved eye contact, reduction of flaccid muscular tone, and was keeping more food down after 10 treatments. She also had no colds or illnesses over the course of treatment. In addition there was decreased joint fixation and spasm and improved on Thermographic scans, which noted less heat (inflammation) and greater symmetry.

After 4 treatments less vomiting was noted by parents. After 6 treatments the parents changed her formula to organic Similac and also noted no vomiting for 2 days, was sleeping better, and consuming more. Observations included increased interaction, less fussiness, and reduced flaccid muscle tone. After 10 visits eye contact was improved and vomiting was no longer daily.

On her 11th visit, vomiting was not present that day and bowel movements were normal. Mother also stated that the pediatrician did not agree with her treatment option of chiropractic care, however the parent noted that since care was instituted the "baby was healthier than she's ever been." After 13 visits the parents continued to report that their child was sleeping for longer periods of time. The patient's condition regressed slightly over the next 4 weeks. On her 15th visit, the patient vomited twice while in the office and the parents were under obvious distress. The parents discontinued care after 19 visits as they felt their daughter had plateaued and would not improve any further while under chiropractic care.

Discussion:

The parents desired to raise their child without outside assistance, but were surrounded by the pressures of family and friends to raise a healthy child according to "typical" standards. They were under tremendous stress while raising their child and constantly concerned that the child was developing normally and on schedule. This parental distress may have been a contribution to the child's condition.

There was a significant temporal relationship between the child's improvement and the care rendered at this office. The parents noted that by the 6th visit (the 2nd or 3rd week) the child was clearly improved compared to any other time in her life. During the treatments (1-14) the parents and doctor found that the child became more aware, interactive, and had increased general body muscle tone.

A search of chiropractic care and GERD revealed a similar case of a 3-month-old that presented for chiropractic care with regurgitation after each feeding. After 7 chiropractic treatments it was reported that the patient's regurgitation was reduced to once per day. Other improvements include sleeping for 4-5 hours, reduced painful cry, and more efficient nursing via a better latch on the breast.[4] Another case discussed a 3-year-old male being treated medically for gastroesophageal reflux disease with various antacids (Prilosec) since the age of 2 months and Prilosec since the age of 24 months. In this case the child received 5 office visits and on the fifth visit, two weeks after the initial treatment, the mother reported no reflux and that she had discontinued the Prilosec after the second treatment. Follow-up contact 12 months later upon a return visit found the patient was stable without reflux pain or symptoms, nor taking any medications.[5]

It is difficult to determine specifically whether chiropractic and cranial care alone contributed the child's successful response to care. Other factors may have also played a part in the child's response to care are: (1) It is possible that the change in formula may have been responsible for the child's positive response; (2) The doctor's and/or parental reassurance may have played a significant role in the patient's improvement; and (3) It is possible that the child's natural gastrointestinal and nervous system development were taking place at the same time as treatment was instituted.

Conclusion:

The patient began to have reduced vomiting following 4 chiropractic treatments, which coincided with a 7th change of formula; however, formula changes generally do not improve vomiting or reflux symptoms. This case suggests that chiropractic care and/or parental reassurance may help in the reduction of vomiting and regurgitation in infants. Further research in the non-musculoskeletal conservative chiropractic care in pediatrics should be performed to determine whether more children with vomiting, gastro-esophageal reflux, fussiness, frequent colds, and poor weight gain might be helped without the risk of pharmaceutical or surgical interventions.

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Chronic inner ear congestion of 17 years relieved by Sacro Occipital Technique (SOT) chiropractic care: A case report.

Matthew Colman, DC, Charles L. Blum, DC

Introduction:

The current trend in chiropractic research has been to attribute the majority of chiropractic intervention to the treatment of head, neck and low back pain. Historically, chiropractic care has been found successful for a multitude of non-musculoskeletal type conditions [1-3]. The challenge has been discerning which patient with a non-musculoskeletal condition may best fit specific criteria warranting chiropractic care.

A 34-year-old woman presented to this office June 2010 with a primary complaint of chronic inner ear congestion. Of interest is that she had other conditions as well: Ehlers-Danlos syndrome (HT-EDS), Type II diabetes (controlled with diet and Metformin), a history of one migraine per month since 8 years old (with positive response to chiropractic care and associated with menstrual cycle according to the patient), polycystic ovarian syndrome (PCOS), celiac disease, and general disorientation causing commonly bumping into walls (possibly related to inner ear condition). Medications included Metformin 500mg/tid for diabetes, Wellbutrin 75 mg/day, BioIdentical Progesterone 100 mg days 14-28 of cycle, as well as a no wheat and no sugar diet.

Case Presentation:

The 34-year-old woman presenting at this office described her primary complaint of inner ear congestion as “chronic unrelenting congestion in her right ear since 1993.” During the 17 years she had been seen by many doctors of varying specialties, however, she had not received any relief. Approximately one year prior she had 2-rounds of antibiotics and following the 2nd round she described that she felt her ear drum burst (confirmed by ENT) and noted relief lasting 1-2 days, however when the ear drum healed she again had the symptoms of inner ear congestion and increased pressure.

Intervention/Methods

Examination revealed left upper and right lower inguinal ligament sensitivity along with the arm fossa test and other related SOT indicators diagnosed a sacroiliac joint hypermobility syndrome with pelvic torsion (category two) [4]. Palpation revealed cervical sensitivity at C4-7 bilaterally, thoracic spine sensitivity T6-9 bilaterally with exquisite sensitivity at T6 spinous process, and L3 left lateral mammillary process. Palpation of specific cranial indicators noted the greater wing of the sphenoid was more inferior on the left, there was decreased left to right maxillary motion on palpation, and inferior occiput on the left. Neurological testing of note found increased patellar reflex, and decreased biceps and brachioradialis reflexes. Testing for eye accommodation found her left eye was comparatively weak.

Treatment:

Specific SOT psoas release techniques were used for a category two on the left side [4]. Trapezius fiber analysis revealed sensitivity at the 4th trapezius fiber with a reflex relationship to T6, which was adjusted according to SOT protocols [4]. One cranial indicator based method correlates contralateral medial heel tension with sphenoid position which was congruent with the patient's inferior left sphenoid and following treatment medial heel tension was resolved. Following the sphenoid correction the patient was treated with supine pelvic block placement according to SOT category two analyses and treatment for a left short leg pelvic torsion [4]. Lateral CSF fluctuations were increased with reciprocal temporal bone pressures at the mastoid processes as well as A/P CSF fluctuations utilizing SOT cranial specific balancing technique. Internal dural tensions were balanced and relaxed by gentle external contact at the posterior aspect of the occiput at the junction of the tentorium cerebelli and falx cerebri. While the patient did have cervical sensitivity to palpation cervical stairstep analysis was unremarkable and no adjustment was applied to the cervical spine at this first office visit [4].

Results:

Within 20 minutes following office visit the patient contacted the office and reported that her "ear opened up." An email to the office stated, …" after I left your office, my ear started opening up. For the first time in seventeen years, it feels better. I've actually been very emotional about it ever since; I'm experiencing some shock over the change, and I'm afraid I'll wake up tomorrow and the congestion will have returned. The patient, due to personal reasons has been unable to return for another office visit, but has indicated she will do so as soon as possible. However during the seven days following her initial visit her condition has been stable and pressure had not returned.

Discussion:

Hypermobility type Ehlers-Danlos syndrome (HT-EDS) is a relatively frequent, although commonly misdiagnosed variant of Ehlers-Danlos syndrome, mainly characterized by marked joint instability and mild cutaneous involvement. Chronic pain, asthenia, and gastrointestinal and pelvic dysfunction are characteristic additional manifestations [5].

Normally when sound waves enter the ear they are conducted from the middle ear to the inner ear by three tiny bone joints called the malleus, incus, and stapes. But due to the HT-EDS the joints affecting these tiny bones may become hypermobile. This may cause the sound not to be conducted effectively from the middle to the inner ear. In some cases patients suffering from hearing loss caused by HT-EDS may find a need for hearing aids. It is unclear whether the chronic increased pressure was directly affected to the patient's presenting condition of HT-EDS, however of significance is that no prior treatment appeared to have any lasting effect other than the brief period of time when the patient's ear drum apparently ruptured.

The temporal association between the patient relief and treatment rendered, the ear pressure lasting for 17 years despite other repeated various treatment interventions, and its sustained relief for the following 7 days (at least) suggests a therapeutic relationship with the care rendered. It is unclear how the chiropractic treatment could have such a dramatic effect and could be associated with kinematic chain balancing and its affect on muscle and eustachian tube tensions. It is possible that spinal meningeal tensions were balanced through this SOT and cranial method of treatment and this may have affected inner ear pressures. Modulation of her vascular system, autonomic nervous system, or even general reduced stress to her body may also contribute to positive response to care.

Conclusion:

Further study is indicated particularly with complex cases that have chronic conditions, which respond dramatically to a therapeutic application. While there certainly seems to be a cause and effect regarding the treatment rendered, it is still not clear what caused the patient's condition for 17 years and what specifically created the salubrious outcome. Care that offers some benefit and low risk warrant greater study. It is not clear how many patients with this type of condition may be helped with SOT chiropractic care, however, a trial may be indicated to determine if there is a specific subset of patients that could benefit from specific type of chiropractic care.

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Improvement in a pediatric patient with craniosynostosis undergoing chiropractic care.

Julie Doucet, DC, DACCP, Joel Alcantara, DC

Introduction:

Craniosynostosis, defined as the premature fusion of one or more of the cranial sutures, presents itself as a diagnostic and therapeutic challenge in pediatrics. For example, premature fusion of the lambdoidal sutures or the coronal sutures results in oblique deformities of the skull, but so does deformational plagiocephally. Different surgical techniques are recommended for the craniosynostosis, but conservative care allows for the management of plagiocephaly. Uncorrected, craniosynostosis results in increased intracranial pressure of the brain, asymmetry of the face and malocclusion. In the most comprehensive review on the subject to date, Kabbani and colleagues[1] estimate the prevalence of craniosynostosis to one per 1,800 - 2,200 births, but caution that it may be higher. Potential complications of surgery specific to correcting craniosynostosis include massive blood loss, air embolism and mortality. Conservative means such as chiropractic should be investigated to assuage the need for surgery. Towards this end, we present the chiropractic care of a patient with medically diagnosed craniosynostosis.

Clinical Features:

A 3-week-old girl with sagittal craniosynostosis was brought to this office by her mother for chiropractic care. The patient's birth history was uneventful, consisting of a short labor without the need for labor induction, the use of forceps or epidural anesthesia. At birth, her APGAR scores were 9, 10 and 10 at one, five and ten minutes following birth. Based on head circumference measurements, digital palpation of the anterior and posterior fontanel and comparisons with standard growth charts, an obstetrician and pediatrics concurred the diagnosis of craniosynostosis. On physical examination, the patient's head appeared small compared to children cared for by the attending clinician. Digital palpation revealed the posterior fontanel as fused and the anterior fontanel as small and diamond-shaped with a slight bulging that measured approximately 1cm in diameter.

Segmental dysfunctions (vis-à-vis static and dynamic palpation) were detected at the C1, T5, L3 and S2 spinal segments.[2] The right temporomandibular joint along with right frontal/parietal and left parietal/occipital cranial distortions were also determined by inspection and static and motion palpation. The relative relationship of the cranial bones (i.e., frontal bone to the front, parietal bones superiorly, sphenoid bones anteriorly, temporal bones inferior-anterior, and the occiput posterior-superior directions and the nasium separate from the frontal bone, inferiorly) to each other were visually and digitally palpated for cranial subluxations.[2]

Interventions and Outcomes:

The patient was cared for with contact-specific, high-velocity, low-amplitude type thrust judiciously modified to account for the patient's immature neuromusculoskeletal system and to sites of spinal subluxations[3] along with cranial therapy.[2] Following 6 visits, the patient's cranial diameter measured 39.2cm compared to 34.5cm at birth, with the anterior fontanel remaining open. Long-term follow-up revealed the patient's cranial development progressing without the need for surgery.

Discussion:

We caution the reader on the generalizability of the care presented, as case reports have limitations and bias; the natural history of the disorder, the role of placebo, regression to the mean, the demand characteristics of the clinical encounter, and subjective validation are confounders to making cause and effect inferences. To what extent these competing explanatory variables (i.e., placebo effect) occur in a 3-week-old infant or on the part of the parent (i.e., demand characteristics and subjective validation) remains to be determined. With respect to the natural history of craniosynostosis, it is said that without surgery to reopen the used sutures, pressure on the growing cerebral cortex results in a detrimental effect on the child's intelligence, although unequivocally raised intracranial pressure is only present in about 50% of patients, even with multiple suture fusions.[4]

With respect to the chiropractic care provided, we acknowledge the genetic component in the pathophysiology of craniosynostosis[1] but mechanical factors may have been involved in maintaining sutural patency. Skull growth matches brain size in infants with microcephaly and hydrocephaly as well as in infants with normal brains with brain growth generating tensile strains in the sutures. Henderson and colleagues[5] measured the bone deposition rate and tensile strains in normal infants and found that both showed an approximately exponential decrease from 1 month to 4 years of age; however, the results suggested that tissue level strains in the sutures might be too small to influence osteoblast biology. The correction of cranial dysfunction (i.e., cranial tissue alignment) may possibly augment the optimum tissue level strains in the sutures to influence osteoblastic activity.

Conclusion:

This case report provides documentation that in this case it is possible that chiropractic may have been helpful for this patient with deformational craniosynostosis. More research is indicated to evaluate whether this case was a novel presentation or may offer options offering low risk and benefit for children with similar conditions.

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Successful resolution of congenital torticollis with non-synostotic deformational plagiocephaly in a 3-month-old infant: A case report.

Beth Forgosh, DC, Stéphane Provencher, DC, Charles L. Blum, DC

Introduction:

Pediatric torticollis is due to contracture of the neck musculature involving the sternocleidomastoid (SCM) and other muscles and prevalence is estimated to be 0.3% to 2% in the United States and 0.006% in eight European countries. Although the etiology is uncertain, the possible causes of injury are intrauterine constraint and birth trauma. Conventional medical treatment includes observation, application of orthosis, active home exercise program, gentle manual stretching, vigorous manual myotomy, medications and various types of surgical procedures. Consequently, the outcomes of treatment are difficult to compare given the diverse management strategies [1,2].

Since parents will not commonly choose to watch and wait if their child's condition will spontaneously resolve, particularly with presentations of ongoing congenital torticollis and plagiocephaly, conservative safe procedures are preferred in the early stages of care. When home therapies suggested to parents (observation, application of an orthosis, an active home exercise program, and/or gentle manual stretching) are not helpful, parents will seek other alternative therapies. Chiropractic and cranial care for young children can be helpful and offers a low-risk procedure as compared to the other less conservative methods, such as surgery, injections and medications. If the conservative methods are not successful, chiropractors are trained to know when to refer for more extensive testing or therapeutic interventions.

Clinical features:

A 3-month-old male presented with congenital torticollis with cervical motor impairments. During delivery, the baby changed position from posterior occiput, and was delivered left anterior occiput. Post birth, he was unable to lift or turn his head to the left. According to the parents he habitually woke up screaming. The patient's condition was consistent from birth to 3 months, and this was consistent with his presentation to this office. The parents noted some deformational plagiocephaly but it was unclear if this was birth-related or due to the child's inability to turn his head when sleeping.

Interventions and Outcomes:

Upon exam, the patient demonstrated 0° of left cervical rotation and an antero-posterior cranial strain pattern, consistent with non-synostotic deformational plagiocephaly. Hypertonicity of the left SCM and bilateral suboccipital muscles was also observed. Visual analysis of head tilt, head flattening, orbital dimension (small or large orbits), anterior triplanar analysis[3] and vertex strain analysis[3] was utilized to assess the cranial strain.

Treatment was guided by visual assessment of asymmetry, palpation of increased muscle tension or asymmetry, regions of sensitivity illustrated by the child's positional preference away from certain regions of touch or with signs of distress, and lastly a controversial method of assessment involving muscle testing. Surrogate muscle testing is an extremely individualized method of analysis and was not used as the only method of assessment, but as part of a group of tests, so the findings pre and post treatment could be assessed along with the test itself. While there was no great reliance on surrogate muscle testing with this child, it did appear to work successfully, based on the outcome assessments and the child's response to care.

The assessment process determined that there was a left spinous process rotation at T1, left posterior lateral atlas, left internal temporal bone distortion pattern, left posterior occiput distortion pattern, left TMJ condyle posterior, right posteriorly rotated sacral segment at S2, right anterior hip displacement at the acetabulum, and the right aspect of the frontal bone had an internally rotation distortion.

Sacro occipital technique (SOT) cranial strain corrective techniques were utilized for the correction of an anterior posterior (A-P) strain[3] and left internal temporal bone distortion pattern with the parent's aiding with dorsiflexion of child's feet to assist correction via a direct method. Manual correction of A-P strain was performed via the direct method, with gentle oblique hand pressure "squeezing together," or molding, of the right frontal bone and left occiput. Manual correction of internal temporal bone distortion pattern involved contacting the parietal bone, just above temporal squama with 3 fingers, and just above mastoid process with thumb, directing temporal bone externally while mother dorsiflexed the child's feet to assist correction. Spinal adjustments were made by using the activator instrument at a low-force setting to the anterior right hip, left atlas, T1, temporomandibular joint (TMJ) (contacting doctor's thumb, overlying TMJ) and right posterior S2 sacral segment.

Results:

After the initial adjustment, the patient gained 30° of right cervical rotation. After the next adjustment, he was able to lift and turn his head to the right from the prone position. After the third adjustment, the cranial strain appeared resolved and he recovered full cervical ranges of motion (ROM). The parents reported that the child was no longer waking up with vocalizing distress. The patient's positive outcome was consistent with the visual, palpatory and functional examination changes exhibited during each office visit and used to guide treatment.

Discussion:

Schertz et al[1] demonstrated that congenital muscular torticollis in the pediatric population is associated with an increased risk of concomitant early gross motor delay. Furthermore, minor developmental problems occurred after one year of age, including cognitive

delays. Children with a history of plagiocephaly also appear to have a greater risk for developmental impediment. Chiropractic literature has demonstrated the effectiveness of spinal adjustment for congenital muscular torticollis. Some authors discussed the positive response via cranial adjustments for torticollis and/or cranial strain patterns. The normalization of facial features, improved sleeping, resolution of agitation, and improved feeding patterns may be some positive responses from cranial and/or spinal adjustments in the pediatric population presenting with congenital torticollis and/or cranial strain.[4, 5]

A search of PubMed [September 6, 2010] for risks or adverse reactions to "sacro-occipital technique," "SOT," and/or "cranial manipulation, technique, or therapy" did not locate any published studies relating to specific risks associated with SOT cranial adjustments. Caution in treatment of an infant is needed because the vault of the neonatal skull is largely membranous in origin. Specific and gentle cranial manipulation under certified SOT training is advised to prevent potential insult to the delicate vault tissues.

With any case report it is extremely difficult to make any assumptions between the treatment rendered and a subject's response to care. In this case the child did not appear to be in the process of resolving his congenital torticollis and it was unclear if the deformational plagiocephaly was a separate coincidental finding or related to the child's inability to sleep in different positions due to very limited cervical ROM. It is possible the child might have recovered without any treatment; however, the child's parents were not going to "wait and see." Therefore a conservative means of care was preferred, and if the patient would not respond in a reasonable period of time, a referral for more extensive care could be made.

Conclusion:

This case report demonstrated a resolution of congenital torticollis with concurrent deformational plagiocephaly (cranial strain pattern) via SOT, cranial and chiropractic treatment. SCM spasm and rigidity associated with spinal and cranial strain may be a suggested mechanism for delayed cervical motor skills. Further research is needed to understand the relationship between torticollis, cranial and spinal strain and its relationship to birth trauma. Cranial therapeutic interventions and chiropractic care of children with plagiocephaly or congenital torticollis should be evaluated in large comparative-case control situations to determine if there is a significant relationship between the treatment rendered and patient response.

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Cranial bone imbalance, TMJ dysfunction and craniocervical syndrome, and its affect on the sucking reflex in a 2-month-old female infant: A case report.

Beth Forgosh, DC, Stéphane Provencher, DC, Charles L. Blum, DC

Introduction:

Full-term healthy newborns display strong nutritive sucking reflex within hours of birth, which depends upon coordinated sucking, swallowing and breathing patterns.[1] Feeding disorder is relatively common in early infancy. A recent parental survey found that 35% of infants exhibit food sensitivity and refusal.[2] The most common treatments used to help an infant's reduced sucking capacity include options such as cup feeding, tube feeding, bottle-feeding and nipple shield. However, since breastfeeding has significant attributes for the infant and mother, all available opportunities to continue with breastfeeding is preferred. The La Leche League International has programs that contribute to increasing breastfeeding incidence and duration among full-term and preterm low-body-weight infants. The La Leche League's mission is to help mothers worldwide to breastfeed through mother-to-mother support, encouragement, information and education, and to promote a better understanding of breastfeeding as an important element in the healthy development of the baby and mother.

The benefits of breastfeeding are numerous and multifactorial. They vary from the touch and connection with the mother, which is essential to healthy developmental motor skills and has even been found to be associated with increased cognitive function, as well as a reduction in the risk of schizophrenia. Breastfeeding decreases the incidence and/or severity of a wide range of infectious diseases, including bacterial meningitis, bacteremia, diarrhea and respiratory tract infection, as well as recurrent otitis media necrotizing enterocolitis, otitis media, urinary tract infection, and late-onset sepsis in preterm infants. Some studies suggest decreased rates of sudden infant death syndrome in the first year of life and reduction in incidence of insulin-dependent (type 1) and non–insulin-dependent (type 2) diabetes mellitus, lymphoma, leukemia, and Hodgkin disease, overweight and obesity, hypercholesterolemia, and asthma in older children and adults who were breastfed, compared with individuals who were not breastfed. Lastly, postneonatal infant mortality rates in the United States have been comparatively reduced by 21% in breastfed infants.[3]

From an orofacial developmental standpoint, breastfeeding is important to the proper development of the swallowing action of the tongue, proper alignment of the teeth, and the shaping of the hard palate. Occlusion and a high palate contribute to an optimal airway passage development and could contribute to the prevention of obstructive sleep apnea in adult life. While breastfeeding is clearly a healthy option for children, it is interesting that studies have also found that the mother also benefits from breastfeeding. For instance, breastfeeding mothers who have depression issues benefit from breastfeeding and this benefit appears to carry over to their child. Nurses Health Study (NHS) and Nurses Health Study II (NHS II) have even found that each year of breastfeeding is associated with a reduction in the likelihood of the mother's later development of Type 2 diabetes.

The infant sucking reflex requires that the labial and facial muscles assist the tongue to compress the hard palate. The piston-like motion of the temporomandibular joint (TMJ) and the tongue create suction during feeding. Disruption of the infant cranium and other parts of the body subsequent to labor and delivery may affect infant coordination and alertness, which can result in a dysfunctional sucking reflex. There are various theories why the cranium may be involved, since occipital condyle mechanical dysfunction may contribute to cranial nerve IX, X and XII entrapment(s) that could alter tongue or swallowing function. Temporal bone involvement may affect the TMJ function and craniofacial imbalances may affect the child's comfort level during sucking. Birth trauma could relate to cranial bone distress and it would be reasonable to assume that in some instances there may be a relationship between poor sucking and cervical spine or cranial related mechanical dysfunction contributing to related neural dysafferentation and associated reduced muscle function.

Clinical features:

A 2-month-old underweight female presented with nutritive sucking dysfunction since birth as reported by her mother. The infant preferred right-sided breastfeeding. The mother was 1½ weeks post due when labor began. Complications developed when labor failed to progress. Pitocin was administered to expedite delivery. Since the child had limited sucking capacity, she was taken by the mother for two visits to an osteopath before seeking chiropractic care at this office. According to the mother the child was taken to the osteopath "to address underdevelopment of cranial structures/ jaw." The mother had a good experience with the osteopath, but her lactation consultant recommended she seek chiropractic care since the baby was not sucking strongly enough, was underweight, and she had to continue supplementing the infant's feeding with formula.

Outcome and Interventions:

Treatment was guided by visual assessment of asymmetry, palpation of increased muscle tension or asymmetry, regions of sensitivity illustrated by the child's positional preference away from certain regions of touch or with signs of distress, and lastly a controversial method of assessment involving muscle testing. Surrogate muscle testing is an extremely individualized method of analysis and was not used as the only method of assessment, but as part of a group of tests, so the findings pre and post treatment could be assessed along with the test itself. While there was no great reliance on surrogate muscle testing with this child, it did appear to work successfully, based on the outcome assessments and the child's response to care.

Visual analysis of the patient revealed a head tilt, left sided flattening of the skull, orbital dimension (small left eye), and flattened left ear. The patient's history of weak sucking directed investigation into evaluations of TMJ related structures and their possible contribution to the patient's symptoms. Gentle static and motion palpation revealed

segmental dysfunction positioning at the left mandibular condyle (posterior), left malar (inferior), left temporal bone (internally rotated), left greater wing of sphenoid (inferior), and left atlas (lateral).

SOT cranial corrective techniques were utilized for the correction of left mandible condyle, left malar, left temporal bone and left greater wing of sphenoid. The activator instrument was utilized to assist in correction of left lateral atlas and left TMJ. The activator instrument, set to a very low setting, was placed over the doctor's finger contact, which was to both the atlas and TMJ as a means to control direction of the gentle impulse over the small surface area.

Results:

Within minutes following initial treatment, the child's sucking strength improved significantly. Five days later, the baby returned and sucking strength had sustained. Mom described the sucking as strong and direct for the first time ever, beginning minutes following the first treatment. At the follow-up office visit, the mother reported that the baby no longer exhibited preference for right-side breast, and was nursing equally on both sides.

Discussion:

Proper nutritive sucking reflex in infants allows for proper growth, development and a multitude of secondary conditions, and even affects the health of the mother. Organizations such as the La Leche League have pioneered supporting breastfeeding for mothers and children. Collaboration between chiropractors treating pediatric patients with sucking dysfunctions need to be aware of the need for cross-referrals to facilitate optimal mother and child breastfeeding behavior. The support from La Leche League groups, advisors, and mother-to-mother forums can be crucial for mothers attempting to have a normal breastfeeding experience with their child. As exhibited in this case report, it is possible that some children who are having trouble with sucking or breastfeeding may not just have a behavioral issue but instead have some mechanical type of dysfunction amenable to chiropractic and SOT cranial type therapies.

Arcadia noted in a clinical setting where she observed and treated 1,000 newborns (ages 1 hour to 21 days), for failure and/or difficulty with breastfeeding. She found that in 800, or 80%, birth induced Temporomandibular Joint Dysfunction was the cause, and the majority of the patients responded well to cranial and spinal manipulation. Other chiropractic research studies have found a relationship between cranial and spinal manipulation and improved sucking or breastfeeding.

With the patient in this case, both intra-uterine constraint and complications associated with the birth process may have contributed to cranial patterns of distortion, TMJ and atlas segmental dysfunction, which could have led to a diminished sucking reflex and a

positional preference when breastfeeding. SOT cranial care has some specific methods to evaluate and treatment craniospinal and craniofacial imbalances secondary to fetal inter-utero position and birth trauma.

Due to the temporal nature of the treatment and child's response it seems unlikely that the child's response was casual or coincidental to the care rendered, but rather that there was some causal relationship. However, because this is a single subject case without controls or placebo it is difficult to generalize this to the infant population at large. Studies developing a prediction instrument may help determine what subset of infants that have difficulties sucking or breastfeeding may respond to chiropractic and cranial care.

Conclusion:

This case report illustrated a relationship between cranial imbalance, TMJ dysfunction and a craniocervical syndrome, which may have adversely affected this infant's nutritive sucking reflex. Her improvement, virtually immediately following a chiropractic and cranial corrective technique, suggests a relationship between cranial strain, spinal misalignment and impaired sucking reflex. Further case-controlled studies into the nature of this relationship is needed in order to determine which children with reduced sucking may benefit from chiropractic interventions.

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The chiropractic care of a child with birth trauma.

Catherine Généreux, DC, Joel Alcantara, DC

Introduction:

Injuries from mechanical forces such as compression, distraction, torsion (or combinations thereof) applied during the process of birth are referred to as birth trauma. According to a recent estimate, 2.6% of births are complicated by some type of birth trauma.[1] Although the resulting injuries may involve soft-tissue, nervous system, bony and intra-abdominal injuries, of interest in this report are craniofacial and cervical spine injuries. Specific examples include congenital torticollis, plagiocephaly, craniosynostosis and facial asymmetry. Conservative medical care for torticollis may involve soft-tissue therapy and stretching of the cervical spine to lengthen a shortened sternocleidomastoid (SCM), the use of botox, or surgery to induce a symmetrical length of the SCM. For plagiocephaly, the molding helmet is popularly recommended, while surgery is performed if premature closure of the sutures progress. The indicators for initiating and terminating cranial molding via a helmet is questionable, and from a cranial therapy perspective, its use replaces/induces one type of cranial distortion with another. Surgery is not without risk, such as bleeding and death. Given the risks associated with medical care, chiropractic is viable as an alternative or to augment medical care. We describe the successful chiropractic care of a patient with injuries attributed to birth trauma.

Clinical Features:

The parents of a 4-day-old male infant presented their child for chiropractic evaluation and possible care with a chief complaint of a “twisted” face. The child had additional complaints of constipation and intestinal gas without regurgitation for 3 days prior to the initial presentation. The patient’s mother denied any trauma during the patient’s birth, but recalled that the attending physician placed his hand on the baby’s head to slow the progression of delivery upon the second push. The patient cried loudly upon birth and his face was “twisted to the left.” Despite the facial deformity, the baby breastfed without difficulty. When examined, the patient was very calm, presenting no stomach distension or sensitivity to abdominal palpation. He was breathing deeply and did not have any nasal congestion. Digital palpation of the right temporomandibular joint revealed hypertonicities in the superficial and profound fibres of the masseter muscles. Also notable was a left deviation on the hyoid bone. When placed on his back, it was very difficult to laterally bend the patient’s body to one side without having him turn his head in the opposite direction. Upon attempting the manoeuvre with his mother holding his head in the neutral position, the patient became agitated suggestive of meningeal tension between the sacrum and the occiput. When placed on his stomach, his gluteal muscles were “squeezed together” and his buttock line deviated to the right, suggestive of an inferiority of the sacrum, ipsilaterally. Hypertonic paraspinal muscles were noted throughout the cervical spine and the right SCM muscles.

Intervention and Outcome:

The patient was cared for with cranial therapy in combination with Logan Technique and soft-tissue therapy. The sacral imbalance was addressed with Logan Basic Technique. The child was placed on his stomach, over the doctor's lap, with the anterior sacrum close to his body. A "pinkie finger" contact was made over the right sacro-tuberous ligament in a line from the lateral to medial and inferior to superior directions. Pressure applied was not more than 56 to 168 grams (2 to 6 ounces). Contact was sustained until the tension disappeared and breathing became regular. The patient's cranial movement was improved with cranial therapy. The child was placed on the table in a supine position with the doctor by his side. The "pinkie finger" of the inferior hand was placed in the baby's mouth to have the baby suck during the treatment. The suckling helped the cranial bones to move by acting as a pump. By increasing and releasing tension on the stress fibres of the dura mater, cerebrospinal fluid circulation is activated, leading to a variation of pressure which allows the cranial bones to unwind. Each cranial bone was assessed by applying a pressure of less than 5 grams and pulling away from the fontanels.

Active Release Technique was performed on the SCM, cervical paraspinal and shoulder muscles. The technique was adapted to account for the baby's mass, size and immature neuromuscular system. To release the SCM, the child was placed at the end of the table with his head supported only by the doctor's hand. The child's muscle was shortened and the tension was taken along it between index and middle fingers. The child's head was then brought in extension and slightly in rotation and lateral flexion to increase tension at the end of the movement. The protocols for the cervical erector spinae and shoulder muscles were followed as prescribed. Diversified Technique was used to address sites of vertebral subluxations. Intersegmental static and dynamic palpation (incorporating global and segmental specific range of motion) was performed to determine specific vertebral levels that were dysfunctional in position and motion and the required vector for the applied adjustment. Thoracic issues were addressed principally in the prone position with a posterior to anterior line of drive. Contact was made with the tips of the index and middle fingers on the transverse processes of the segment needing adjustment. The atlanto-occipital region was addressed in the supine position, with a lateral to medial and slight posterior to anterior line of drive. Contact was made with the index finger's lateral tip.

Results:

The first treatment improved trunk lateral flexion and increased bowel movement frequency. On the third visit, a more uniform facial symmetry was noted and the patient's head posture improved slightly. The hypertonicities in the masseter muscles were greatly improved and the hyoid bone position was centered. Following 5 visits, contraction of the right SCM muscle was noticeably improved and symmetrical rotation during passive range of motion of the head was observed. The buttock line deviation was no longer observed. After 8 treatments, the child still had a tendency to resume a right rotation and cervical extension position while sleeping but lateral bending of the patient's body was

achievable while the mother held his head without frustrating him. Follow-up treatments (N=13) over a period of 10 months were necessary to recover normal head position. At 14 months, the patient's facial asymmetry was still noticeable but improved.

Discussion:

It was our working diagnosis that the asymmetry and imbalance detected in this patient (i.e., cranial distortions, TMJ subluxation, and tension in the reciprocal tension membrane system) was associated to some degree to the patient's symptoms. By addressing this asymmetry and imbalance with chiropractic care, a relationship to the child's improvement position (static and motion) in the patient's spine and cranium appeared to have a direct relationship to the patient's improved function. This was witnessed by both the doctor and parents.

Leighton[2] examined the long-term health and developmental implications secondary to plagiocephaly; the scope of safe and effective conservative treatment, various outcome measures, prognosis; and "alternative" care approaches. This was augmented with a case report of a 15-year-old non-synostotic deformational plagiocephaly. According to the author, the most recent systematic review on the conservative treatment for this disorder provides no definitive conclusions on their effectiveness. Williams and Gloar[3] described the care of a 6-year-old female with congenital torticollis, plagiocephaly and left facial asymmetry. Chiropractic adjusting protocol, as suggested by Frogley and Wallace, and Diversified Technique was the care approach. The patient tolerated the care well and experienced substantial changes in her clinical presentation. Quezada[4] described the care of an 8-month-old male with a large posterior bilateral prominence of the occipital bone along with craniofacial asymmetries. His developmental milestones were equivalent to a 3-month-old. He fussed or screamed if his head was touched or if placed in the supine position to sleep. Chiropractic care involving cranial and sacro-occipital techniques resulted in the infant's developmental milestones progressing to match his age, and cranial facial asymmetries improved despite minimal changes in shape of his occipital bone. Smith-Nguyen[5] described the chiropractic care of a 10-month-old girl with plagiocephaly and delay in gross motor skills despite medical care consisting of neuromuscular rehabilitation involving cervical spine stretching and strengthening. The patient was cared for with Activator Methods over a 6-week period and 5 visits resulting in resolution of torticollis.

We caution the reader on the generalizability of the case presented. Lacking a control group, case reports are prone to bias with competing explanatory variable for the effectiveness observed. These include the natural history of the disorder and spontaneous resolution, the effects of placebo, regression to the mean, the demand characteristics of the clinical encounter and the subjective validation.

Conclusion:

The patient appeared to respond well to the care rendered with greater facial symmetry cosmetically and improved function of the spinal joints and related myofascial balance. The parents were pleased with the care rendered and the child exhibited no adverse reaction to any chiropractic therapeutic applications. With the weighing of risk/benefit ratios of care rendered and chiropractic's history of low risk, further research is needed to determine if other children with similar pediatric presentations might benefit from chiropractic care.

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Investigating new bonds in patient care to develop an engineering platform for the health care sector: A case report.

Laura Hopkins, James Countryman, DC, Charles L. Blum, DC

Introduction

Normalization and standardization across the patient population to map the treatment and resolution of emotional and mental disorders to somatic structural care has yet to be achieved. The purpose of this study is to attempt to meet this challenge through manipulation of the enteric nervous system (ENS) by utilizing a new field in bioengineering, Enteric Structural Mechanics© (ESM), in chiropractic care.

Traditionally the ENS is considered a subdivision of the peripheral nervous system that directly controls the gastrointestinal system. However in ESM we consider that the ENS is a system of control related to the pineal gland and reproductive organs, primarily and the pituitary, thyroid, adrenal axis secondarily. The enteric nervous system has been described as a "second brain [1]." This is because the ENS can operate autonomously; even though it communicates to the CNS through the parasympathetic nervous system, when the vagus nerve is severed the ENS continues to function.

From an engineering perspective, ESM redefines the ENS and attempts to identify biothermodynamic laws, or equations, that govern a woman's health in relationship to her conceptive potential, pineal gland and reproductive organs. A corollary aspect of these laws, or equations, defines foundational biothermodynamic potentials that govern a man's health in relationship to his conceptive potential, pineal gland and reproductive organs. These laws, or equations, capable of being uniquely defined for each patient, reveal specific timing patterns that form the foundation of the patient's homeostatic potential.

Chiropractic's sacro occipital technique (SOT) clinically appears to provide an effective frame of reference for a multi-platform concurrent clinical application of chiropractic and engineering techniques. The purpose of this article is to present an example of concurrent chiropractic and engineering treatment on a 32 year old male with mental and emotional disorders presenting to an SOT chiropractor for structural care associated with antalgia and low back pain.

Case History:

A 32-year-old male presented to an engineer for assistance with anxiety, depression and addictive tendencies in January of 2007. Using ESM tools, the individualized growth process for this patient was defined and mapped. Enteric and myofascial therapies were administered on a monthly or bimonthly basis. In July 2007, the patient was referred to an SOT chiropractor for concurrent cranial, spinal, and pelvic treatment and the treatment continued for another 52 days.

The patient reported that his mother, age 63, was still living; his father had died at age 41 (patient age 2 years) of stomach and pancreatic cancers; his sister, age 41, was still living. He noted his exercise level as moderate, his diet as fair, and listed habits of chewing 1 can of "snuff", and drinking 2 cups of coffee, per day. He stated he was not satisfied with his weight and that his weight had varied significantly in the past year. He noted that he was not sexually active, was not concerned with sexually transmitted diseases and was not a victim of domestic or sexual abuse. He reported a fracture of his left wrist in 1977 and his right hand and clavicle in 1982. His health goals were losing weight, gaining energy and getting his eating under control. Regarding historic and preexisting conditions, he indicated that he had "Low back pain," "Anxiety," "Depression," "Unexplained Fatigue," as well as "anxiety/depression 1986-present."

Interventions/Methods:

Chiropractic findings, noted a right head tilt with anterior head carriage, a posterior superior left shoulder and bilateral crepitus associated with scapular motion. Shoulder abduction elicited pain bilaterally at the glenohumeral joints. Posture analysis showed a mixture of category II (sacroiliac joint hypermobility syndrome) and category III (lumbosacral discopathy syndrome) indicators. A left lateral pelvic deviation with a 5-degree left antalgia was found originating at the lumbosacral junction. He also presented with a left short leg with his sacral apex rotated to the right. He had muscle tenderness to palpation along the mid-thoracic region and osseous tenderness at T5 and the left sacro-iliac joint.

ESM tools can augment the patient's care to provide control mechanisms for periods of mental and emotional imbalance through somatic structural care. Understanding a patient's cyclical body patterns may help give both the chiropractor and patient a sense of comfort during the period of time when psychogenic components are released from the body. This patient was found to have a 26 month cycle and with chiropractic care passed through specific patterns associated initially with a period of latency, then an accelerating condition, a deep releasing of the psychogenic somatization, and then a period of recuperation.

Results:

By the time treatment was concluded the patient's visual analogue scale (VAS) improved by a decrease in pain from a score of 5/10 to a score of 0/10. His antalgic posture of a 5 degree left lean and his left lateral pelvic deviation both returned to midline. From a chiropractic viewpoint the information yielded by ESM helped guide the care rendered to the patient. During the collaborative clinical process the patient's low back pain and presentation were not progressing as would be typically expected. At the end of each chiropractic office visit the patient's posture would be almost plumb and at the beginning of the next visit he would be back to his initial postural distortion. Along with the

inability to maintain postural symmetry the patient's VAS scores had also reached a plateau until a "breakthrough" was noted by the ESM.

The patient was unaware of the ESM findings that were utilized as a method to facilitate treatment and be prepared when patient progress would be slower then expected. From a chiropractic practitioner's perspective it was quite interesting to see this predictable change in the patient recuperative response and his ability to sustain the corrective benefits of the care rendered. Following the "breakthrough" as predicted by ESM protocols the patient's VAS score, postural distortions, and other SOT Category two and three indicators resolved within three visits after that date.

While treating low back pain is something every chiropractor does routinely, a chiropractor can not qualify or quantify how or where emotion is being stored in the body and how emotional processes are related to challenges in benefitting from somatic structural care. For 6 weeks, Category II and III procedures were successfully performed on the patient, but due to somatopsychic or psychosomatic issues the patient's body was resistant to any lasting effect. Once the emotional release occurred, he did not return to the clinic in an antalgic state. An ESM review of the data associated with this patient provides for a direct correlation of the timing of the emotional release to the timing of antalgic release.

Discussion:

In ESM, subluxations are considered waves of growth that have been subjected to enteric turbulence and, as a result, have been adversely fixed, or suspended, in place. ESM can be used effectively with chiropractic due to chiropractic's ability to "release" neuromusculoskeletal imbalances resulting in a release of somatopsychic patterns from the patient's body. Allowing the patient's body to release these patterns minimizes the enteric turbulence within the patient's body. This novel approach can help guide healthcare interventions to reach optimal health levels for each patient.

To bring chiropractors an adjustment measurement system conducive to using these equations, a novel approach to mapping the body based upon basic harmonic theory has been provided called Enteric Axial Harmonics© (EAH). Using EAH, the cranium, spine and pelvis are mapped against the nodes of theorized strings that run from the bregma to the base of the coccyx. Using the example of a guitar string, plucking the guitar string without placing a finger along the fret would result in a sinusoidal wave of the 1st harmonic. This wave, vibrating from one end to the other, contains no nodes, or stationary points. Using the example of a jump rope and a child holding either end, the children waving their respective ends of the rope so that center of the rope was stationary as the left and right halves of the rope was oscillating up and down would result in a sinusoidal wave of the 2nd harmonic. The 2nd harmonic wave has 1 node, the stationary point at the center. This simple pattern continues as you increase in harmonic number: dividing the string into 3 equal parts, the string has 2 nodes; dividing the string into 4 equal parts, the string has 3 nodes, etc. The divisions of the string can continue as far as

the practitioner expects it to be useful. For initial clinical applications, EAH contains 9 strings. The nodes of these 9 strings are then mapped to the axial skeleton when viewing the patient's back parallel to the sagittal plane.

ESM maps adjustment and EAH data for the left and right sides of the body independently to provide the critical ability to view the body as two separate halves. This data collection modeling procedure provides the chiropractor with the ability to quickly and effectively identifies trends as the treatment process progresses. This provides the practitioner with a powerful mapping and charting tool to; optimize treatment effect, minimize treatment time, and assist the patient with managing fear associated with extremes in enteric turbulence or somatopsychic imbalance.

There have been studies that support a relationship between the body and psychogenic presentations. In one study autonomic responses to the threshold and subthreshold concentrations of odogenes (olfactory stimuli) were studied in 58 healthy young females. They suggested that "autonomic (somatic) changes make their contribution to the conscious (psychic) perception of a stimulus [2]." Rau et al introduced the field of psychoneurocardiology, and to support their contentions "cite examples of research into psychosomatic and somatopsychic bases for hypertensive development [3]." In a study of patients with whiplash (n=117)it was concluded that "the psychological and cognitive problems of patients with common whiplash are mainly related to somatic symptoms [4]." Lastly, Goyeche et al investigated the role of yoga into a somatopsychic imbalance associated with asthma They found that "the role of skeletal muscle tension and posture, the role of the 'voluntary' respiratory musculature, especially the diaphragm, as well as anxiety, emotional suppression and excessive self-consciousness, all of which may be precipitants rather than the outcome of the onset of asthma."

Integrating ESM and chiropractic care is best achieved with: 1) a highly motivated and disciplined patient; 2) a high level of trust on both sides of the patient/practitioner relationship; and 3) an ability to assist the patient in managing fears associated with care as they move through their specific cyclical patterns. As ESM can help evaluate a patient's cyclical somatopsychic or psychosomatic patterns this will hopefully facilitate improved patient outcomes. With the subtly and diffuse nature of autonomic somatic reflex relationships a sensitive tool such as the ESM may help uncover subclinical conditions which may have been missed through other protocols. Further study is needed to determine if these patterns can be studied in a reliable manner and if they have the scientific validity.

Conclusion

This treatment program is particularly helpful for a subset of patients labeled with emotional and mental disorders that may be unresponsive to current therapy and who are seeking an alternative methodology. This case highlights the observation that when EMS and chiropractic care are administered concurrently the somatic quality of some mental and emotional disorder may be effectively treated. Developing new diagnostic tools for

chiropractors, educating chiropractors about EMS cycles or patterns, and finding motivated patients can provide the necessary populations to be established for a future clinical research database. This database may elucidate how a study could be produced to investigate how chiropractic could function as an alternative to mood and psychoactive medication with a specific subset of patients who have somatopsychic components to their presentation.

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Chiropractic spinal manipulative therapy in a 32-year-old female with neck pain, rib cage asymmetry, unicornuate uterus and persistent infertility.

Shadia Koury-Hajal, DC

Introduction:

The purpose of this case report is to examine the possible connection of a woman with a unicornuate uterus and infertility and chiropractic spinal manipulative therapy (SMT) documented subjectively and objectively during the course of her treatment. "A unicornuate uterus represents a uterine malformation where the uterus is formed from one only of the paired mullerian ducts while the other mullerian duct does not develop or only in a rudimentary fashion. The sometimes called hemi-uterus has a single horn linked to the ipsilateral fallopian tube that faces its ovary."[1]

Unicornuate uterus is a Mullerian anomaly with prognostic implications for poorer outcomes during pregnancy. Women presenting with a history of this anomaly are considered high-risk obstetrical patients with a significant risk of pregnancy loss and preterm labor, as well as ectopic pregnancy. Miscarriage risk may be due to abnormalities in the blood supply of the unicornuate uterus that might interfere with the functioning of the placenta (or increase the odds of implantation in the tube). The risk of preterm labor is thought to be because of space restrictions; because a unicornuate uterus is smaller than a typical uterus, the growth of the baby might trigger early labor. Doctors may recommend cerclage, also known as a cervical stitch, used for the treatment of cervical incompetence (or insufficiency) for women at risk of preterm labor.[2]

The following is a case study of a 32-year-old female who presented to the chiropractor with chronic neck pain and misaligned rib cage, and a diagnosis of a unicornuate uterus and infertility since October 2002. Her Oriental Medical Doctor (OMD) who was treating her for infertility for 3 months referred her to a chiropractic office. The OMD had difficulty accessing her liver meridian for acupuncture due to her asymmetric rib cage. When the patient began chiropractic SMT, she chose to discontinue her herbal infertility treatments prescribed by her OMD.

Methods and Interventions:

The patient was seen at this office for care at 3 times a week for 12 weeks. She had tonal, low-force specific chiropractic spinal and cranial manipulative therapy using Torque Release Technique, Koren Specific Technique, Chiropractic Cranial Therapy, and Webster Technique. A hand-held integrator instrument (ArthroStim and a VibraCussor) was used to deliver the specific spinal manipulative therapy (SMT).

Results:

Improvements were seen, with decreased neck pain and quality of life scores were subjectively documented by the patient after 5 weeks of non-cavitational care

chiropractic (Torque Release Technique), and SMT at 3 times per week. Objective results were seen with subsequent Surface EMG scans on every twelfth visit, indicated by greater muscle symmetry patterns**.** The patient conceived after 3 months of chiropractic SMT and delivered at 38 weeks gestation. The patient was seen 3 times a week for 12 weeks at this office due her unusual presentation and because clinically deep-seated neuromusculoskeletal imbalance can sometimes take 8-12 weeks of care to reduce chronic neurological and myofascial habituation in order to help facilitate body symmetry and greater function.

Discussion:

There have been studies that support a relationship between chiropractic and infertility,[2] however the evidence base of this relationship is in its formative state. While it is unclear if the patient's scoliosis is a direct factor in her current presentation, a disorder associated with congenital scoliosis, Mayer-Rokitansky-Kuster-Hauser syndrome, has been found to have mullerian duct agenesis.[3] The field of chiropractic is expanding its care of patients with non-musculoskeletal complaints and is also developing an evidence base for integrative treatment of other related uterine type abnormalities.[4]

There are various possible rationales why the chiropractic care might have facilitated this patient's issue with fertility. It may be possible that balancing the pelvic bones with their effect on the pelvic myofascial floor and its related attachment to the uterus could have ameliorated a dysfunctional biomechanical condition. It is also possible the relief of the patient's discomfort associated with neck pain and rib cage deformity reduced her stressful conditions this improved her ability to become pregnant. There is also a possibility that the cranial treatment stimulated a positive autonomic response that either relaxed the patient and/or facilitated her becoming pregnant.[5]

Conclusions:

In this case, chiropractic SMT appeared to have a significant impact on improving infertility for this patient. Based on the finding from this case report, further study is warranted to determine the role of chiropractic in helping women with a unicornuate uterus and infertility, and how chiropractic may serve as a part of an early intervention team for women with uterine anomalies and reproductive challenges.

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Improvements in occulomotor, auditory function and range of motion in a child with Down syndrome undergoing chiropractic care.

Nicole Poirier Keenan, DC

Introduction:

A recent study suggests that manipulation delivered to the neuromusculoskeletal system may create central plastic changes in the auditory system.[1] The purpose of this paper is to present a case report of an infant with Down syndrome (DS), occulomotor, auditory and cervical range of motion deficiencies treated with chiropractic management.
Each year 3,000 – 5,000 children are born in the U.S. with Down syndrome. A 2002 study, "Prevalence of Down Syndrome Among Children and Adolescents in 10 Regions of the United States," published in *Pediatrics,* found that the prevalence of DS among children and adolescents aged 0 to 19 was 1 in 971, or approximately 83,400 children and adolescents living with DS in the Unites States. According to Sigfried Pueschel, M.D., Ph.D., M.P.H, 60-80% of children with DS have hearing deficits caused by sensoroneural loss, conductive loss related to otitis media, or both. Small ear canals are often associated with this syndrome. Children with DS often have more eye problems than other children who do not have this chromosome disorder. For example, 3% of infants with DS have cataracts that are often surgically removed. Other eye problems such as cross-eye (strabismus), near-sightedness, far-sightedness and other eye conditions are frequently observed in children with Down syndrome.

Other common DS related issues include congenital heart disease, craniofacial changes, hypothyroidism, intestinal issues and skeletal changes. Complications associated with DS include immunologic concerns, leukemia, Alzheimer disease, seizure disorders, sleep apnea and skin disorders, which may require the attention of specialists in their respective fields. Children with DS commonly need to be evaluated by an ENT for hearing and vision tests which are recommended every 3-6 months until the age of 3 years old and then annually thereafter. There is no treatment for DS, but management often involves either surgical correction of specific problems listed above, medication such as anti-seizure meds when necessary, and therapies such as physical therapy (to correct hypotonia) and speech therapy. Early intervention programs are often used with the goal of enhancing the development of infants and toddlers and helping families understand and meet the needs of their children.

Case Presentation:

An 11-week-old male with DS, fluid in both ears, having failed all allopathic model auditory tests point and only able to track light and dark was presented to this office by his mother for chiropractic evaluation and care. His mother noted that he did not respond to her coming near him when crying and appeared completely unresponsive to sounds. The child was concurrently working with an ENT and audiologist, who prior to the initial office visit did not indicate any success from their interventions. The patient was

delivered in an uncomplicated vaginal birth and has had difficulty swallowing/sucking, which the mother attributed to a larger tongue, associated with DS.

Methods:

Treatment was performed by two doctors working together at a clinic in close communication regarding evaluation and treatment protocols. At the initial office visit the patient presented with a right head tilt, decreased cervical rotation and left medial canthus that is inferior and larger left as compared to the right side cranial measurement. The child had motion restriction in his left sacrum and was generally hypertonic.
Because atlanto axial instability is associated with 10-20% of individuals with DS, this area was addressed very cautiously while treating the child's cervical spine.[2] Patient was treated with low-force, specific, full-spine and cranial chiropractic manipulative therapy.

Cranial chiropractic manipulative technique[3] was performed in areas of asymmetry that also had palpatory restriction. Treatment protocols involved some of the following protocols. On the side of the low canthus and larger cranial measurement, placing thumbs over coronal suture and gently separating utilizing five grams of pressure (Webster's Coronal Suture adjusting); gently flexing the occiput looking for hypertonicity of the tissue at the base of the occiput and complimentary movement of the sacrum; and rotating the sacrum and occiput in opposite directions, looking for restriction and holding position until it softens, laterally flexing occiput and sacrum unilaterally to both the right and left looking for restrictions and holding until the tension changes (Meningeal Release Technique, as taught by Dr. Jeanne Ohm). Treatment consisted of two visits the first week, then one visit per week for 3 weeks.

Results:

Visit 1: Immediately post adjustment, patient showed improvement in focus and pupillary constriction and dilation (alternating mydriasis) slowed from every few seconds to more responsive to environment. He became attentive to the doctor's face and/or voice and overall hypertonicity decreased. Visit 2: Patient's mother reported he had been calmer and slightly more responsive. Visit 3: Mother reported he is cooing and more verbal, which was very unusual for him. Chiropractic evaluation found cervical range of motion, particularly rotation, had improved bilaterally. It was also noted during the examination and treatment that the child was smiling more. Visit 4: Range of motion continued to improve along with increased responsiveness and visual tracking. Visit 5: Allopathic visual retesting indicated tracking at age-appropriate levels at that point. Mother also reported he was beginning to consistently respond to loud noises, such as a door slamming, where prior to care he had no response. Also of significance, his cooing and smiling had notably increased.

Discussion:

An infant's interpretation of the world is achieved via his senses. Decreased auditory and occulomotor function will change an infants initial perception of the world as well as decreased stimulation of the highly innervated suboccipital muscles caused by aberrant/ restricted cervical motion. One study compared eye contact between 12 mothers and infant pairs, 5 of which were infants with DS, and noted delays in the establishment of eye contact of the children with DS.[4] The American Academy of Pediatrics Preventative Task Force July 2008 found that children who had auditory dysfunction often suffered from increased difficulty with verbal and nonverbal communication, increased behavioral problems and decreased psychosocial well-being, as well as lower educational attainment.

Conductive hearing loss can be caused by multiple reasons, including otitis media and fluids trapped behind the tympanic membrane from birth The United States has 2 million typanostomies performed yearly to treat this problem; these types of procedures increased by 35% over the decade from 1996 to 2006. Utilizing chiropractic conservative treatment[5] could not only be cost-saving measure but can purportedly improve a child's visual and auditory function, affecting a child's righting mechanisms and their ability to physically relate to their world.

Conclusion:

In this one case it appeared that chiropractic offered a possible therapeutic benefit for a child with DS who was suffering from vision, auditory and cervical spine asymmetrical function. With proper differential diagnosis and working in an interdisciplinary relationship, chiropractic could become a valuable partner in a team of healthcare practitioners treating children with this complex and diverse condition. Further research is needed to determine if other children may also benefit from specific chiropractic manipulative and cranial therapy, which may offer a viable option for improving multi-sensorial function in an infant with multiple issues.

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SOT and ART treatment of a 73-year-old male post stroke with L4/L5 foraminal stenosis: A case report.

Jeffrey A. Mersky, DC, Charles L. Blum, DC

Introduction:

Low back pain is an extremely common finding for patients presenting for chiropractic care. When the pain involves bilateral lower extremity radiculitis, antalgia, and marked restricted ranges of motion, greater caution is needed. With most care of patients this type of presentation care can lead to treatment that is long term and frequent. It would be of value to determine if chiropractic therapeutic applications can become both effective in reducing pain and increasing function and at the same time have the patient's response to care occur with a minimal number of office visits.

Sacro occipital technique (SOT) has had some studies that discuss its effectiveness in the treatment of low back pain and disability [1-3]. Active release technique (ART) while commonly used for athletes [4,5] can be a method of myofascial release utilized in a typical chiropractic practice. Essentially ART relates generally to a procedure also called "pin and stretch" which has the doctor maintain a firm contact at a specific portion of the muscle (usually origin or insertion) while the patient specifically attempts to elongate the muscle through active motion. This case report discusses the application of both SOT and ART for the treatment of a patient with severe low back pain.

Case History:

A 73-year-old male presented July 2010 with subjective complaint of acute lower back pain with bilateral (grade one) upper thigh and gluteal radicular pain. He had earlier suffered a stroke (left parietal lobe), based on MRI, analysis 3 weeks prior to presentation at this office. While a clear relationship was not found between the stroke and lower back pain it is likely that the lumbar dysfunction had been present for months but the pain and lack of function appeared only following the stroke. He radiographs of the lumbar spine revealed osteoarthitic degenerative changes at the L4/5 and L5/S1 disc spaces, with significant bilateral foraminal stenosis at the L4/5 level. Patient's posture was markedly antalgic in a forward position. A Doppler study of the carotid arteries revealed a moderate calcific atheroma in the left proximal carotid artery creating a less than 50% stenosis. He had a history of ulcerative colitis that was controlled with medication (Ascol), and also for cholesterolnemia (Lovastatin) and elevated blood pressure (Atenolol and HCTZ).

Methods/Treatment:

Patient was analyzed and treated utilizing sacro occipital technique (SOT) and determined to be a category three which relates to lumbosacral discopathy and dysfunction. Patient had profoundly limited lumbosacral ranges of motion and was

guarding with all movement due to pain. He positive orthopedic finds consistent with lower lumbar discopathy and foraminal stenosis. SOT findings noted a bilateral psoas contracture and piriformis muscles syndrome (iliofemoral) with reduced bilateral internal hip rotation. Pelvic torsion was noted in the prone position and SOT pelvic wedges were used according to category three principles to reduce pelvic torsion and either reduce or centralize the gluteal and thigh pain.

Active release technique (ART) was utilized in conjunction to facilitate patient response to care. The myofascial work was applied to his superior hamstring origin, superior gluteal origin, latissimus dorsi, and psoas iliacus. With each muscle group the procedure involves elongation of the muscle group with resistance at the origin/insertion of the muscle. In general 3-4 applications were used for each muscle group.

Results:

Following the first treatment the patient's low back pain and disability had reduced approximately 75%, with elimination of bilateral gluteal/thigh pain and anterior antalgia. He was seen twice the first week and then once a week for two weeks and then two weeks later for a total of five treatments. By the 5th office visit he was 95% improved based on pain reduction, body function, and activities of daily living. Remaining was lumbosacral muscle tension lumbar paraspinal and quadrates lumborum hypertonicity. The patient continued with self limiting activities such as repetitive bending, lifting, twisting, pushing, pulling, and carrying which preventing any flare-up or exacerbations. Due to being pain free and having good function he was comfortable with the residual muscle tension and activity limitations.

Discussion:

When patients present with bilateral radicular symptoms caution must be made to rule out cauda equinae type syndromes which involve loss of bowel or bladder function or saddle numbness. Particularly with this patient there was concern of possible prostate contribution to his symptoms however laboratory findings noted normal PSA levels and his urologist found examination of the prostate lobes unremarkable. There was concern regarding the patient's medications since he had been taking Ascol, Lovastatin, and HCTZ for years and these medications have side effects associated with joint or muscle pain and stiffness. Since the patient improved with care it was considered that the lumbosacral imbalance was the prime cause of the patients presenting symptoms, however the patient was instructed to discuss his medications with his allopathic practitioner.

Major B. DeJarnette, the developer of SOT, often cautioned doctors that with severe iliopsoas contracture, found with category three patient presentations, that evaluation of the patient's heart status and function may be indicated [DeJarnette MB. Sacro-Occipital Technic. Privately Published: Nebraska City, NB. 1946:79.]. He related the iliopsoas and

diaphragm crural fascial interrelationship and their possible affect on pericardial motion and function. It is not clear whether this myofascial relationship had any possible association with the patient's stroke. Yet it is interesting to note that he had been noticing low back discomfort for 4-6 weeks prior to the initial office visit, however due to his intervening stroke the low back pain did not take a therapeutic foreground.

DeJarnette developed SOT as a paradigm of care which generalized patient presentations into three specific categories, one of them related to patient presentation with lumbosacral discopathy and dysfunction called category three [1-3]. SOT has a group of diagnostic indicators, which are used to direct care and evaluation patient progress. From DeJarnette's perspective the focus was not upon a specific method of treatment but upon improving the patient's SOT indicators, which related to reduced pain and increased function. With this in mind the application of ART [4,5] to SOT treatment and methodology offers an effective manner to increase the possible myofascial therapeutic applications within SOT category three protocols.

Conclusion:

Treatment of patients with lumbosacral radicular pain and dysfunction with SOT protocols has had some emerging evidence [1-3]. Of particular interest in this case was the combination of ART and SOT as an integrative method to treat a patient with severe low back pain and stiffness. While the care was particularly successful in this one case, due to lack of a control group, sham comparative procedures, and the bias of the doctor performing the treatment, it is difficult to make far-reaching claims. However future study could investigate how ART and SOT could be combined to treat patients and help expand the myofascial toolbox for the SOT practitioner.

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SOT treatment of a 2 ½ year old female with a 35° scoliosis and two hemivertebra: A case report.

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Introduction:

Searching for care that is safe and offers low levels of intervention for our children is essential in our evolving healthcare arena. One important aspect of pediatric skeletal health involves the awareness and treatment of scoliosis. Adolescent idiopathic scoliosis (AIS) remains the most common deforming orthopedic condition in children. "Increasingly, both adults and children are seeking complementary and alternative therapy, including chiropractic treatment, for a wide variety of health concerns."[1] Studies have found that a scoliosis spinal column curve of 10° or less affects 1.5% to 3% of individuals. The prevalence of curves less than 20° is about equal in males and females. It is most common during late childhood, particularly in girls.

Idiopathic "congenital scoliosis is the result of osseous malformations of the spine. The process of formation of the spine is extremely complex. The vertebral formation process results in either a failure of formation of part of a vertebra (hemivertebra), failure of segmentation of a vertebra (two vertebra stuck together on one side or a unilateral bar), or some combination of the two. The result is essentially a growth disturbance of the spine that produces a curvature. No two cases of congenital scoliosis are the same, and each pattern requires careful assessment to determine the risk that a serious curve will occur and need treatment."[2]

The risk of undergoing surgery for scoliosis, initially estimated to be 5%, is, according to the latest evidence, a far greater rate of complications. Possible complications may be inflammation of the soft tissue or deep inflammatory processes, breathing impairments, bleeding and nerve injuries. As early as five years after surgery another 5% of patients require reoperation, and today it is not yet clear what to expect from spine surgery in the long term.[3] "Taking into account that signs and symptoms of spinal deformity cannot be changed by surgical intervention, surgery remains primarily a cosmetic indication, only especially in patients with adolescent idiopathic scoliosis (AIS), the most common form of scoliosis never exceeding 80°."[3] Unfortunately, the cosmetic effects of surgery are not necessarily stable.

This article will discuss the application of sacro-occipital technique (SOT) procedures on a 2½-year-old female with scoliosis and two hemivertebra, and the positive results obtained through her chiropractic care.

Case Presentation:

During a routine physical examination at age 6 months her pediatrician noted a curvature in her spine. An ultrasound was ordered and a scoliosis and thoracic kyphosis caused by two congenital hemivertebra was detected. On December 10, 1998, the first X-ray study

was performed to monitor the scoliosis. Due to the degree of the scoliosis an MRI study was ordered on January 14, 1999, and measurements were made. A Moire study was performed on December 12, 1999. The degree of the thoracic curve was measured at thirty-five degrees. A follow-up Moire study was done on December 9, 2000, and due to the progression of the scoliosis an orthopedic consult was made, who suggested that the patient undergo a surgical fusion of the involved vertebra to stabilize the scoliosis. The surgery was scheduled for April, 2001

On March 9, 2001, the patient presented at my office with her mother for examination. Her mother, a patient of mine, contacted my office to inquire if there were any other less invasive alternatives. We suggested she bring her daughter in for an evaluation since studies have found chiropractic care successful in reducing and stabilizing scoliosis in children. The patient's previous history was insignificant. Her prenatal, birth and postnatal life was within normal limits. She showed no signs of developmental abnormalities except for the scoliosis and two hemivertebra previously mentioned.

Methods/Intervention:

On her initial visit on March 9, 2001, the patient underwent a complete chiropractic evaluation. Standard chiropractic evaluation procedures were used as well as specific SOT protocols. The evaluation revealed: a right thoracic scoliosis with an accompanying thoracic kyphosis and lumbar lordosis; a right short leg in the prone and supine position;, restriction in left cervical rotation; and left psoas contraction; a positive arm fossa test on the right upper fossa; lateral sway of ¾ inch when standing; a posterior sacral base was noted on the left side; palpatory tenderness at T10, T4 and C2; and a positive Adams Test.

Cranial evaluation revealed: a slightly posterior positioned TMJ bilaterally, a high narrow palate with medial ridging, a restriction in sphenoid motion on the left, and an occipital restriction on the left.

The patient was put on a six-week intensive care program beginning March 14, 2001, to address her subluxation pattern, stabilize her Category II complex (sacroiliac joint hypermobility and its effect on the whole body kinematic chain) and correct the cranial bone and meningeal imbalance. Her initial visit frequency was two visits per week for the first 6 weeks. The surgery was still scheduled for April 2001.

Results:

Six weeks after her initial chiropractic adjustment the patient was re-examined by the orthopedic surgeon, prior to performing his surgical intervention and fusion. His evaluation and follow-up Moire study on April 26, 2001, revealed a significant reduction in the scoliosis. Surgery was postponed and the orthopedic surgeon put the patient on a

program of follow-up Moire studies every six months through November 2002 to monitor the scoliosis.

Throughout the patient's care, SOT evaluation and adjusting procedures were used. Applications of SOT blocking procedures and standard SOT adjustment protocols, as well as reduced-force cavitation adjustments, were used to make the corrections.

Adjustments over the first three weeks included: Category II blocking procedure (supine pelvic wedges used to reduce pelvic torsion and joint laxity) for a right pelvic hypermobility subluxation; correct of a left psoas contraction through SOT psoas correction techniques; reduction of thoracic inferiority subluxations as determined by trapezius fiber analysis; cervical spine corrections determined by cervical stairstep indicators, including C5, C2 and atlas; reduction of occipital fiber line 2 rotational subluxations at T3 and T4; and cranial adjustments to the occiput and maxilla.

After the first three weeks of care, Category II stabilization had been achieved and further adjustments were made using the necessary SOT indicators to continue to reduce the presenting compensatory subluxation complex and uncover the initial facilitative subluxation (Category I – anterior sacroiliac joint fixation leading to reduced sacral nutation and CSF circulation). Over the next three weeks specific reduced-force adjustments were made to the right ilium and sacrum to restore normal pelvic balance. Further thoracic and cervical adjustments were made following previously stated protocols and continued cranial corrections were applied, adding corrective procedures designed to reduce the hard-palate dysfunction.

Discussion:

Objective findings and continued orthopedic evaluations using the Moire system of scoliosis tracking continued to show marked improvement in the patient's scoliosis. She has maintained her chiropractic care to date on a maintenance level, and has continued to see the orthopedic surgeon to monitor her scoliosis every 6 months. At this point in time the patient's scoliosis, kyphosis and lordosis have been drastically reduced, all her functional levels are completely normal, and she is no longer a candidate for invasive surgical fusion. Since continued improvement was evident, the Moire study program was stretched out to once a year in 2003 and 2004. Her last Moire study, done on May 6, 2004, showed almost complete resolution of her scoliosis, kyphosis and lordosis.

Though direct clinical evidence is not conclusive from one case study, it is important to note that in this particular case the patient made no other alterations in her lifestyle or clinical situation, besides the addition of chiropractic care, to afford such a positive outcome. Correlation of clinical findings directly supported the reduction of the patient's subluxation complex and scoliosis in this case, as evident by the changed biomechanical and structural parameters, per radiological and Moire studies. Even with the additional complication of two congenital hemivertebra, this patient's scoliosis was drastically

reduced through consistent chiropractic care using the SOT adjusting protocols and procedures.

Chiropractic care for pediatric patients with scoliosis has been discussed in the literature and in one case report it was found that utilizing Pierce chiropractic technique for a 7-year-old female patient diagnosed with idiopathic scoliosis that "along with improvement of subjective complaints, the post AP lumbopelvic radiograph showed a 62% improvement in Cobb angle after just one month of care."[4]

While there have not been many studies investigating SOT treatment of scoliosis, one study discussed care of a adult patient with scoliosis who was successfully treated with a combination of SOT chiropractic care and Pilates exercise therapy.[5] With the long-term risk/benefit ratios of surgical intervention on children, conservative options are both necessary and reasonable to consider. Preliminary studies are being performed to investigate how chiropractors and orthopedic surgeons can work together to facilitate improve and safer outcomes for children with scoliosis.[1] Hopefully this will lead to improved outcomes with less risk or improved outcomes from surgical interventions, since the children could be helped with improved symmetrical function by the pre and post-surgical inclusion of chiropractic care.

Conclusion:

Since conservative chiropractic care in this case offered less risk to the patient, was more cost-effective, and offered significant benefit, it would appear that further study into the efficacy of chiropractic care in the treatment of childhood scoliosis would be prudent, especially before surgical intervention is considered. Fusion surgery for scoliosis is permanent and irreversible in nature, and if conservative chiropractic care can be offered without any serious risk to the patient's health, then chiropractic care should be explored in the subset of patients that respond to care. During those periods of time when the medical physician is only monitoring the patient or preparing for possible surgical intervention, this would provide the optimal opportunity for a trial period of chiropractic care.

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Chiropractic care of pediatric nonmusculoskeletal conditions: A retrospective patient survey.

Martin G. Rosen, DC, Charles L. Blum, DC

Introduction:

A call has been made for more rigorous scientific inquiry to examine the value of manipulative therapy in the treatment of pediatric conditions.[1] Simultaneously there have also been inquiries by our scientific community attempting to isolate what subset of patients with nonmusculoskeletal conditions might respond to chiropractic care.[2] Due to the scarcity of published literature relating to the chiropractic treatment of nonmusculoskeletal conditions,[3] particularly of pediatric patients, this paper attempts to facilitate a glimpse into a clinical practitioner's office where these conditions are routinely being treated.

While randomized controlled studies are the preferred option for investigative studies, observational studies may also offer valuable information.[4] Case reports have a tendency to represent a positively biased presentation of selectively chosen patients by a doctor, yet still in some instances they may offer an important glimpse into what is taking place in chiropractic clinical practice.

Methods:

As standard practice of this office for follow-up, patient control and management, parents of an active group of pediatric patients (2000-07) were (n=127) sent a questionnaire via the mail. The questionnaire inquired about follow-up information on their child's response to care. For the purposes of this case series, children treated for nonmusculoskeletal symptoms (n=37) out of those who responded to the questionnaire were used for this case series. Data were extracted from questionnaires that met the above inclusion criteria and were entered into a SPSS spreadsheet for tabulation. All pediatric patients were treated by the same clinician. In all cases active chiropractic care consisted of sacro-occipital technique and cranial pediatric treatments. In 5/37 cases, ancillary procedures were used to improve neurological function, including cross patterning, biofeedback, early intervention and targeted exercise. In 4/37 cases, nutritional support or homeopathic allergy desensitization was utilized.

Results:

65/127 parents responded to our standard follow-up outreach, and 37/65 were treated for nonmusculoskeletal presentations. Of the 37 (17♂, 20♀) nonmusculoskeletal pediatric patients, 5 were treated for immune function, 7 for developmental delays/dysfunction, 9 for birth trauma, 1 for seizure activity, 4 for learning problems, 3 for endocrine problems, 3 for migraines, 2 gastrointestinal issues, 2 for fussiness/agitated/anxiety, and 1 for enuresis.

Discussion:

A challenge in evidence-based healthcare is integrating historically successful clinical practice with current published research. Developing a pediatric chiropractic evidence base, particularly one for nonmusculoskeletal conditions, for practicing doctors[2, 3] would likely start with expanding the doctor's knowledge of pediatric diagnosis and treatment options. This process could involve a certification process such as one by the International Chiropractic Pediatric Association (ICPA), which has postgraduate 180-hour certification and 360-hour diplomate programs.

Implementing chiropractic adjustive techniques on newborns, infants and young children is completely different from dealing with the adult patient, so learning appropriate chiropractic therapeutic interventions to mitigate any adverse response to treatment[5] may be important. Sacro-occipital technique (SOT) has protocols that are indicator-based and offer the low-force techniques may be better applied to a young child. Cranial techniques, which are part of SOT's system of analysis and treatment may be indicated to address some newborn and developmental conditions. The Sacro Occipital Technique Organization – USA (SOTO-USA), like the ICPA, also has a certification program to ensure that practitioners treating pediatric patients have appropriate training.

This case series was based on a response to questionnaires sent to parents of children receiving wellness care at this office. It is anticipated that the success in treatment (N=36/37) for nonmusculoskeletal pediatric patients in this case series was high due to the response was predicated upon patients (parents) that were satisfied with care and those who had a positive response may have been the ones choosing to respond to the questionnaire.

Conclusion:

Since it does appear from this case series that both pediatric nonmusculoskeletal conditions may benefit from SOT and cranial pediatric adjustive techniques, there is a greater need to investigate whether these responses to care are individualized to one practitioner or can be generalized to the chiropractic profession. It is of importance to investigate if chiropractic pediatric adjustive techniques that include treatment of nonmusculoskeletal conditions, are actually accomplishing what they purport. Of essence is integrating successful chiropractic clinical practices treating pediatric patients with nonmusculoskeletal conditions and the investigations of the chiropractic research community, so that each faction is not functioning independently of one another, thus limiting the building of an accurate evidence base.

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Balancing the pelvis post partial hip replacement: A case report.
Albert R Salem DC

Introduction:

Major joint replacement is the fourth most common group of hospital procedures (2008). Hip replacements account for 38% of these, behind only knee replacements (61.5%). [1] In the 5 years 2003 to 2008, the national cost of hip replacement surgeries has nearly doubled to $22.4bil. [2] The increasing prevalence of hip replacement patients may prove to satisfy the surgeons' criteria for successful conclusions, but the symptomatic effects may be just beginning. [3] By these patients presenting for care for relief of complaints, the surgical history may indicate revision of the usual therapy plan and complicate the prognosis. Such patients would have been better served by replacement of a hip into the same measured dimensions and relative position as pre-symptom radiographs would verify.

The apparent anatomical alteration resulting from a partial hip replacement operation is clearly evidenced in a follow-up radiograph. The measurably altered dimensions of the hip may likely produce effects in the biomechanical position and kinetic response of the pelvic orientation and, therefore, further dorsocephalad effects starting from the sacroiliac joints. As the fulcrum for weight-bearing stability of the human frame, the interosseous integrity of the sacroiliac joint is of paramount importance for whole body structural dynamics. The category two (sacroiliac joint hypermobility syndrome) of sacro-occipital technic (SOT) is the complex of signs and symptoms resultant from ligamentous, neurological, and positional faults based in the sacroiliac joint.

The presented case is of a unilateral partial hip replacement patient admitted to a chiropractic clinic 4 years after surgery with an active category two syndrome pattern. He reported that no significant complaints existed prior to surgery except for a "locking" of the hip joint after extended driving.

Case History:

The case patient was a 58 year old married male on clinic admission four years after partial replacement of left hip surgery. In the year prior to surgery, his only complaints were "shin pains" and noting the left hip would lock after extended driving. In that time, he was assessed by densitometry to have moderately severe osteopenia in both femoral necks, but short of the osteoporotic range.

Following surgery, lower and upper back and neck pains and restrictions gathered to the point that his walking, sitting, and driving demands were adversely affected. By the third year after surgery, routine suboccipital headaches established and shingles appeared across the back below the thoracolumbar transition.

Interventions/Methods:

Clinic examination indicated upper buttock SOT category three (lumbosacral discopathy) tenderness and signs of the sacroiliac slip separation of category two, including sensitivity of all four fossae (superior and inferior aspects of the bilateral inguinal ligaments), tenderness and restriction at mid-cervical spine as well as left TMJ. Radiographs revealed degenerated discs in the mid-cervical region and from L2 through L5. The radiologist noted pelvic tilt associated with lumbosacral right convexity.

With any surgical intervention influencing the balance of the sacroiliac joints, it may likely affect the weight-bearing integrity of the human frame. This liability is assured by the concomitant or the resultant category two. The unilateral insertion of a partial hip replacement with femur head prosthetic should ideally be placed in support of maintaining the pelvic fossae in strength. In this case study, category two testing commenced 4 years after the implantation, showing positive objective and subjective findings. Radiographs of the patient were measured over dates before and after partial hip replacement surgery. The head-neck axis of the right femur measured consistently longer than the left in the pre-operated radiographs. Further, pre-operation measurements of femur heads tilt off the horizontal baseline favored the more superiorly placed left hip by generally less than 2.5 degrees above the right. After the left head replacement, radiographs evidenced a longer left femur head-neck axis length. Post-operation angle readings were again left dominant but from 5.3 to 6.8 degrees.

Treatment:

Treatment averaged approximately three visits per two weeks over the initial six weeks of care. The therapeutic intent was to release the lumbosacral disc and related joints from the compressions and distortion patterns by SOT category three methods. Following reduction of those patterns of distortion then the goal was to begin the category two correction with reestablishment of sacroiliac stability. Other corrections that were complementary to the pelvic category stability included cervical facetal gliding (cervical stairstep), soft tissue balancing around both hips (psoas and piriformis muscles) as well as monitoring all extremity joints and the introduction of cranial and TMJ procedures to aid sacroiliac joint stability [4].

Results:

At six weeks of therapy, the patient began regularly reporting he was free from complaints and was more expansive in activities. With ensuing category two corrections over the year, the femoral head comparison angle reduced radiographically down to 2.5 degrees from the horizontal, close to the pre-surgical status.

Discussion:

As in any case of surgical intervention on osseous weight-bearing structures, it is difficult to predict an adverse reaction this treatment may cause to the weight-bearing kinematic chain. All treatments were applied with minimal input to elicit positive changes and then the patient would be monitored for response. Much of SOT therapy is known for the practitioner option to be able to reverse whatever treatment was rendered so the treatment tends to be more functional rather than permanent. However with this patient no undesired effects were noted.

Due to the fixative effect of surgery altering anatomy, a patient may never fully stabilize as therapist would desire. The case becomes individualized in prognoses. This patient responded well in the first six weeks. As time and treatments progressed, a more characteristic category two pattern presented itself. In this case some progress noted that cranial and TMJ/dental category two care facilitated the patient's overall function particularly in the surgically modified hip [4].

By radiograph measurement, physical examination and the patient reports, this case illustrated how treatment of the category two complex led to successful diagnostic and therapeutic action. The category analysis of SOT provides a view into how the human body can respond to stress upon key structural systems. Any exogenous insult, such as surgical alteration to weight-bearing mechanical parts, should be examined with the tools at hand of the practitioner. Comparative radiographic mensuration of the anatomical part from before and after the surgery may serve to approximate the degree of affectation to the structural systems. This influence deserves consideration in the formation of a treatment plan and in the monitoring of results. Determination of an inclining effect on the low back (category three) and/or of disruption to the sacroiliac joint (category two) provides a sensible start to analysis of any hip replacement patient. A strict radiographic protocol at set dates minding symptom onset, pre-surgery and progressive post-surgery images would be desired for best reliance of mensuration data.

Other cases of hip replacement may benefit by the chiropractor measuring available radiographs dated before and after the surgery. In one study a patient with postsurgical hip pain was successfully treated with a combination of chiropractic manipulation of the lumbar and pelvic region and low-tech rehabilitation 14 months postsurgery [5]. This type of presentation and care paralleled the care rendered to this patient who had lumbosacral and sacroiliac joint dysfunction. Where there are limited radiographs available, a complete assessment of findings may not be possible. Surgical intervention to a hip joint is of risk to complicate or to cause category two; therefore, surgery and prosthetic preparations should include requisites with the goal to leave the patient with hips symmetrically at a level and of dimensions and orientation in support of the sacroiliac integrity.
The sacroiliac joint is a common place for the stresses caused by asymmetrical muscle attachments to the hip joint. Due to the attachment of the piriformis from the greater trochanter to the anterior sacrum as well as the iliopsoas attachment to the lessor trochanter to the internal iliac crest and sacroiliac basin, asymmetrical tensions from the

hip joint would be supported by the sacroiliac joint and its related ligaments. If this stress becomes too severe then it would be reasonable to assume that the sacroiliac joint would be compromised, which would be the beginning of an SOT category two type syndrome.

With any case report that does not have a case control or comparative sham type procedure it is difficult to make far-reaching statements on a patient's response to treatment. However even with this limitation it is of note that the patient's condition was consistently worsening over time and radiographic findings were consistent with a stressed hip joint. Of interest is that following 6 weeks of care the patient's pain decreased, function increased, and a positive radiographic change was noted in his surgically repaired hip joint.

Conclusion:

For the chronic category three or two patient, it would be best to realize the possible influence of a history of trauma or of any surgery to the weight-bearing joints. This study examined a 4 year post surgery partial hip replacement and how it may have been the cause of a secondary category two due to the anatomical and functional asymmetry of the surgically repaired hip joint. This patient improved in objective findings and in subjective reporting following six weeks of SOT category care. Further research is indicated to determine if the findings in this case may be of value for other patients with various degrees of hip replacement surgery.

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Dental chiropractic interdisciplinary care of three patients with different conditions yet similar symptom presentation: A case series.

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Introduction:

Dentists and chiropractors have been treating patients with temporomandibular joint disorders (TMD) for decades [1]. In the past two decades dentists and chiropractors have begun the process of developing co-treatment methodologies to facilitate and improve patient outcomes. One aspect of developing this mode of co-treatment involves determining whether a patient's primary presentation originates from postural (lower extremity, pelvis, and spinal) influences or TMD [2]. John Beck, MD developed a method for dentistry of testing the body and Autonomic Nervous System (Motor Reflex Testing – MRT) to determine which orthopedic structure related to balance is the patient's primary presenting condition associated with nervous system irritation [3].

From the Sacro Occipital Technique (SOT) and Cranial perspective, it is believed that while the MRT is a valuable test (most can dictate the primary source of orthopedic imbalance), the MRT needs to be incorporated with SOT findings to create a method for an optimal dental chiropractic co-treatment process. Incorporating MRT and SOT differential diagnosis includes the chiropractic SOT analysis, which can lead to a secondary interpretation of the MRT test results. Utilizing SOT cranial diagnosis is also important in an ascending postural pattern and a descending TMD pattern to include another primary diagnosis: the cranial lesion. Therefore, from this perspective, when the MRT indicates an ascending or descending primary pattern a neurological irritation rather than a musculoskeletal condition is present.

Motor Reflex Testing (MRT) (also called Autonomic Reflex Testing) is purportedly a system of evaluation with the premise that structural imbalance or compromise produces posture avoidance mechanisms such as loss of balance or strength to testing of a muscle. The following are descriptions of the three common tests used to evaluate the patients in this case study and include the wall, parachute, and dark/light tests.

Wall test: In this test, patient is standing upright with feet in the patient's normal position for standing. Both arms are bent at 90` facing forward. Doctor makes sure patient is standing like a statue, and not pushing toward the doctor, who will be pressing inwardly on the arms individually (the radial nerve is pressed on both sides to stimulate the nervous system directly). If the patient's arms are unable to sustain their position the wall test is positive and the patient is considered to be in a state of structural instability. Next, to determine if the patient has an ascending or descending component to their presentation, he is asked to place his back against a wall and the doctor performs the test again. If test shows positive again, that means the patient likely has an ascending issue originating in the feet. If patient can now hold his hands firm (test is negative) after radial nerve provocation and inward pressure of the arms the primary dysfunction is considered to be descending from either the temporomandibular joint (TMJ), cranium or cervical spine (or any combination thereof) downward.

Parachute test: While seated upright with no back support, the patient outstretches his arms in front of the torso, and turns the thumbs down. The ability to hold the arms in this position is tested by the doctor by pressing downward gently. The doctor then scratches over radial nerve area and the arms are individually retested. If an arm comes down, it is considered positive for Trigeminal nerve inflammation or involvement. Next, a tongue blade is placed on the teeth to hold centric relation (ask patient to count 66-77 and place the jaw where the jaw goes in that phonetic position). With tongue blade in place the parachute test is repeated. If the patient's arms can resist the downward pressure it is believed that the patients TMD is the cause of their Trigeminal inflammation. Following this test (if positive), to differentially diagnose between TMD and cervical spine influences as well as to determine a possible primary concern of the ANS, the patient stands up while tongue blade is still inside the mouth and perform the wall test. If the patients standing test is now negative with the tongue blade in the mouth the patient is considered a TMJ primary (with the tongue blade in the patients' mouth (the TMD component relieved) the patients balance returned). If patient tested positive for the standing test with the tongue blade further testing is needed to determine the primary structural injury.

Dark/light test: While patient is seated upright with no back support, place patient hands in same position as when performing the wall test. Retest with inward pressure stimulating the radial nerve both sides and test for the patient to resistance this inward pressure to get a baseline. Then either have patient close their eyes, or place a black object in front of the patient and retest. If patient now cannot resist the inward pressure, the patient is considered to be in a state of reflex sympathetic dystrophy (RSD). Retest the patient after placing the tongue blade in the mouth to attain centric relation. If following closing their eyes/staring at a black object they can now resist inward pressure, then the TMD is the cause of RSD. If not, and they still have difficulty resisting the inward pressure then lightly scratch the cervical spine and retest (light touch stimulates the A delta fibers and temporarily stops nociception firing). If then the patient can resist inward pressure the cause of the patient's RSD is originating in the cervical spine. This test can also be performed on any of the upper or lower extremity peripheral nerves.

Along with standard dental and chiropractic (sacro occipital technique) SOT diagnostic protocols MRT was used to help differentiate the various types of patient presentations. These differential diagnostic procedures are believed to help determine where to focus care and how to monitor the patient's progress in an effective manner as these tests are repeated to determine how the patient is responding to care and to re-evaluate for new primaries.

Case Summary:

Symptom presentation can often be confusing since sometimes the treatment will need to vary regardless of what the patient describes what or where their pain might be. For instance, in the three cases discussed in this report series each patient presented with jaw pain, limited cervical range of motion, and some related headaches. Patient A presented

with a closed lock, with scoliosis, and determined by MRT to be a cervical primary. Patient B presented with a history of a jaw fracture that healed in a "broken" position (by the oral surgeon) and determined by MRT to have both a primary TMJ and cranial contribution. Patient C was a classic closed lock case (disc displacement with and without reduction) with tension type headaches and neck pain and determined by MRT to be a temporomandibular joint (TMJ) primary.

Patient A:

Patient A is a 18-year-old female presented with chief complaint of jaw locking, worse upon awakening. MRT confirmed a cervical primary condition. Cone Beam Computerized Tomography (CBCT) was taken and revealed a closed lock reduction (disc displacement without reduction), military neck (mild kyphosis), ligament laxity, and scoliosis. Decreased space was noted between C1-Occiput, and C1-C2. The patient indicated she was a cheerleader and had sustained many falls. Her history appeared to corroborate the MRT, which suggested that the temporomandibular (TM) disc displacement being secondary to cervical spine issues.

Dental Treatment Protocol: The patient was prescribed a nighttime deprogramming orthotic. This not only reduced the clenching events and their duration, but also guided the condyles into centric relation with each "clench." The goal of this initial intervention was to control nighttime parafunction, as well as to relieve excess upper trapezius firing due to the same parafunction. Within a few days of using the nighttime orthotic the patient noted over 90% reduced early morning "locking."

Chiropractic Treatment Protocol: The MRT was found to be an indicator of the most neurologically irritated area at that time and not a chiropractic diagnosis. SOT indicators found that the patient had an unstable musculoskeletal system leading to the overcompensation of the musculoskeletal system and the overloading of the cervical spine

The diagnosis was a category two (sacroiliac joint hypermobility syndrome) with lumbar, thoracic, and cervical joint fixations. Sutural compression and tensions in the cranial facial structures with associated myofascial restriction from the primary TMJ muscles (masseter, ptyergoids, and temporalis). The cervical primary diagnosis from Dr. Shirazi was used as an indicator for a musculoskeletal imbalance that needed diagnosis and treatment.

Category two [4] SOT blocking protocols were performed including the use of a trochanter belt with ancillary techniques performed including Iliofemoral, psoas /diaphragm release, and 1st rib manipulation. Prior to category two blocking tension was released in the dural membrane using an SB+ blocking procedure. Cervical compaction testing elicited a positive result which was cleared with active and passive manual cervical manipulation associated with step one and two of SOT sutural cranial techniques. The TMJ imbalance was treated by releasing the cranial sutural tension and

distortion of the craniofacial structures along with soft tissue manipulation around the TM joint to help reposition the TM disc. In order to the TM disc position it was communicated to the dentist that prolotherapy would be important to help reduce retrodiscal tissue laxity.

Dental Chiropractic Treatment: After cervical spine issues were addressed and patient treated with SOT and cranial protocols, a day orthotic was fabricated in the same centric relation position associated with symmetrical cervical positioning. The orthotic was to be worn mostly when exercising and especially when cheerleading. During that time, in coordination with the chiropractic care prolotherapy was initiated on right and left posterior joint space, to reduce ligament laxity and facilitate joint stability without the day or nighttime orthotics.

Six months after treatment was initiated the patient no longer had any jaw pain or had TMD, posturally the spine was found in a more symmetrical AP plane, and the space between C1-occiput and C1-C2 was improved.

Patient B

Patient B is a 40-year-old male presented with chief complaint of jaw clicking with intermittent locking, ear congestion and pain, and neck pain. Motor Reflex Testing confirmed a TMD Primary condition. CBCT was taken and was discovered cervical subluxations, retruded condylar position, disc displacement with reduction (clicking and popping), calcified stylohyoid ligaments as well as gonial notching, both of which are common signs of a history of nighttime parafunction. Patient was an avid golfer and plays baseball. It was considered that positional changes in golf may have contributed to his presentation.

Dental Treatment Protocol: A daytime orthotic and nighttime deprogramming orthotic were prescribed at the same time. The goals were not only to reduce the clenching events and their duration at night, but also guide the condyles into a centric relation when the patient chews or swallows during the day. The nighttime appliance focus was to control nighttime parafunction, as well as to relieve excess upper trapezius firing due to the same parafunction. As MRT presented a TMD primary condition, greatest success can be achieved by clearing the neurology of the structural injury of greatest importance to the ANS.

Chiropractic Treatment Protocol: The diagnosis was a category two (sacroiliac joint hypermobility syndrome) with lumbar, thoracic, and cervical joint fixations. Sutural compression and tensions in the cranial facial structures with associated myofascial restriction from the primary TMJ muscles (masseter, ptyergoids, and temporalis).

Category two blocking [4] protocols were performed including the use of a trochanter belt with ancillary techniques performed including Iliofemoral, psoas /diaphragm release, and 1st rib manipulation. Tension was released in the dural membrane prior to category two blocking using an SB+ blocking procedure. The patient's TMD was treated by

releasing the sutural tension and distortion of the craniofacial structures along with soft tissue manipulation around the TM joint to help reposition the TM disc.

Dental Chiropractic Treatment: As the patient was wearing the day and nighttime orthotics, SOT chiropractic adjustments commenced and during the course of the patient's use of the orthotics. When cervical spine was 'corrected' and in a symmetrical stable position, prolotherapy was utilized to recapture joint displacement.

Five months after treatment was initiated the patient no longer had any jaw pain, had TMJ stability, the spine was stabilized in a lateral plane, and ear symptoms had resolved. While the patient was under chiropractic care he had reduced cervical spine pain however as the patient felt better he attempted to reduce the chiropractic treatments and subsequently his neck pain increased.

Patient C

Patient C was a 15-year-old male presented with chief complaints of jaw pain and tension type headaches, constant. MRT confirmed a cranial and TMD primary condition, which was clinically assumed to be due to the repetitive nature of the mandibular condyle contacting the temporal bone of a patient. CBCT was taken and was discovered cervical spine intersegmental asymmetry, retruded condylar position, and severe condylar remodeling. The severe condylar remodeling was assumed to be caused subsequent to being kicked in the jaw while on the floor and then being surgically corrected (mouth wired shut) to that dysfunctional position. The patient had a "heart shaped" condyle, a calcified stylohyoid ligaments as well as Gonial notching, which are signs of a history of nighttime parafunction. The patient is a young high school student who plays the tuba in the marching band.

Dental Treatment Protocol: A daytime orthotic and nighttime deprogramming orthotic were prescribed at the same time. The focus was to not only reduce the clenching events and their duration at night, but also guides the condyles into centric relation when the patient chews or swallows during the day. The orthotics also prevented the condylar repetitive stress to the temporal bone eminence day and night. Of note, the nighttime appliance was not rigid, which had as its additional goal of allowing normal cranial flexion and extension, and also allowing for normal cranial bone and suture compliance. The nighttime appliance was to control night parafunction, as well as to relieve excess upper trapezius firing secondary to this TM parafunction.

Chiropractic Treatment Protocol: The MRT was found to be an indicator of the most neurologically irritated area at that time and not a chiropractic diagnosis. SOT indicators found that the patient had an unstable musculoskeletal system with significant muscle tension and distortion.

The SOT diagnosis found an unstable category two [4] with thoracic spinal joint fixations. Sutural compression in the cranial facial structures was found associated with myofascial restriction in the primary TMJ muscles (masseter, ptyergoids, and

temporalis). There was a dural torque pattern that transmitted down to the upper cervical spine, which appeared to contribute significantly to the cervical segmental asymmetry and headache symptoms.

Category two blocking protocols were performed including the use of a trochanter belt with ancillary techniques performed including Iliofemoral, psoas /diaphragm release, and 1st rib manipulation. Tension was released in the dural membrane prior to category two blocking using an SB+ blocking procedure. The TMD was treated by releasing the dural and sutural tension and distortion of the craniofacial structures along with soft tissue manipulation around the TMJ to help reposition the TM disc. In this case it became clear that the only way for this patient's specific condition to resolve was through extensive cranial treatment

Dental Chiropractic Treatment: During the process of the patient wearing day and nighttime orthotics, chiropractic adjustments were utilized through the course of dental and TMJ modifications. Initially acupuncture was attempted but the patient was not capable of tolerating the needles. Therefore electro- acupuncture was attempting and used successfully in conjunction with the oral appliance therapy and SOT cranial adjustments to reach maximum medical improvement, which in this case was a complete resolution of presenting symptoms.

Five months after treatment was initiated patient no longer had any jaw pain, had a stable TMJ, the cervical spine was stabilized in a lateral plane, and was no longer having headaches.

Discussion:

In these three cases each patient presented with jaw, head, and neck pain but with each case the treatment varied. The MRT and other dental and SOT chiropractic related tests helped guide patient care. MRT is a safe, simple, repeatable and method to differentially diagnose the region of the body contributing to the patients presenting symptoms and help guide treatment for each specific patient. Clinically the MRT can be a very useful tool to determine how to prioritize patients' treatment particularly when a patient presents with spine/pelvic/foot or TMJ issues (i.e. multiple symptoms). Developing a methodology to prioritize an ascending versus a descending primary condition helps determine what part of the body should be treated and resolved first. As found clinically and with the three patients in this case report when the proper sequence is found, this can aid the therapeutic intervention. Also, MRT can help determine if there is not a structural component to their presenting symptoms, particularly where the patient complains of pain in the orthopedic structure, and therefore can help aid in determining if there is a referral source of that pain.

From a chiropractic SOT perspective instability in the kinematic chain above or below the cervical spine will create asymmetry and increased compensatory tension into the musculoskeletal system. While the MRT is an extremely valuable test to help guide

dental co-treatment and monitor patient progress the SOT chiropractic examination and treatment protocols are necessary to treat the patient so that they can have an optimal response to the dental interventions. At this time from an SOT standpoint it appears that when the MRT indicates an ascending or descending primary it is a sign of neurological irritation and not necessarily a musculoskeletal diagnosis to dictate chiropractic treatment.

Further study is indicated to evaluate how dentists and chiropractors can work together utilizing their varied diagnostic modalities [5]. Determining what may be the primary ascending and descending contribution to the patient's TMD presentation can be an essential part of the assessment and treatment process. The MRT gives the dentist a valuable tool to help guide their care and the SOT examination and treatment modalities offers the chiropractic valuable tools to facilitate the patients ability to adjust musculoskeletally to changes in occlusion or condylar position.

With case reports where there are no control groups or comparative sham procedures utilized there is always the chance of biased reporting. It is also possible with patient presentations that the improved clinical findings were related to a regression to the mean. However in these three cases it did appear that the patients' condition was chronic or stable and that care followed a progression of improvement consistent with the initial examinations and treatment rendered.

Conclusion:

In these three case reports dental and chiropractic diagnosis and treatment yield good outcome. Of interest is that while some of their symptoms were similar they all needed different types of treatment. Sometimes where the pain or dysfunction appeared to be located was not the region needed the maximum intervention. As with any case report no strong extrapolations can be made from the results or data, still there the clinical success suggests that further study is indicated into dental chiropractic co-treatment. This co-treatment study would seem especially important with patient that are presenting with both musculoskeletal and dental issues. Also when a dentist or chiropractor that is treating a patient with TMD finds their care is not creating the necessary outcome it may indicate the need for referral and co-treatment.

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Cranial treatment for a patient presenting with Down syndrome: A case report.
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Introduction:

Down syndrome or "trisomy 21" is a chromosomal disorder caused by the presence of all or part of an extra 21st chromosome. It is named after John Langdon Down, the British physician who described the syndrome in 1866. Often Down syndrome (DS) is associated with some impairment of cognitive ability and physical growth, and a particular set of facial characteristics. Individuals with Down syndrome tend to have a lower-than-average cognitive ability, often ranging from mild to moderate disabilities. A small number have severe to profound mental disability.

The incidence rate of Down syndrome in 2006 was estimated as one per 733 live births in the United States (5429 new cases per year) [1]. DS occurs in all ethnic groups and among all economic classes. Maternal age influences the chances of conceiving a baby with Down syndrome. At maternal age 20 to 24, the probability is one in 1562; at age 35 to 39 the probability is one in 214, and above age 45 the probability is one in 19. Although the probability increases with maternal age, 80% of children with Down syndrome are born to women under the age of 35, reflecting the overall fertility of that age group. There has been no evidence that a Down syndrome birth is due to parental behavior (other than age) or environmental factors.

While DS children are a high risk for many conditions (congenital heart disease, thyroid disorders, malignancies, gastrointestinal disorders, infertility, neurological, as well as ophthalmology and otolaryngology disorders), there are no specific treatments for DS and therefore DS patients will need to be treated on a case-by-case basis. The level of DS cognitive dysfunction between each child and with this particular case the cognitive dysfunction was significant. From a chiropractic standpoint ligamentous laxity can be a factor in treatment application and atlantoaxial instability can be a common finding with DS patients. The purpose of this case study is to investigate a DS patient's response to a specific cranial technique application.

Case Presentation

A 38-year-old female with Down syndrome was brought to this office by her mother to see if chiropractic treatment might assist her daughter's ability to function, thrive, and possibly improve her cognitive abilities. She had previously tried various medical interventions as well as acupuncture care with minimal to no results. The patient appeared to be mentally at the level of a five year old. She could not read or write. She was unable to independently dress, bath, or wash her own hair.

Intervention and Methods:

Since the patient's mother wanted to make sure that her daughter could have some improvement cognitively aside from standard sacro occipital technique (SOT) care the patient was also treated with cranial techniques. Upon cranial palpation and symptom presentation it appeared that a specific method described by DeJarnette (Exhalation Fault Cranial Adjustment) is used to increase general cranial function into its inhalation or flexion phase. The patient was able to understand and comply with the requests associated with the cranial procedure. On the following office visit due to the patient's adverse reaction to the cranial treatment, the reverse procedure was used. This specific method described by DeJarnette (Inhalation Fault Cranial Adjustment) is used to increase general cranial function into its exhalation or extension phase.

The Exhalation Fault cranial adjustment is performed with bilateral thenar pad contacts to mastoid processes. Patient exhales deeply and holds breath out as long as possible while the doctor's thenars direct mastoids lateral superior (indirect). Constant pressure is maintained to the mastoid processes while patient quickly inhales, then exhales and holds as long as possible. The procedure is repeated 6 times and then pressure is released to the mastoids. The Inhalation Fault cranial correction has the same contact however the patient inhales deeply and holds breath as long as possible while thenars direct mastoids medial posterior (indirect). Constant pressure is maintained to the mastoid processes while the patient quickly exhales, then inhales and holds as long as possible. The procedure is repeated 6 times and then pressure is released to the mastoids [2].

Results:

Following the initially office visit it appeared that the Exhalation Fault cranial technique appeared to adversely stimulate her nervous system. She became agitated and hyperactive which alarmed her mother. The patient's condition was then reevaluated and on the following office visit, to "antidote" the initial reaction the opposing cranial technique was used, the Inhalation Fault cranial adjustment which had a dramatic effect on the patient. Almost immediately following the adjustment she became calmer and more responsive to her environment.

Through continual application of the inhalation fault cranial procedure during subsequent office visits, 20 office visits over 4-6 months, and she began to recognize words such as store signs and billboards, something that was completely novel for her. She was able to begin the process of learning how to write and found that with help she was becoming capable of writing short notes. She even surprised her mother one day by dressing herself and washing her own hair without being asked to and without any outside assistance. As treatment progressed 4-6 months later she was beginning to be independent with her dressing, bathing, and washing her own hair as well as beginning some independent reading and writing. Around the 6-month point in care her mother passed away and this limited her ability to receive care at this office with the last visit occurring a few months later.

Discussion:

One aspect of chiropractic healthcare and particularly the system of SOT analysis and treatment is that there is an indicator-based system, which can relate to patient's response to care. In this manner, a treatment while therapeutically intended, can also function as a diagnostic process. In this case the patient responded adversely to an extension cranial fault adjustment and similarly to using positional preference for pain provocation or centralization to direct care, the patient's adverse reaction suggested that the opposite direction might be preferred. Using this logic a flexion cranial fault adjustment was performed and the patient had a profound positive response.

In an attempt to understand why the inhalation fault maneuver was so beneficial for this patient it was theorized that her brain was overwhelmed by efferent stimuli and by slowing down the rate the stimuli reached her brain; her brain might be capable to differentiate which stimuli were most important and which could be ignored or at least given secondary consideration. Further research is needed to test this hypothesis or to determine if it was due to some other factor or if even the intervention is not universally applicable for Down syndrome patient and instead was effective only on this one individual.

SOT cranial treatment was also found effective for a DS child with severe tachypnea, a history of chronic pneumonias, a failure to thrive, chronic fevers of unknown origin, and a possible atrial-septal defect [3]. There may be some basis for cranial treatment for DS patients since as compared to normal DS children have a larger cranial base angle; reduced elevation of sella; reduced anterior and posterior cranial base lengths as well as reduced anterior and posterior face heights [4].

From a cranial diagnostic standpoint there are craniodural balanced tension patterns, which tend to vary physiologically, creating normal cranial compliance to the ebb and flow of CSF pulse waves or fluctuations. In pathological or subclinical states some patients will have either more tension (cranial extension or exhalation), which creates an increased anterior and posterior cranial base length or less tension (cranial flexion or inhalation), which creates a decreased anterior and posterior cranial base length. The cranial inhalation fault adjustment in this patient's case may have improved cranial dural and helped to increase the patient's decreased anterior and posterior cranial base length [5].

It is difficult to clearly know whether or not this patient may have been at a tipping point just before coming into the office and the treatment was coincidental to her remarkable change in cognitive function and ability to become independent. What was clear is that the patient's mother had not seen any shift in two decades with her child's behavior prior to the 2nd office visit. It is also worthy to note that the first treatment appeared to create agitation and had an adverse effect, so the subsequent office visits and her response could not be solely attributed to satisfying the doctor or mother.

Conclusion:

Without a control group or comparative sham procedure analysis it is difficult to extrapolate the finding of this one case. However as a qualifier this patient was evaluated and treated when the clinician was new in practice and had not yet perfected his skills of cranial diagnosis and treatment. So it is both likely and possible that at this time (years later) he would have been able to assess that the patient so that the initial treatment might have been what appeared to be the appropriate cranial adjustment. However it is interesting to note that the cranial adjustment itself had a significant effect both when performed inappropriately and appropriately so that experience and skill in application of cranial techniques are suggested. Further research is indicated to determine if other patients with Down Syndrome might respond similarly to cranial adjustments.

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Occlusal cranial balancing technique.
Gerald H. Smith, DDS, DNM

Introduction:

Occlusal Cranial Balancing (OCB) is a technique that can be used as a comprehensive diagnostic and treatment system for balancing the occlusal cranial complex. The OCB System is based on the concept that dental occlusion functions as the self-correcting mechanism for balancing the cranial bone and meningeal patterns of tension. OCB technique is based on the use of five palpatory cranial indicators as a diagnostic system to evaluate dental cranial imbalances. The five indicators are theorized to provide a quick, accurate, non-invasive, palpatory, 3-dimensional diagnosis of dental cranial distortions [1]. It is also suggested that this diagnostic system can be used to determine where occlusal support should be placed to help stabilize the dental cranial complex and craniosacral system. OCB technique was developed in Langhorne Pennsylvania with the patient's consent and was part of the dentist's normal procedure for guiding and rendering treatment.

Case Presentation:

The treatment was provided in January of 2010 on a 59-year-old female who had been suffering facial pain for 25 years. The patient's facial pain pattern occurred soon after her mercury fillings were removed and her occlusion was iatrogenically modified.

Methods and Intervention:

Observations: Palpatory cranial evaluation revealed the following clinical findings:
All cranial evaluations were performed in the dental chair with the patient in a supine position.

1. The mastoid position was evaluated by bilaterally comparing the relative position of the mastoid tips in a sagittal and vertical plane. There was a balanced mastoid position with non-occlusal contact whereas a right anterior positioning of the mastoid was found with occlusal contact.

2. The greater wings of the sphenoid were palpated to evaluate their relative position in a sagittal, vertical and horizontal plane. There was right anterior sphenoid position without occlusal contact whereas increased right anterior positioning of the sphenoid was found with occlusal contact.

3. Bilateral placement of the palms over the vault (parietal) area of the skull was used to palpate CSF pulsations that are purportedly independent of cardiovascular or pulmonary influences. This specific type of CSF pulsation is called the primary respiratory mechanism (9 –14 cycles of expansion and contraction). The

pulsation's amplitude was used to assess symmetry and quality (weak or robust) of motion. Without occlusal contact the pulsation rhythm was strong and regular whereas with full occlusal contact the amplitude was weaker and irregular.

4. The cranial sidebend assessment is easily performed by placement of the palm of one hand directly under the squamal portion of the occiput while the thumb and middle finger of the other hand straddles the greater wings of the sphenoid. By means of gentle palpatory pressure the clinician can ascertain the strain pattern present within the occipital and sphenoid bones (sphenobasilar symphysis area). If the strain pattern bends toward the patient's right side, the lesion or distortion pattern is termed a right sidebend lesion. Cranial palpation revealed a right sidebending lesion without occlusal contact. With occlusal contact there was a worsening of the right sidebending lesion. Once a baseline pattern is noted, the doctor maintains the same hand position and the patient is asked to make complete contact of all teeth. If the occlusal schemed presents a malocclusion (this could be a minor contact interference on one tooth), the strain pattern has been found to often change clinically and in many instances the original distortion will worsen.

5. Normal sphenobasilar (SB) motion involves compliance (termed flexion) of the SB, which will be expressed with a slight inverted "V" shape pattern. Congruent with the SB flexion motion, the occiput exhibits a caudalward motion of the base of the occiput on inhalation. Clinically some patients who have experienced physical traumas (whiplash injuries, inappropriate orthodontic treatment, falls, etc.) will exhibit an occipital motion, which rises with inhalation, signifying an extension type motion. This reverse motion places an additional tension on the entire dural tube down to the sacrum. Without occlusal contact this patient had normal occipital motion on inhalation; with occlusal contact her occipital motion moved superiorward with inhalation, which signified an extension type motion.

Thin strips of 24-bond paper were used to test for occlusal support. Placement of one sheet between the coupling of the upper and lower right first bicuspids neutralized the five cranial indicators and produced a balanced cranium. Functional muscle testing [2] revealed support was needed on the lower first bicuspid tooth. A resin shim the thickness of a sheet of typing paper was bonded on the lower right first bicuspid tooth.

Further testing revealed presence of a left foot pronation and tender Shock Point (an anatomical point located at the left side juncture of the zyphoid process and sternal body). The Shock Point diagnosis was established by Robert Fulford, DO. Fulford postulated that since the lungs were lower on the left side of the chest due to heart position and upward pressure on the right by the liver, physical trauma to the body would result in an inspiratory breathing motion coupled with the fascia being pulled up and inward at the juncture of the ziphoid process and sternum. This action often resulted in a "spastic" diaphragm that would linger long after the post-trauma healing period. Diagnosis is made by placement of the tip of the small finger into the soft tissue area at the juncture of the ziphoid process and sternum. Any presence of pain or discomfort was interpreted as a

spastic diaphragm. The connection of a spastic diaphragm with this patient may have been associated with malocclusion, which can often affect upper cervical function and have an affect on the phrenic nerve (C3-5), which innervates the diaphragm.

Treatment:

Treatment involved correction of the cranial lesions using a cranial therapeutic procedure to release the distorted tension within the structures. The specific sequence began with the zygomatic bones and then the external and internal ptyergoids, pre-maxilla, maxillae and various suture areas were released. By placing one finger on the acupuncture point GV20 and another finger on the other hand on the structure to be released an unwinding process can occur whereby the cranial meningeal tension dissipates. Following the cranial balancing the diaphragm was relaxed and a bonded occlusal support was applied to balance the occlusion. The pronation was corrected by placement of a pair of flexible 3.5mm insoles as discussed by Rothbart [3].

Results:

At the patient's initial office visit the patient stated that her pain level was a 7 on a scale of 1- 10 where 10 was the worst. Immediately following treatment the patient's pain level was reduced to zero and she has remained pain free since January 19, 2010. The patient also reported that her posture improved and that she felt an overall sense of relaxation and occlusal comfort for the first time in 25 years.

Discussion:

Several theories provide a global view of how stability is achieved in the human body. Posture and occlusion are intimately linked; one study showed that changing occlusion affected body posture and balance and changing pedal dynamics affects dental occlusion [4]. Rothbart has described how postural distortions emanating from the feet can affect muscle and structural alignment in the occlusion and facial bones. Rothbart theorizes that there are two primary foundations, the feet and maxillae, which directly affect the center of gravity of the pelvis along with the fascial, dural membrane, ligamentous, muscular, and osseous systems of the body [3]. Structural imbalances change function and unless the foundations are corrected most symptoms cannot be resolved by treating the compensatory mechanisms alone. If the pedal dynamics or occlusion are out of balance then a compensatory change occurs between these structures. Generally the cranial sutural and meningeal system of balanced tensions can be affected to the level that the subtle CSF pulsation can be affected and balance between the cranium and sacral regions [5] are likewise affected.

Every time one swallows or chews the teeth contact. If the teeth are in proper alignment the pressures generated are believed to re-establish balance to the head and neck as well

as the related skull bones and dural membrane systems. Clinically it has been observed that patients who have an optimal bite relationship with less TMJ disorders tend to have fewer medical problems. Whether this is due to generalized less physical stress and its affect on health or if there is a direct relationship has yet to be determined.

The use of the five cranial indicators helped to create pre and post palpatory indicators to help guide treatment. With this analysis a preexisting structural distortion pattern was found related to the patient's occlusion and when the patient's muscles were functionally assessed [2] there was reduced capacity to sustain force when in occlusion compared to following when care was instituted. Upon correcting foot pronation and stabilization of the occlusion with a resin-bonded shim not only were the cranial indicators balanced but functional muscle tests also improved dramatically.

While a placebo effect could have been involved with the patient's outcome, what makes actual physical intervention seem to be a controlling factor is that the patient was not cued into what to expect from each intervention. Corroborating changes in functional muscle assessments as well as utilizing the five cranial palpatory indicators a system of analysis with crosschecks helped to rule out therapeutic changes solely due to patient suggestion. The dramatic changes found temporally to the interventions also seemed to show a relationship between the treatment and patient's resultant change in symptomatology.

Conclusion:

One of the key components for enhancing structural stability can be the balance of the occlusal cranial complex. The development of the five cranial indicators used with the OCB technique provided in this study a diagnostic and treatment solution for achieving a significant improved clinical outcome. Greater study is indicated to determine what subset of patients best fit the criteria for this type or diagnostic and treatment method. Further research is needed to evaluate if this care can be generalized for the TMD population at large.

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Can chiropractic adjustments help decrease the incidence of acute otitis media?

Melissa D. Sonners, DC

Introduction:

While there are different types of ear infections, acute otitis media (AOM), meaning infection and inflammation of the inner ear, is the most common. AOM affects three out of four children by the time they reach age 3, making it the most common illness in babies and young children [1]. Due to their developing immune system, children are more prone to getting illnesses and infections. Other contributing factors to the high incidence of ear infections in children can include; pacifier use, exposure to tobacco smoke, exposure to other children with illnesses (such as in daycare centers), colds, food sensitivities and allergies [1].

Traditional treatment of AOM has involved antibiotic therapy and the use of "tubes" for resistant types of AOM. Unfortunately, some of the bacteria that can cause AOM have become resistant to antibiotic due to the overuse of antibiotics for colds and other viral infections.[2] When bacteria become resistant to antibiotics, those treatments are then less effective against infections. This means that several different antibiotics may have to be tried before an ear infection clears. Antibiotics may also produce unwanted side effects, such as nausea, diarrhea and rashes [2]. Antibiotic therapy has been shown to provide little clinical benefit while promoting bacterial resistance. For most children, delayed prescribing is not likely to have adverse longer-term consequences, and treating such children with antibiotics immediately may not alter longer-term outcomes.

This awareness in the allopathic field has led to a treatment protocol called the 'wait-and-see prescription' (WASP). The WASP "approach substantially reduced unnecessary use of antibiotics in children with AOM seen in an emergency department and may be an alternative to routine use of antimicrobials for treatment of such children [2]." When parents have a difficult time attempting the wait-and-see approach, chiropractic care offers a reasonable therapeutic option, due to its low risk and emerging evidence supporting its efficacy for the treatment of pediatric AOM.

Objective:

To examine the effectiveness of chiropractic care as an alternative in relieving ear infections and improving overall health and well-being in the pediatric population.

Clinical Features:

Two sisters, Sister A, a 2-year-old and Sister B, a 1-year-old, were brought to our office for chiropractic evaluation and care. They had both been suffering from chronic ear infections since birth. Both girls were on inhalers and allergy medicine, and were sick

every week, according to their mom**.**

Specifically, Sister "A" (2 years old) was started on (5/9/07) saline drops before each feeding and then later (10/9/07) Augmentin 600/5ml ½ tsp. 2x/day for 10 days and (12/12/07) Omnicef 250/5ml ½ tsp 2x.day for 10 days. A year and a half later (5/4/09) she was prescribed Zyrtec syrup 1 tsp/day, as well as Singular. Five months later (10/28/09) she was prescribed Augmentin ES 600/5ml 1 tsp 2x/day for 10 days. Test results for the flu were positive (10/29/09) and she was given Tamiflu 3/4 tsp 2x/day for 5 days, Augmentin chewable 400 mg 2x day for 10 days, and Xopenex 2 puffs every 6-8 hours. On 12/18/09, and again on 2/6/10, she was prescribed Omnicef 250/5ml 1 tsp 1x/day for 10 days.

Specifically, Sister "B" (1 year old) initially was given a full nebulizer treatment of Xopenex (5/4/09) and was then prescribed (5/6/09 and 5/7/09) Xopenex 2 puffs every 6-8 hours. Vusion cream that was used (8/17/09) for diaper rash was ineffective, so she was prescribed Cortaid 3x/day for one week and Bactroban 3x/day for one week. Two months later (10/7/09) she was prescribed Amoxicillin 400 ml 2x/day for 10 days. Two months following (12/1/09) she was prescribed Zithromax 200mg/5ml and Xopenex 2 puffs 3x day, with Augmentin 600/5mls 2x/day for 10 days later in the month (12/23/09).

With each ear infection, they were treated with one to three rounds of antibiotics, which gave them diarrhea, vomiting and diaper rash. The girls' pediatrician recommended that "tubes" **(**myringotomy) be put in their ears. Ear tubes, or tympanostomy tubes, are small tubes open at both ends inserted into the incisions in the eardrums during myringotomy for children with chronic unresponsive AOM. Their parents, after investigating various options, decided to try what they perceived to be a lower-risk conservative intervention, chiropractic.

Method:

The girls were both seen once a week for nine weeks and then every other week for eight weeks. The chiropractor assessed the children using motion palpation to assess sacroiliac joint (SI joints) position and/or fixation and then using the findings to direct treatment. Sacro-occipital technique (SOT), cervical stairstep, occipital condyle and dollar sign assessment and corrections were used to treat cervical, occipital bone imbalance and SI joint imbalance. Toggle recoil (light force) was used on resistant regions of reduced intersegmental motion in the cervical region. In the thoracic region an activator was used at thoracic spine, based on decreased intersegmental motion, increased tone, and patient's response to palpation. Gluteal crease deviation was used to indicate anterior sacrum position ipsilaterally, and was corrected with Logan Basic sacrotuberous ligament contact. In general, chiropractic examination revealed the following vertebra subluxation patterns in Sister A: C1, C3, C7, T4, T6, T12, L1 and L5, and revealed the following vertebral subluxation patterns in Sister B: C1, C2, C5, T3, L2 and S2.

Results:

Both patients' responses to care was positive. After the first three visits, the patients' mother reported noticing that both girls had less mucus coming out of their noses and their eyes seemed clearer. At the end of the nine weeks (9 office visits) both patients had not had any ear infections or colds. After seventeen weeks of care (a total of 13 office visits) the patients' conditions had completely resolved. Mom reported noticing a big change in both of her daughters. They had made it through allergy season for the first time without any medications. No sick doctor's visits were warranted. She also noted that Sister A's eyes looked much healthier, and Sister B's digestion had become more regular than ever before.

Discussion:

Although it is challenging to definitively suggest the care created the change in symptoms, it is notable that both girls, for the first time, got through cold season without any ear infections. It is important to note the other changes reported by the patients' mother. Improved digestion, less mucus production, and clearer eyes were all associated with improved health and general well-being.

As recent research has found a relationship between hereditary factors and spinal disc degeneration [3], it could be postulated that this congenital type of spinal similarity might also be associated with related non-musculoskeletal type presentations that could have spinal – autonomic nervous system components. Ussher discussed the relationship between spinal curvatures and visceral dysfunction [4], lending support that a relationship may exist between AOM and craniospinal systems since both sisters' AOM responded positively to spinal and cranial manipulative therapy. Pickar supports this contention, describing how "one mechanism underlying the effects of spinal manipulation may, therefore, be the manipulation's ability to alter central sensory processing by removing subthreshold mechanical or chemical stimuli from paraspinal tissues. Spinal manipulation is also thought to affect reflex neural outputs to both muscle and visceral organs [5]."

By balancing the spinal and cranial systems this could have possibly removed nervous system dysafferentation, and by "removing subthreshold mechanical or chemical stimuli from paraspinal tissues [5]," a positive response occurred for these two sisters. Chiropractic care may offer specific techniques that can improve symptoms of ear infections by increasing drainage, removing any excess pressure on the eustachian tubes caused by a neuromusculoskeletal misalignment, and offering parents a viable alternative to the wait-and-see approach.

Conclusion:

In both cases chiropractic adjustments appeared related to the patient's improvement in health status. Chiropractic care may be an effective and natural option for parents seeking

relief for their children suffering from ear infections. Due to the increasing incidence of antibiotic-resistant bacteria, other options should be researched and offered for parents before prescribing antibiotics for AOM. Greater study is needed into chiropractic conservative care for the treatment of AOM to discern which children may be good candidates for low-risk interventions.

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Utilizing sacro occipital technique chiropractic methodologies on an equine: A case report.

Jean E. Thompson, DC, Heidi Bockhold DC, Charles L. Blum DC,

Introduction:

Chiropractic care in the field of veterinary medicine is something that has taken place for years although there are not much published research on chiropractic treatment of canines, but apparently treatment appears to represent low risk [1]. In the recent past specific certification and instruction for chiropractors has been taking place. Utilizing chiropractic methods of analysis and treatment is still in the formative stages. In this case report we utilized a chiropractic technique called occipital fiber analysis and treatment (OFT) [2], which is a method within sacro occipital technique (SOT) used to analyze and treat thoracic, lumbar, and sacral segments. The rational for using OFT is to find regions of the body that have some interrelationships through direct musculoskeletal and indirect reflex to the occipital region, spine, and possibly to visceral referred pain pathways [2]. While chiropractic care has been used on equines for years its evidence base is slowly emerging [3-5]. This study investigated whether the OFT could be found in canines and whether a treatment based on OFT would yield any response.

Case Report:

AB, a 12-year-old Dutch Warm Blood began having shortness of breathe during work as a level 3 Dressage competitor. She was diagnosed with a sinus infection and treated multiple times with different antibiotics. She could not perform due to her condition.

Methods and Intervention:

OFT may be of value for treatment of various conditions found within animals such as equines, canines and felines. Occipital Fibers were analyzed on a 12-year-old Dutch Warm Blood and their relationship to corresponding spinal levels was verified. Comparative anatomy was taken into consideration (18 thoracic vertebrae, 6 lumbar vertebrae, and 5 sacral segments are present in the equine) and examination for relationships between the occipital fibers and the standard corresponding vertebrae as well as with the adjacent vertebrae were identified. The procedure was performed in Georgia at the horse's barn with the owner's consent.

Occipital Fiber analysis and treatment was performed while the horse was standing for analysis. Occipital Fiber 2, line 2, was found and corresponded to a tender T3 nodule. The horse was tender to palpation on the maxilla and frontal bones bilaterally. Relating to the T3 syndrome, this horse also had subluxations at C2 and the sternum. T3 was adjusted (posterior left subluxation) and chiropractic manipulative reflex technique (CMRT) was performed after neutralization of the occipital fiber. The CMRT included lung massage, intercostal massage and a diaphragm release. Tenderness was determined

by the horse's reaction to pressure in various regions whereas some points of palpation did not elicit any reaction in other areas. Palpation of the points of "tenderness" also noted regions of increased local swelling and had a different texture compared to regions that the horse did not react to during palpation.

Results:

Following the occipital analysis and treatment procedure the horse took a deep breathe of air and began to relax. The occipital fiber was no longer swollen and boggy. The maxilla and frontal bones remained tender.

Twenty-four hours post treatment AB's symptoms were much worse. She was depressed, refused food, was very restless, and stood and threw her head up and down violently. The owner was quite upset. Thirty hours post treatment the horse threw her head one more time and a large amount of dark thick mucus came out of her mouth and nose. Again AB was able to take a deep breathe of air. She also walked over to her hay and began eating. For the next 12 hours she continued to drain from her nose as well as cough up thick mucus. AB showed so much improvement that the owner decided to turn her loose in the pasture. She bucked and galloped off (something she had not done for 2 months). Five days post treatment the horse was put back into work. Sixty days after the first treatment the occipital fibers and indicators came back. The above procedures were repeated. Months later AB continues to do well, she has returned to full work and competition.

Discussion:

In bipedal humans the rational for OFT rests upon visual and vestibular righting mechanisms, which occur as a method of accommodation to keep the head upright and parallel to the horizon. Of interest is whether these reflexes could be found in quadrupeds and if these reflexes were similar to what has been found clinically in bipeds. Chiropractic care of equines has been found effective in the treatment of the kinematics of back and limbs in equine with clinically diagnosed back problems [4] as well as even improving spinal mechanical nociceptive thresholds in horses without clinical signs [5]. In a prior related study OFT and CMRT had been used successfully to treat an equine with a gastrointestinal disorder [3]. What this study investigated was whether animals and specifically equine also might have these reflex patterns similar to humans. It did appear from the horse's response that there was a positive correlation between OFT and CMRT typically applied to humans when applied to the horse in this study.

The response by the equine exhibited by a significant release of mucus as well as significant improvement was novel for this horse and pleasantly surprised its owner. Whereas the equine's response to care may have been coincidental the temporal nature of the response coupled by the prior unresponsiveness to any other therapeutic intervention makes a relationship compelling.

Conclusion:

In a single case report investigating an animal that has limited ability to share information pre and post treatment it is difficult to make certain statements regarding a mode of analysis and treatment. However based on the owner's interpretation of the horse's response before and after treatment there was reason to believe that some positive change had occurred. Due to these findings it is reasonable to assume that further investigation into the use of OFT and CMRT for equines and possibly other animals is warranted.

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Category II and incontinence: A case report.
Tara Tweg, DC

Introduction:

Clinically a relationship has been found with patients that relates to incontinence disorders and low back pain. Following motor vehicle accidents the type of incontinence most often took the form of "urgency." For the purposes of this report urgency is described as the sudden compelling desire to urinate.

When this relationship existed it was found that the low back pain consistently was diagnosed as a category II (sacroiliac joint hypermobility or sprain syndrome). Howat notes that a category II weight-bearing separation causes latissimus dorsi muscle contraction and subluxates the 6th thoracic vertebra [1]." He notes that this pattern of stress tends to commonly affect L2, "the lowest point of the sympathetic chain, feeding into the lower mesenteric ganglion and responsible for the caecum, lower part of the large intestines, and the urogenital system [1]." Since clinically a relationship between urgency and low back pain has been found, it was considered that therapeutic relief of the low back pain might help to improve a patient's urgency.

While it is theorized that a relationship between incontinence and/or urgency may relate to low back pain, it is important to properly differentially diagnose a patient's presenting symptoms. These may include: Diabetes Mellitus, neurogenic bladder, urinary tract infection, cauda equina syndrome, disc herniation (L2-5), acute bacterial prostatitis (males), combat stress reaction
cystitis, pregnancy (females), primary prostate cancer (males), spinal fracture, weak pelvic-floor muscles, and psychogenic retention.

The purpose of this case report is to investigate whether a somatovisceral relationship between category II presentations and urgency exists and if a there could be relationship between treatment of sacroiliac sprains and the improvement of incontinence.

Case History

The patient described in this study is a 13 year old female with a prior history that included sprained right and left ankles, attention deficit disorder (ADD - inattentive type), rare occasion bed wetting at age 3 and 4 (fully toilet trained at age 2). She presented as an intelligent yet anxious child taking medication for ADD (Concerta 54mg daily). Her present complaints focused on incontinence and mainly urgency. On occasion in the past, she was not able to hold her urine before reaching her bathroom at home following a day at school. The incontinence worsened the summer prior to the office visit following a fall from a swing onto her back and into a lake.

The patient reports that she sleeps on her side, back and stomach. She has woken up often in the past with morning stiffness and cervical pain. She had an urge to go to the

toilet in the nights following the fall. This urge would wake her up and she was not able to reach the toilet in time. Following the fall in the water the frequency of incontinence was approximately 20 times/week during this past summer, July/August 2010.

Interventions/Methods:

An examination revealed sensitivity palpation at the cervical, thoracic, lumbar transverse processes, and sacral iliac joints. Evaluation found bilateral heel tension (reduced dorsiflexion), numerous cervical and upper thoracic subluxations, lack of lumbar spinous lateral motion, bilateral weak psoas muscles, and bilateral weak leg lift prone. Category II findings included sensitivity and hypertonicity at the left upper inguinal ligament, a positive arm fossa test, and pelvic torsion causing a supine physiological short left leg (1 centimeter). With the patient's presenting symptoms and examination it was determined that she suffered from incontinence (urgency) and a category II.

Treatment took place from August 26th through September 30th. August 26, 2010: bilateral psoas release, bilateral heel tension release, R and C technique (cervical and lumbar reflex guided adjusting), Carver thoracic adjustment, lumbar spinous medial to lateral mobilization, thumper massager machine, trapezius fibre T7, category II blocking (left short, left upper fossa), 10 minutes walk following blocks. August 31, 2010: Right psoas release, C3 spinous push, anterior T5-7, T4-5 right rib adjustment, Carver thoracic, and T8 adjustment. Category II blocking (left short, left upper fossa).

September 2, 2010: Category II negative, left psoas release, Cervical C3, C7 right adjustment diversified, Carver T5 adjustment, CMRT T4 left procedure. September 8, 2010: R and C technique, bilateral psoas release, left hip mobilization, Anterior T3 right rib adjustment. September 9, 2010: Right anterior humeral head adjustment, Traps T7, T4, T5 –X-bilateral adjustment, R and C technique. September 10, 2010: left psoas release, anterior T4, T5, T6 adjustment, Traps T7, T7 X-bilateral, left anterior humeral head adjustment, lumbar spinous mobilization. September 30, 2010: left psoas release, left anterior humeral head adjustment, bilateral diaphragm release, C3 left adjustment, Carver adjustment, Traps T7 (osseous release), T12 spinous mobilization.

Results:

A log of her incontinence was made to follow her response to care. On August 27, 2010 she noted at 5am she had a small leak just prior to reaching toilet. September 1st she was unable to get to a "port a potty" in time and soiled her underwear. September 2nd she had a small leak in pants in evening, September 7, 8, and 9 she had an incidence of "dribbling" prior to reaching toilet, and on September 10th noted a drop of urine in underwear prior to reaching toilet. September 24th 3:30pm patient reported having voided in her pants, September 25th there was a small incident in the am, and on September 29th there was a small leak prior to bedtime.

While the patient was clearly still having incontinence during treatment, of importance for the patient and parent was that the incidence of incontinence and frequency of occurrences were clearly lessening. There appeared to patient and her parent to be a clear relationship between reduced low back pain secondary to the patient's category two with the decrease in incontinence and urgency. The amount of urine voided was less and there was a full two weeks from September 10-24th with no incidences of incontinence. This was clearly an improvement from the chronic frequency of 20 occurrences per week, which had worsened following the low back injury. No side effects or risks are identified with the treatment rendered.

Discussion:

In this case study, there appeared to be a temporal relationship between an improvement in the symptom of incontinence with the correction of category II. When the treatments stopped, the incontinence resumed slightly at a lesser frequency with a smaller amount of voiding which suggests a possible need for supportive or maintenance treatments.

One hundred random case files were chosen of individuals who were involved in motor vehicle accidents to look for the number of people suffering from incontinence following the trauma. Of the hundred MVA cases, 97 cases were suffering from low back pain that was diagnosed as sacroiliac joint sprain/strain. Of these 97 people, 8 people (8.25%) of the people were also suffering from incontinence in the form of urgency. Two of the patients were male (2.06%) and six (6.19) of the patients were female; therefore it is likely that condition affects males and females and is not gender specific. It is suspected that the incidence of incontinence/urgency in correlation to low back pain is actually quite higher. For instance in the MVA study group during the history, not all patients were specifically asked if they suffered from incontinence. Most often, patients reported that they were uncomfortable discussing this issue as they felt that it was embarrassing. The patients also did not correlate their incontinence to their low back pain or to their car accident (trauma) and therefore were also not likely to mention it. So the incidence would likely be a minimum of 8% of sacroiliac joint sprain (category II) patients suffering from incontinence [2].

Another study found "an apparent association of low back pain with urinary incontinence was observed. Sixteen patients were investigated for organic neurologic and genito-urinary disease or deficit, which could provide a conventional explanation for the incontinence [3]." "Twelve of the sixteen patients had surgery (spinal fusion in 11 and total hip replacement in one), and four are awaiting surgery." Of significant they determined that "when surgery reduced low back pain successfully (11 of 12 patients), the urgency incontinence was cured or improved. The investigations did not reveal any neurologic or genito-urinary pathology in any patient [3]."

A study by Zhang et al [4] (n=13) were included in a chiropractic study due to urinary incontinent issues and chronic low back pain, neck pain and leg pains, (11 patients), prostate and macular degeneration (1 patient), and auto accident (1 patient). Nine

patients had chronic urinary urgency and frequency where they had to void at least 3 times at night. Before treatment, the average frequency of urination at night was about 3.8±1.17 times for all patients. The average history of urinary incontinence was 5±2.2 years from all subjects. After 1-8 weeks of chiropractic adjustments adjustments (contact is one inch under the coccyx and directed upward into the Sacral Plexus and Ganglion of Impar), the urinary frequency at night was significantly reduced from 3.8±1.17 to once a night ($P<0.001$). All 13 subjects demonstrated reduction of urination frequency at night [4].

In a literature review on "urinary incontinence and participation in sport and fitness activities was performed with a special emphasis on prevalence and treatment in female elite athletes. The highest prevalence is found in sports involving high impact activities such as gymnastics, track and field, and some ball games. A 'stiff' and strong pelvic floor positioned at an optimal level inside the pelvis may be a crucial factor in counteracting the increases in abdominal pressure occurring during high-impact activities [5]." Therefore a sacroiliac joint sprain could affect the function of the pelvic floor and in some instances be contributory to a subclinical urinary incontinence condition. However, anatomically there can be another relationship between the sacroiliac joint and urinary bladder function since it is controlled by the autonomic nervous system. The bladder body is innervated by the parasympathetic nervous system. This parasympathetic supply originates in the sacral portion of the spinal cord (S2, S3, and S4) and is called the pelvic splanchnic nerves. These are the motor nerves to the bladder. The sympathetic innervation originates from the thoracolumbar spinal cord (T10-L2) and travels through the pre-sacral plexus to innervate the bladder via the hypogastric nerves.

It would therefore seem reasonable that a trauma or injury to the sacroiliac joint could affect the nerves exiting from the sacrum, the pelvic splanchnic nerve (S2, S3, S4), which innervates the bladder. This stress or irritation to these nerves could then in some cases be associated with urinary incontinence. By eliminating the somatovisceral component of the incontinence it is theorized that this would subsequently improve the patient's urinary urgency also.

With all case reports it is difficult to clearly extrapolate a patient's response to the care rendered. There are various limitations such as regression to the mean, no control group, and no set of comparative sham procedures. It is also possible that the patient wanted to please and perhaps the improvement in urgency and incontinence was a psychological improvement and not necessarily a physical improvement. It is also possible unbeknownst to the patient or parent that there were psychological issues involved in the beginning of the summer and not the injury to the back when falling on the water that actually caused the flare up of incontinence. It is also possible that when her back pain improved that this allowed her to be more relaxed and capable of controlling her urine.

Conclusion

The purpose of this report was to investigate a possible relationship between low back pain (category II) and incontinence and if a relationship could be noted if an

improvement in urinary urgency would occur along with resolution of that low back pain. From a review of the literature, it was found that there are relationships between low back pain and incontinence. However what is novel about this case study is that trauma induced sacroiliac sprains in relation to incontinence had not been emphasized previously. Future research is required with a larger sample size to determine if SOT treatment might have a significant effect on incontinence or if a specific subset of patients with low back pain and urinary incontinence or urgency may have a somatovisceral component.

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Bruxism and temporal bone hypermobility in patients with multiple sclerosis.

David E. Williams DDS, John E. Lynch, PhD, Vidhi Doshi, G. Dave Singh DDSc, PhD, BDS, Alan R. Hargens PhD

Introduction:

In this study, we investigated the link between jaw clenching/bruxism and temporal bone movement associated with multiple sclerosis (MS).

Intervention/Methods:

Twenty-one subjects participated in this study (10 patients with MS and 11 controls). To quantify the change in intracranial diameter between the endocranial surfaces of the temporal bones during jaw clenching, an ultrasonic pulsed phase locked loop (PPLL) device was used. A sustained jaw clenching force of 100lbs was used to measure the mean change in acoustic wavelength (ΔL) as measure of intracranial distance.

Results:

In the control subjects the mean ΔL was $0.27mm \pm 0.24$. In subjects with MS the mean ΔL was $1.71mm \pm 1.18$ ($p < 0.001$). The increase in magnitude of bi-temporal bone intracranial expansion was approx. six times greater in subjects with MS compared to controls.

Conclusion:

Therefore, jaw clenching/bruxism is associated with more marked displacement of the temporal bones and expansion of the cranial cavity in patients with MS than in control subjects.

Chiropractic care of a child with sensory processing disorder, speech delay, constipation, and poor sleep: A case report.

Rebekah A. Wittman, DC

Introduction:

Sensory Processing Disorder (SPD) is a complex neurological disorder that impedes integration and processing of the five senses, vestibular system, and/or proprioception.[1] The original theory of Sensory Integration Dysfunction, by occupational therapist and psychologist A. Jean Ayres, is that deficits in processing sensory information from the body and the environment lead to sensorimotor and learning problems in children. This implies that the child is unable to properly "make sense" of the incoming visual, taste, smell, touch, sound, proprioceptive and/or vestibular information, and the child's response is exhibited through poor motor planning or behavioral problems.[2] The autonomic nervous system plays a key role in SPD in that it regulates the body's ability to perceive and adapt to environmental changes through modulation of sensory, motor, visceral and neuro-endocrine functions.[3] Sleep and gastrointestinal function are influenced by the autonomic nervous system and are often affected in many children, including those with SPD.

Parents often seek chiropractic care for their children for multiple reasons, including general aches and pains; muscle conditions; ear, nose and throat issues; and respiratory and digestive disorders. This is a case report of one child with SPD that showed improved speech, behavior, sleep and bowel movements while under chiropractic care.

Method:

A case report of a 3-year-old male that presented to Kentuckiana Children's Center with sensory processing disorder, speech delay, constipation, and poor sleep. Physical examination revealed vertebral subluxations in the cervical, lumbar, and sacral regions of the spine and tension along the coronal and temporal suture.

Initial treatment plan included chiropractic adjustments twice a week for 4 weeks, then once a week for 4 weeks, and chiropractic cranial therapy once a week for 8 weeks. Methyl B12 supplementation, joint compressions and sensory activities were also implemented. Laboratory recommendations included a comprehensive stool analysis, elemental analysis, urine porphyrins and food allergy panel.

Results:

At the 8-week re-evaluation, the child was having regular bowel movements every day. The child's mother also reported fewer tantrums and an easygoing demeanor. Sleep had improved, as well, and the child was sleeping through the night 4 out of 7 nights. Speech was also improved, and he was using three- to four-word sentences.

Seven months after the onset of treatment, the child continued to have regular bowel movements, was sleeping through the night, overall better behavior and relating to other children, and better speech. His mother noted that he could carry on a full conversation, although his comprehension still seemed a little slow.

Discussion:

The sympathetic division of the autonomic system helps the body cope with stressful situations which involuntarily leads to a series of reactions resulting in increased heart and respiratory rates and decreased gastrointestinal function. The parasympathetic division is concerned with conserving and restoring energy of the body. These two divisions are coordinated in an antagonistic way[4] Since children with SPD often overreact or under-react to sensation and have a difficult time restoring balance after a stressor or challenge, it is a reasonable assumption that these children have problems in other functions of the autonomic nervous system as well. This child benefited from chiropractic care by way of normal bowel movements, better sleep, better behaviors and better speech. It is hypothesized that these improvements were realized due to the impact that chiropractic adjustment and cranial work have on the autonomic nervous system.[5]

Conclusion:

Chiropractic adjustments and cranial therapy utilized in the care of this child may be the primary factor in the resolution of chronic constipation and poor sleep in a child who also has sensory processing disorder and speech delay. Although improvements in speech and behavior were also documented, additional factors may have played a large role. It is this author's opinion that additional studies and/or clinical trials are warranted to further understand the role of chiropractic adjustment and its impact on the autonomic nervous system.

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Effective Scientific Posters: Quick Reference

George R. Hess
[http://www.ncsu.edu/project/posters/NewSite/documents/QuickReferenceV2.pdf]

A poster is a visual communication tool.

An effective poster will help you …
… engage colleagues in conversation.
… get your main points across to as many people as possible.

Posters serve as …
» a source of information
» a conversation starter
» a summary of your work
» an advertisement of your work

Tips for Effective Poster Presentations

- Get your message across with effective visual displays of data and small blocks of supporting text. Think of your poster as an illustrated abstract.
- Tell readers why your work matters, what you did, what you found, and what you recommend. Avoid excessive focus on methods – it's the results and implications that count!
- Overall appearance. Use a pleasing arrangement of graphics, text, colors. Your poster should be neat and uncluttered – use white space to help organize sections. Balance the placement of text and figures.
- Organization. Use headings to help readers find what they're looking for: objective, results, conclusions, etc. A columnar format helps traffic flow in a crowded poster session.
- Minimize text – use graphics. Keep text in blocks of no more than 50-75 words – don't create large, monolithic paragraphs of prose.
- Text size. All text should be large enough to read from 1-2 meters, including the text in figures. Title should be larger, to attract attention from far away.
- Use color cautiously. Dark letters on light background are easiest to read. Stick to a theme of 2-3 colors. Avoid overly bright colors – they attract attention but wear out reader's eyes.
- Don't fight reader gravity, which pulls the eyes from top to bottom (first), and left to right.
- Include full contact information. You want to be found – the reader should not have to look up anything to find you.

Clean graphs show data clearly!

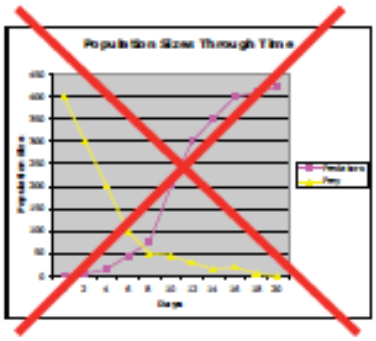
Desired message: Prey decreased as predators increased.
Focus on relationships – exact values are usually not important.

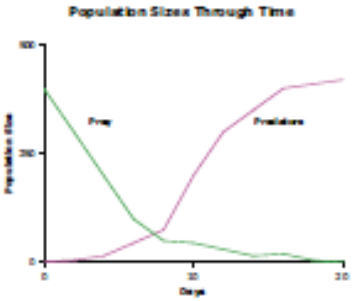
Eliminate "chart junk" to keep focus on data.
Grid lines, detailed ticks on axes, data markers, and grey backgrounds are not needed.

Label data directly, when possible.

Legends force reader to look back and forth to decode graph.

Message is now loud and clear!





Sample Case Report Poster Presentation

Names of Authors and Affiliations

INTRODUCTION

In the introduction section you describe the purpose of your poster presentation. Describe the importance of the topic, why the reader should bother to read this poster, and briefly summarize the poster's focus.

CASE REPORT INFORMATION

This is the place where you share the patient's gender, age, and any pertinent information. Why did they come to you for treatment, is there any unusual information about this patient, and any prior or current treatment they received?

INTERVENTION/TREATMENT

What treatment did the patient receive at your clinic? How long and how many treatments were rendered? Were any unusual tests performed and did they guide treatment?

RESULTS

What was the patient's response to your treatment? Can you objectively quantify their response with outcome assessment pre and post forms? Were there pre and post laboratory, imaging, or other type of findings?

A brief caption under a picture is helpful.

DISCUSSION

Can you give a research or "evidence" basis for why you think your treatment had the purported effect on the patient discussed in this poster?

DISCUSSION (Continued)

Why do you think that the patient would not have gotten better on their own without treatment or that some other treatment they received was not the reason for their response to care? What are the limitations to your study?

CONCLUSION

Summarize your whole poster in a sentence. How could future studies be improved and how is this one a call for further research?

REFERENCES

1. Block SM. **Do's and dont's of poster presentations**. *Biophysical Journal*. 1996; 71: 3527-9.
2. Harms M. **How to prepare a poster presentation**. *Physiotheraphy*. 1995; 81(5): 276.
3. Hess GR, Brooks EN. **The class poster conference as a teaching tool**. *Journal of Natural Resources and Life Sciences Education*. 1998; 27: 155-8.

2011-12 Sacro Occipital Technique Research Conference

To Be Announced

INSTRUCTIONS ON SUBMITTING ABSTRACTS

We are well aware that doctors in practice often see the submission of research to be daunting and we wish to encourage all interested doctors to submit a request for help if they want to participate, but need assistance. We are here to assist your process participating with presenting your research at this conference. With our assistance this year we are hoping that next year you might be in a position to help someone else who may be in a similar position to you at this time.

Categories of Sacro Occipital Technique (SOT) Related Research.

SOT related research is fairly open ended and inclusive of many aspects of investigative science, clinical experiences, as well as pertaining to historical presentations and other related perspectives. In general the submission should pertain in some way to sacro occipital technique, which includes but are not limited to topics such as:

- Traditional SOT Category Analysis and Treatment
- Use of Pelvic Blocks for Treatment
- Treatment or Theory Involving the Stomatognathic System
- Treatment or Theory Involving Temporomandibular Disorders
- Treatment or Theory Relating to Cranial Bone, Dural Membrane or CSF Flow
- Treatment or Theory Relating to Viscerosomatic or Somatovisceral Reflex Balance
- Any Treatment or Theory that could be Reasonably Related to SOT
- Dental Chiropractic Co-Treatment of Temporomandibular Disorders

Abstracts should be submitted in one of the following categories:

Basic Sciences. Includes the use of animals and computer-related research or investigation on cadavers, in fields such as anatomy, physiology, biomechanics, biochemistry, immunology, etc.

Diagnostic Sciences. Includes the evaluation of various diagnostic or analytical methods or instruments. Where new concepts are presented there should be accompanying data collection on normal and abnormal populations of patients. Clinical examination techniques such as palpation or x-ray and interexaminer reliability studies are encouraged.

Clinical Management. Includes clinical trials, retrospective studies and multiple case studies. The presentation of new adjusting/manipulation methods are encouraged but such presentations should include some clinical data collection on why the techniques should be considered.

Special Interest. Papers on history, anthropology, epidemiology, cost of care, standards of care and educational methods fall into this category. Philosophical papers will also be reviewed provided they follow formal philosophical argument with references rather than the presentation of personal opinion.

Deadline for Abstracts: to be announced – check SOTO-USA website: www.soto-usa.org

Publication. If your abstract is accepted for this conference it will be part of the Proceedings of the 2011-12 Sacro Occipital Technique Research Conference (SOTRC) and the Conference Proceedings may be published in the Journal of Vertebral Subluxation Research (JVSR).

Submission Instructions. Use the following form to submit your abstract directly to the SOTRC by e-mail. **Please remember that you must submit your abstract by e-mail**.

Please type your abstract in 12 point Times New Roman font, single-spaced. TITLE OF THE PRESENTATION SHOULD BE IN TITLE CASE ONLY. (This means that only the first letter of the words in your title is to be in uppercase.) Please list all authors, including degree(s), institutions/organizations, and contact information. Please note which of the authors will be the presenter. Abstracts should be no more than a maximum of three (3) pages in length. If you consider references to be necessary for your abstract, please submit a maximum of FIVE references only.

Sample Abstract. Here is a sample abstract to assist you.

Sitting Disc Technique: Video Myelogram Fluoroscopy Study

Charles L. Blum, DC[1], Marc G. Pick, DC[1], Lisa Lovett, DC[2]
Private Practice[1] – United States, Private Practice[2] – Australia

Introduction: Conservative management of lumbar herniated discs and their possible affects on the thecal sac and CSF circulation deserves consideration as a possible modality. Sacro occipital technique method of care called the sitting disc technique **[1]** and its treatment being rendered were visualized during a video myelogram fluoroscopy. The fluoroscopy study allowed for direct visualization of the CSF, thecal sac and the doctor's thumb contact at the L4 spinous process.

The procedure was performed in Japan with the patient's consent and was part of the treating medical doctor's normal procedure for guiding and rendering treatment. The treatment was videotaped so that the practitioner could evaluate the results of therapy and that fluoroscopic studies would not be needed when future therapy was rendered. The treatment was rendered 15 years ago and at that time the videotape was not initially anticipated to be used for research purposes.

Methods and Intervention: The sitting disc technique was performed on a 50-year-old man presenting with a left spinal inline, right sided sciatica, and decreased CSF circulation as visualized on video myelogram fluoroscopy. The sitting disc technique was applied approximately 3-5 intervals to L4 as the patient flexed and extended their lumbar spine under the direction of the doctor.

Results: Following the procedure the patient reported less pain, and greater movement could be visualized of the vertebra as well as increased CSF circulation during application of the sitting disc technique during video fluoroscopy.

Discussion: There are various theories as to why there would be this increased CSF circulation in the lumbosacral region following the application of the sitting disc technique. These might be associated with an actually mechanical increase in disc height through a form of distraction on the disc and local L4/L5 decompression **[2],** balancing tensions on the related meningeal or thecal structures **[3],** and affects of increased CSF fluctuations and circulation secondary to diaphragmatic or vascular influences. **[4]**

Conclusion: While the patient's improved posture and decreased pain were successful outcomes of the sitting disc technique procedure, **[5]** of greater magnitude was the visualization of the increased circulation of the CSF following and during application. Greater investigation into this conservative method of care and determination of whether this single procedure might have a greater application beyond this single subject study is warranted.

References:

1. Getzoff H, **Disc Technique: An Adjusting Procedure for any Lumbar Discogenic Syndrome** *The Journal of Chiropractic Medicine* Fall 2003; 2(4): 142-4

2. Gose EE, Naguszewski WK, Naguszewski RK, **Vertebral axial decompression therapy for pain associated with herniated or degenerated discs or facet syndrome: An outcome study,** Neurological *Research* Apr 1998; 20(3): 186-990.]

3. Bashline SD, Bilott JR, Ellis JP, **Meningovertebral ligaments and their putative significance in low back pain,** Journal *of Manipulative and Physiological Therapeutics,* Nov-Dec 1996, 19(9): pp. 592-6.

4. Brisby H, Olmarker K, Larsson K, Nutu M, Rydevik B, **Proinflammatory cytokines in cerebrospinal fluid and serum in patients with disc herniation and sciatica,** *Eur Spine J,* 2002 Feb; 11(1):62-6.

5. Hahne AJ, Keating JL, Wilson SC. **Do within-session changes in pain intensity and range of motion predict between-session changes in patients with low back pain?** *Aust J Physiother.* 2004;50(1):17-23.

Questions

If you have any questions, please direct these in the first instance to Charles L. Blum, DC, SOTRC Coordinator at drcblum@aol.com

Submission Form

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Your work is eligible for acceptance at the 2011-12 Sacro Occipital Technique Research Conference even if it has been presented at another meeting, but not if it has been published and you have signed over copyright privileges.

Please enter your abstract as a Word Document making sure you are using 12 point Times New Roman font. Please use the following headings in your abstract: Introduction, Method, Results, Discussion, and Conclusions. When finished, you will need to attach your presentation to an email. If you have any difficulties or questions please do not hesitate to contact us at drcblum@aol.com