2019

Proceedings of the 11th Sacro Occipital Technique Research Conference

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February 26, 2019 - March 1, 2019

Sacro Occipital Technique Research Conference

Nassau, Bahamas
February 27 – March 1, 2019

Hosted by:

Sacro Occipital Technique Organization – USA

CONFERENCE PROCEEDINGS

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2019 SOT RESEARCH CONFERENCE

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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, like all prior conferences, 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]."

> "*Research in Chiropractic must go on forever. Someone must do this type work, for it simply will not take care of itself. A profession cannot stand still. Momentum must constantly be generated. Chiropractic research needs many things it does not now have* [4]."""*Sacro Occipital Technic, like all Chiropractic Technics, needs further study. We certainly do not have all the answers to all of man's problems, and neither does any other group of people* [4]."

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.

4. DeJarnette MB. **The History of Sacro Occipital Technic**. Private Practice: Nebraska City, NB. 1958:27.

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].

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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.

Evidence Informed Practice

The term evidence based medicine (EBM) has traditionally been used to describe a means of treating patients based on research published in biomedical journals. Even though EBM also incorporated expert opinions and a doctor's clinical experience, it was common that insurance companies and other agencies - presumably seeking to protect patients or save money - would focus solely on the randomized controlled trial as the backbone of EBM.

When EBM appeared to be too restrictive or just clearly misinterpreted new terms such as Evidence Based Practice and now Evidence Informed Practice (EIP) have appeared. The value of EIP is that it takes research into account when making a clinical decision but also utilizes patient values and preferences, risk benefit ratio of related or chosen therapy, and the doctor's clinical experience. Because this represents a clearer depiction of an actual clinical experience and at the same time seeks to offer the patient the highest level of care, the belief is that EIP is the best of what EBM has to offer.

It is important that a practitioner is aware of the current research on effectiveness of their care so that they do not inadvertently make false or exaggerated claims regarding the potential benefits of the treatment rendered. Therefore keeping up to date on the research and literature, while time consuming, is an ethical obligation of doctors in practice.

Ideally doctors practicing EIP would best be able to predict and provide outcome expectations against which progress could be measured. In essence we all, as patients or doctors, should receive or offer treatment based on research and clinical experience. New research can uncover therapeutic interventions or benefits of certain types of care that were never before discovered. Also this research may determine that prior care that was customarily rendered is now inappropriate.

The challenge with chiropractic and its various techniques is that we are functioning from a situation where we have limited funds and limited methods to adequately study our innovative therapeutic applications. This conference attempts to offer a tempered and reasonable voice for practitioners on the forefront of care, such as has been the case with Sacro Occipital Technique (SOT) for years. Incorporating current research performed in the patient's best interest with one's own clinical experience is the hallmark of a responsible and ethical physician. Allied healthcare practitioners, chiropractors, and particularly SOT doctors have a responsibility to lead the way with EIP and focus first and foremost on patient based care.

Major Bertrand DeJarnette DO, DC developed SOT with outcome based assessment protocols and with research accountability as its backbone. The onus is upon us, those who learn and utilize his methods, to be informed of the evidence and evolving research and utilize this in the clinical application of SOT and its related methods.

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://soto-usa.com/writing-a-case-report/] Last accessed April 30, 2018.

PRACTICE MANAGEMENT

Who Determines How You Practice Chiropractic?

By Charles L. Blum, DC

If you are like me, you graduated from chiropractic college, passed your licensing examinations, learned different chiropractic techniques to use in practice, and incorporated what you learned in the best way you saw possible to help your patients. As you have practiced, you have learned different assessment and treatment methods that may work better for your patients than what you have utilized previously, and incorporated them into your therapeutic regimen. I foresaw that I could practice this way within the scope of my practice as long as I was helping my patients. However, I have found that things are different from what I had presumed. Practicing chiropractors need to understand how curriculums are developed for our colleges as well as practice guidelines determined by states for scope of practice, insurance agencies for payments, and judicial arenas to determine malpractice.

I recently had the opportunity to participate in a workshop titled, "Toward the Development of a Standardized Chiropractic Technique Program," at this year's Association of Chiropractic Colleges' Research Agenda Joint Conference (ACCRAC) held on March 18–19, 2016 in Orlando, Florida. Part of the process of building a standardized program involves understanding evidence-based practice. Sacket described an "evidence-based practice (EBP) as the conscientious use of current best evidence in making decisions about patient care[1]." One aspect of determining best evidence is studying whether chiropractic's diagnostic and treatment modalities have validity (will what we claim we are finding be supported by the research) and/or reliability (two or more practitioners will have the same finding).

Guiding this workshop was an exhaustive study performed by Triano et al. "designed to evaluate the literature on the validity and reliability of the more common methods used by doctors of chiropractic to inform the choice of the site at which to apply spinal manipulation.[2]" The study concluded, "A considerable range of methods is in use for determining where in the spine to administer spinal manipulation. The currently published evidence falls across a spectrum ranging from strongly favourable to strongly unfavourable in regard to using these methods. In general, the stronger and more favourable evidence is for those procedures, which take a direct measure of the presumptive site of care-methods involving pain provocation upon palpation or localized tissue examination.[2]"

Researchers in this study worked diligently to assess all of the data available and a "total of 2,594 titles were screened,

from which 201 articles met all inclusion criteria.[2]" Interestingly some researchers are questioning the role of EBP, particularly if it does not incorporate the clinician[3]. If clinical practitioners are not publishing in the scientific literature, how can these doctors in active practice have an adequate voice in guiding the future of chiropractic education and practice?

There is irony in having the future of chiropractic practice determined by researchers and their published literature because all research has some degree of bias. Research will only be performed if there is an entity to pay for that research or if the researcher has an interest in a particular type of study. This means that what is taking place in a doctor's office may likely not be considered in future practice guidelines or the development of evidence-based practice. If published research will be directing what we teach in the colleges and is used to develop practice guidelines, how can we integrate the wisdom of both the chiropractic researchers and clinic-based factions?

How is it determined what chiropractic clinical diagnostic and treatment methods are taught in our colleges?

Who is developing guidelines for chiropractic care and ultimately the future of chiropractic?

Isaac and Franceschi lament that the gold standard of the EBP "movement, the randomized controlled trial, meets failure in the clinical realm in terms of the value of one patient's life.[3]" In certain cases, even the need for validity/reliability

arguments that plague qualitative researchers of the generalizability of an "N of 1" become mute.[3] The concept of dualism may be helpful in that it suggests that in order to understand and quantify something we can best do this by separating and comparing. It can be helpful with research when studying "things," however, this may be limiting when studying phenomena such as a healthcare application and a patient's response.

It may be important for EBP to incorporate a nondualistic approach for integrating research and clinical experience when developing chiropractic-based EBP[4]. "Evidence to practice and practice to evidence redefines" EBP "as a circular integration of best research evidence, clinical expertise, and patient values.[3] As Merriam claimed, 'quite a bit can be learned from an N of 1. The impossibility of evidence becomes a matter of practitioner trustworthiness. In this case, a patient's reality becomes the priority, and where application of statistically based generalizations becomes moot. Yet if clinicians are not performing or guiding research or submitting papers to the peer reviewed literature based on their clinical experience, how can they have a voice in this 'circular integration'?"

Is it reasonable to presume that researchers have the extensive clinical experience of those working in the chiropractic therapeutic trenches?

Is it reasonable to presume that chiropractors in clinical practice understand evidence-based practice guidelines and use the research literature to improve the care they render?

There have been a few workshops at previous year's ACC-RAC conferences that attempted to address the relationship between our chiropractic technique systems and the research community. The exchanges during these workshops are usually quite animated and dynamic. One year, I proposed that a good way to study the efficacy or utility of the different chiropractic techniques would be to include a "hands-on" portion along with discussion and review of the literature. It was fascinating how this suggestion was soundly rejected. Emphasis was solely given to the need of reviewing the published research and chiropractic techniques from that perspective, only.

From my experience, I find that no reading or talking can substitute for what I find through the sense of touch. I wonder if one aspect of the difference between researchers and clinicians may be their preferred learning method. The VARK (visual, auditory, read/write, kinesthetic) questionnaire is an assessment tool that has been used to study first-year chiropractic students.[5]

Similar to a study of first-year medical students[6], most students in the chiropractic study preferred a multimodal approach to learning, meaning they preferred a mixture of visual, auditory, read/write, and kinesthetic learning. Yet while the majority preferred multimodal learning, approximately a third of those studied had a particular preference for just visual, auditory, or kinesthetic learning.[7,8]

Is it possible that learning preferences influence a chiropractor's choice to become a clinician, an academician, or a researcher?

And does this learning preference influence the type of research that is performed by the chiropractic research community?

At the 2016 ACC-RAC workshop "Building Chiropractic Research Capacity: 2016 Research Agenda Update," there was a section discussing clinical related research. The predominant theme from those present in this section was that colleges need to create a culture of research, which supports teaching and integrating research concepts into the curriculum. In addition, support should be given to research projects (including those by instructors and students) and the creation of PhD research tracts for chiropractic students and instructors wanting to move in that direction. While I feel all of these suggestions are very important

for the future of chiropractic research, my concern is where does the doctor in clinical practice[9] fit within this solution?

One answer may be to develop a mentorship between research faculty and doctors in clinical practice[10] that have a desire to share their findings in the research arena but are not skilled or are intimidated to do so. Another possible option could be the development of a free online research certification course that could instruct a doctor in clinical practice in the understanding, performing, and publishing of their research. For example, the National Institute of Health Office of Extramural Research has a free certification service to guide doctors wanting to learn about "Protecting Human Research Participants[11]." This could represent a beginning step toward something created by an international chiropractic college academic and research consortium.

> "From my experience, I find that no reading or talking can substitute for what I find through the sense of touch"

Next year's ACC-RAC conference (March 15–18, 2017) is expected to be a monumental joint conference bringing together the ACC-RAC and the World Federation of Chiropractic's 14th Biennial Congress and National Chiropractic Leadership Conference (NCLC), hosted by the American Chiropractic Association. This will be an important place for all researchers and clinicians to meet and collaborate.

Sacro Occipital Technique Organization (SOTO) – USA is a technique-based research and teaching organization that includes an SOT Research Conference as a part of its annual clinical symposium. This year, May 13–14, 2016, will mark its eighth annual research event. In this arena, doctors in clinical practice have a venue to share their research in a welcoming environment, which follows the guidelines of the ACC-RAC platform presentations. The SOT Research Conference is one avenue for doctors in clinical practice to engage in the research arena and help build a future for the chiropractic profession that integrates both research and clinical practice in a nondualistic manner.

Who determines how you will practice chiropractic? By default, the researchers will determine the guidelines of how to practice and what future students learn, and thus the future of chiropractic.[13] However, it is hoped that doctors in clinical practice can also help direct the future of chiropractic. This can be a reality if programs can be developed to help them step up and become more involved in the chiropractic research process. Also, the college-based research programs should be encouraged to involve and incorporate field doctors' thoughts and experiences in the development and direction of future chiropractic research.

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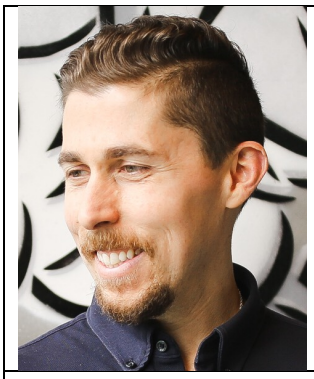
SOT Research Conference Proceeding Author Biographies

Dr. Thomas Bloink specializes in cranial-dental integration in Silicon Valley at the California Cranial Institute, which was founded in 1992. Dr. Bloink was on the board of advisors to help create SOTO USA and is actively involved in promoting the organization, presenting at research conferences throughout the world, and developing novel treatment approaches for functional neurological conditions. He works closely with many different specialists including dentists, orthodontists, and oral-maxilla surgeons. ENT's and others to ensure the best possible outcome for his patients.

Dr. Charles L. Blum is in private practice Santa Monica, California and past president of SOTO – USA, now their research chair. Adjunct research faculty at Cleveland Chiropractic College, associate faculty at Southern California University of Health Sciences teaching the SOT Elective and TMD Care, as well as at Palmer College of Chiropractic West teaching the SOT Elective. Dr. Blum is a Certified SOT Cranial Practitioner, and on the peer review board of the Journal of Craniomandibular and Sleep Practice (CRANIO), Association of Chiropractic College Conference Peer Review Committee, and Journal of Chiropractic Medicine. He has lectured nationally and internationally, has written various SOT related texts, compiled SOT and cranial related research, and has extensively published in multiple peer reviewed indexed journals and at research conferences from 1984 to the present.

Dr. William J. Boro, Doctor of Chiropractic, Certified Craniopath, and Diplomate of the International Craniopathic Society, is the developer and instructor of Advanced Chiropractic Technique, an amalgamation of Sacro-Occipital Technique, Applied Kinesiology, Clinical Kinesiology, Visceral Manipulation, and Van Rumpt technique. He has been in practice since 1983 in Annapolis, Maryland, at the Chiropractic Center of Annapolis, focusing on the whole family, from newborns, to the elderly. Dr. Boro is an expert in evaluating structural, chemical and mental aspects of health using manual muscle testing along with other standard methods of diagnosis, in addition to the application of nutrition as a method of improving a person's health naturally.

	**Dr. Rachel Hamel** has completed advanced training in Applied Kinesiology, Sacro-Occipital technique, SOT Cranial Technique, Craniobiotic Technique, IASTM, Rocktape, Webster Technique, Neuro Emotional Technique; and is working towards her ACN in nutrition, as well as certification in Cranial-Dental diplomat. She is a member of ACA, SOTO-USA, BABI (Bay Area Birth Information) and ICPA (International Chiropractic Pediatric Association). She received her Bachelor's with honors in Health Science from Whitworth University in Washington State, and her doctorate degree where she was valedictorian from Palmer West Chiropractic College.
	**Dr. Keila Nichols** has been practicing in the Northeast Dallas, Texas suburbs since 1989. She utilizes traditional chiropractic techniques, including Sacro Occipital Technique, Craniopathy, and Chiropractic Manipulative Reflex Technique (CMRT), as well as homeopathy and functional medicine. She enjoys spending any spare time with her husband and 5 "almost-adult" children.
	**Dr. Marc G. Pick** is a Doctor of Chiropractic with a 45-year private practice in Beverly Hills, California. He earned his Diplomat and Fellowship status in Craniopathy through the International Craniopathic Society and currently maintains an active Diplomat status from the American Chiropractic Neurology Board. Since 1979, he has lectured Internationally, instructed annual courses in Human Dissection, published in JMPT's, March/April 1994 *"A preliminary single case magnetic resonance imaging investigation into maxillary frontal-parietal manipulation and its short-term effects upon the intracranial structures of an adult human brain"* and was honored when the Smithsonian institute's National Museum selected a photograph of his dissection revealing the entire central and peripheral nervous system with dural meningeal structures as an addition to their collection.

	**Dr. Jason Scoppa** practices at his clinic, Northwest Structural Medicine, located in Bellevue, WA, as well as in Lynwood, WA at Balance Epigenetic Orthodontics as part of a Cranial-Dental comanagement team. He is a certified SOT craniopath (CSCP), certified chiropractic sports practitioner (CCSP), and has a TMD and cranially focused practice.
	**Dr. Arthur Tovar** is a 2005 Magna Cum Laude Graduate of Sherman College and has a Bachelors degree in Biology from Excelsior College. He currently holds advanced certification in Sacro Occipital technique with Soto Europe and currently pursuing certification in Craniopathy with Soto USA. He is completing 120 hours certification in Applied Kinesiology March 2019. He has been studying and teaching Sacro Occipital Technique for the past 12 years. And his passion lies in the treatment of children and expectant mothers.

Chiropractic care of professional ice hockey player suffering from multiple concussions: A case report

Thomas Bloink, DC, Charles Blum, DC

Introduction:

Awareness of sport-related concussion/post-concussion syndromes is beginning to influence the conversation about the health of professional athletes and their teams. "Concussion has been defined as a pathophysiologic process affecting the brain and induced by traumatic forces."[1-4] Conservative and effective methods of care that help the athlete recover are important healthcare considerations. It has been estimated that 1.6 to 3.8 million sports- and recreation-related traumatic brain injuries occur in the United States each year. [5] Although most signs and symptoms resolve over time when concussive injuries are recognized and managed appropriately, concussions can be career-ending. [6,7] Of the various professional sports, concussions are most commonly found in ice hockey players. [6,8-13] Benson et al noted, "post-concussion headache, low energy or fatigue, amnesia and abnormal neurologic examination were significant predictors of time loss among professional hockey players." [1]

The field of chiropractic is becoming more involved in the assessment and treatment of sports-related concussion. [14,15] Studies have found that chiropractors and chiropractic interns in college have "demonstrated the skills and knowledge to diagnose concussion and excel at identifying the definition and mechanism of concussion" yet still "knowledge gaps regarding diagnosis and management of concussion were found." [16,17] A survey noted that a high percentage of the sports-certified chiropractors that responded assess and manage sport concussion in their practice, and many of them endorse the use of the Sideline Concussion Assessment Tool (SCAT) as a sideline assessment tool. [18,19] As the studies emerge, chiropractors involved in treating athletes for sport-related concussion are using the most recent SCAT assessment tools as they are being developed. [18-20]

This case report discusses a professional ice hockey player who presented for chiropractic and chiropractic cranial care at this clinic for unresolving symptoms secondary to multiple concussions.

Case Presentation:

A 21-year-old male professional hockey player suffered a concussion on May 2017 when he was checked into the boards during a playoff hockey game. He was on the disabled list until early November 2017. Upon his return, he played five games before having another substantial head impact on November 22, 2017 resulting in an additional concussion. At his initial presentation on January 18, 2018 he reported constant headaches, which were intermittent in intensity, ranging from increased head pressure to severe pain. His headache was localized to the frontal bone, bilateral sphenoid wings, and glabella. He also stated that he felt he was chronically clenching his jaw. After the initial head trauma, a SCAT concussion checklist suggested a significant brain injury associated with headache, photophobia, photophobia, impaired memory at the time of the

head injury, intermittent brain fog, forgetfulness, fatigue, intermittent mood swings, and continuing for over nine months afterwards. He was referred to this office by his team due to his multiple concussions and an inability to practice/play hockey due to suspected unresolving post-concussion syndrome.

Methods:

The patient pO2 values were 95% at rest and while on a stationary bicycle would decrease to the lower 90s. Sacro occipital technique (SOT) analysis and cranial assessment revealed multiple cranial, craniofacial, and temporomandibular joint (TMJ) -related imbalances. Treatment consisted of balancing his left temporal extension distortion and included sphenoid maxillary craniopathy. Cranial/dental co-treatment included lower occlusal splint therapy to control clenching and the translation of the force of his bite into his head. Dental treatment frequency was one visit per week for three weeks in a row immediately preceded by cranial treatment at this clinic. At each chiropractic office visit specific chiropractic adjustments were administered to his thoracic, lumbar spine, and cervical spine along with soft tissue therapy for his neck as indicated.

Results:

The patient was treated for 10 visits over four weeks at which point he returned to regular play again. His oxygen saturation improved, registering with activity at 99%. His entire original presenting symptoms had resolved by the fourth week of care, and he scored a goal and had two assists in his first game back.

Discussion:

One theory of why the chiropractic cranial care may have assisted in patient recovery relates to the possibility that the low oxygen saturation may have been caused by injury to the medulla oblongata, a respiratory center in the brain. Leddy et al, found that, "exercise intolerance after concussion is believed to be the result of autonomic nervous system dysfunction." [21] Most commonly "athletes with sports-related concussions will recover within 21-28 days. Symptoms demonstrated the greatest improvement in the first two weeks, although neurocognitive impairment lingered across various domains up to 28 days after a sport-related concussion." [22]

There have not been any recent published studies of chiropractic care of a professional ice hockey player. Olson et al describe the successful management of a 14-year-old hockey player with post-concussion symptoms. [23] The student athlete was seen 13 days post-trauma, had "failed to progress toward return to play, and his computerized neurocognitive testing scores had not improved" [23] Treatment included "chiropractic manipulative therapy, myofascial release, instrument-assisted soft tissue technique, and therapeutic exercises…provided over five treatments spanning a 20-day period. The patient followed up each treatment with ImPACT

testing. At the conclusion of the treatments, the patient's computerized neurocognitive testing scores had improved, and the patient was returned to play." [23]

This case is different in that the chiropractic treatment included cranial and TMJ-related co-treatment. The type of cranial care was similar to osteopathic-type interventions, which have been found to be "a safe adjunctive treatment option to improve concussion-related symptoms and recovery." [24] A case series by Wetzler et al utilized "the effects of CranioSacral Therapy (CST), Visceral Manipulation (VM), and Neural Manipulation (NM) modalities for treating patients who have post-concussion syndrome." [25] They concluded that "ten sessions of specific CST/VM/NM therapy resulted in statistically greater improvements in pain intensity, ROM, memory, cognition, and sleep in concussed patients." [25] Also of note, the chiropractic/dental TMJ cotreatment involved the fabrication of a specific dental appliance or orthotic which helped with the patient's chronic bruxism. Recent studies are finding a relationship between orthotics and concussion prevention. [26]

For chiropractors treating sport-related concussion it is important to be familiar with the Sport Concussion Assessment Tool (SCAT), which is an assessment form that has various steps for the examining physician working with traumatized athletes. The SCAT has one section for on-the-field and the other during follow-up assessments. [20]

On the field assessment:
Step one: Determine if there are any red flags
Step two: View the athlete's position or behavior on the field of play
Step three: Perform a Memory Assessment Maddocks Questions
Step four: Examination includes Glascow Coma Scale and cervical spine assessments

Off field assessment
Step one: Athlete's background
Step two: Symptom evaluation
Step three: Cognitive screening, which involves assessing their orientation, immediate memory, and concentration skills
Step four: Neurological screening with balance examination
Step five: Delayed recall assessment
Step six: The physician's review of the assessments and decision or determination

As with any case study it is not possible to generalize the results to the population at large due to not being able to rule out confounding factors, such as the placebo or ideomotor effect, and other related issues, such as possible regression to the mean. What is interesting in this case is that the patient's condition was complex due to the multiple concussions along with his post-concussion sequelae being relatively stable for nine months, well beyond the expected one-month duration. [22] The temporal relationship between his stable condition for nine months and rapid improvement during the chiropractic cranial and TMJ treatment is suggestive that the intervention played a part in his recovered function and ability to return to the ice.

Conclusion:

This case discusses the presentation of a professional ice hockey player suffering multiple concussions and having limited function in his ability to return to play his sport for nine months due to cognitive issues, headaches, and reduced pO2 values when physically stressed. Chiropractic care with cranial interventions along with dental/chiropractic co-management of his TMJ dysfunction with a dental appliance appeared to create a significant change, and he returned to the ice within four weeks of care. Based on the finding in this case report, further research into chiropractic cranial care to facilitate recovery from sports-related post-concussion syndromes might be warranted.

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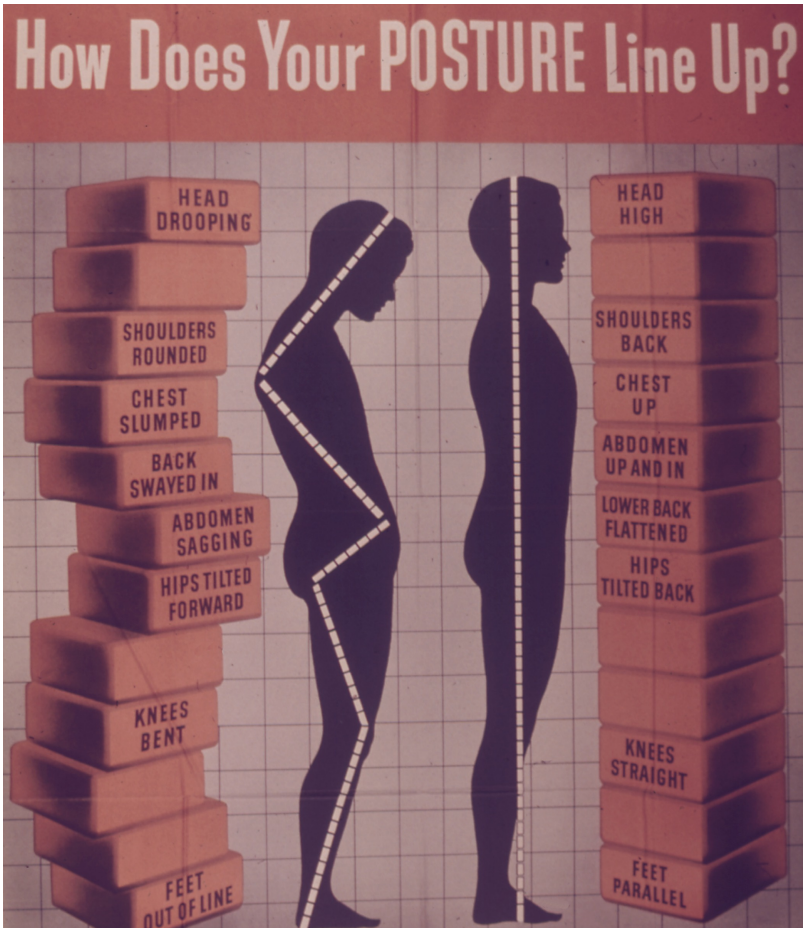
The many faces of forward head posture: The importance of differential diagnosis

Charles L. Blum, DC

Introduction:

Forward head posture (FHP) is associated with the head moving in an anterior relationship to the shoulder or lower spine versus an "ideal" position which would have the ears in line with the shoulders.[1] FHP is also associated with an increased kyphotic thoracic spine or thoracic hyperkyphosis, with some studies suggesting an ascending (the hyperkyphosis causes the FHP) or descending component (the FHP causes the hyperkyphosis) to the etiology of FHP or thoracic spine hyperkyphosis.[2] FHP is not just an aesthetic issue regarding how people hold themselves, but its presentation along with hyperkyphosis is associated with increased mortality rates[3] particularly in elderly men[4] and women[5,6], even independent of osteoporosis.[5] Therefore this type of body posture is a huge concern for our growing geriatric population and determining the etiology and therapeutic interventions to treat FHP/hyperkyphosis is an important healthcare consideration.



There is a parable about a group blind men who come upon an elephant, an animal they have never encountered before. They all touch the elephant in different places, as a means to determine the nature of the elephant.[7,8] One says it is a hard tusk like material, another says it is like a long hose, another a swishy tail, and the last says it is a large wide body. When we look at FHP we tend to see these similar types of proclamations depending on the healthcare practitioner's perspective.

With regard to FHP there is a myriad of perspectives from various healthcare professionals depending on their reference position. In dentistry some research has suggested that there is not any relationship between forward head posture and stomatognathic dysfunction[9] However relationships between the stomatognathic system dysfunction and airway compromise have emerged in the literature with some research finding that FHP is an adaptation to improve airway[10] and other studies finding that FHP compromises airway function.[11]

Within the field of chiropractic[1] FHP is seen as a dysfunction caused by poor ergonomics[12], trauma (e.g. whiplash)[13], accommodation to pain[14], and other related physical factors. In a study by McAviney et al, they "… found a statistically significant association between cervical pain and lordosis < 20 degrees and a 'clinically normal' range for cervical lordosis of 31 degrees to 40 degrees."[15] FHP is therefore seen as outside the 'clinically normal' and "maintenance of a lordosis in the range of 31 degrees to 40 degrees could be a clinical goal for chiropractic treatment."[15]

Podiatry has weighed in on the FHP equation in their treatment of foot pronation.[16] For instance Farokhmanesh et al. found "that with increased bilateral foot pronation, lumbar lordosis and thoracic kyphosis increased as well."[17] Rothbart has found in his research that altered foot function leads to altered vertical facial dimensions[18] as well as position of the atlas (C1), temporal, and sphenoid bones.[19] Conversely, some dental related research has found that a change in occlusion may have a descending kinematic affect on plantar weight distribution.[20,21]

Other types of healthcare methodologies find that from each of their perspectives that FHP has different causations. Deep tissue myofascial techniques (e.g. Rolfing) have seen FHP as secondary affect of chronic fascial tensions.[22] Meyers, though multiple dissection studies, noted that increased tension within either the anterior fascial line (affects the sternocleidomastoid muscle) or the posterior fascial line (affects the suboccipital musculature) can lead to FHP.[23] In the psychotherapeutic arena FHP is seen as an accommodation to emotional stress.[24] This is also

viewed as a syndrome that may respond well to interventions such as yoga[25,26] and Alexander Technique,[27] or could be associated with a general stress response.[28] It is this complex nature of FHP that makes generalization of its etiology as a single entity virtually impossible.

Risk Benefit Ratios and Airway Disorders

As we attempt to step back and look at FHP from various standpoints, we see that FHP is a complex condition with ascending and descending components. Understanding risk benefit ratios helps to put the need for care of FHP into proper perspective. Ultimately airway compromise and its resultant secondary effects make assessing airway, apneas, and oxygenation with their relationship to FHP paramount. Epidemiological studies have found that even mild obstructive sleep apnea has an association with significant morbidity.[29] "Evidence from methodologically strong cohort studies indicates that undiagnosed obstructive sleep apnea, with or without symptoms, is independently associated with increased likelihood of hypertension, cardiovascular disease, stroke, daytime sleepiness, motor vehicle accidents, and diminished quality of life." [29]

Airway compromise is associated with snoring and a Canadian study by Norton and Dunn[30] found that 2001 subjects reported on snoring and medical conditions in members of their household. "For spouses the prevalence of snoring increased with age up to the seventh decade, with a higher prevalence of nearly 85% in husbands."[30] Norton and Dunn even found that when correcting their data "for smoking and obesity the association between snoring, hypertension, and heart disease persisted."[30]

In another study by Al-Delaimy, et al. after performing an analysis of their data that was stratified by body mass index, smoking history, or parental history of diabetes they found a consistent independent association between snoring and type II diabetes within the categories of those variables.[31] It would appear that airway compromise, such as snoring[30,31], obstructive sleep apnea[29], upper airway resistance syndrome[32], and other syndromes associated with reduced oxygenation, all have significant factors affecting all-cause mortality and morbidity.

Dental Chiropractic Management of FHP Presentations

What becomes essential is for dental and chiropractic practitioners who are utilizing FHP as a diagnostic aspect of treatment delivery to be able to determine causation of individual instances of FHP. Determining FHP causation is particularly important in dental treatment of temporomandibular joint dysfunction (TMD) disorders and chiropractic treatment of cervical spine imbalance because:

1. For dentists it is important to be aware that in some instances FHP may not be related to a patient's TMD or airway compromise.

2. For chiropractors it is crucial to be aware that some cases of FHP may be compensatory positioning to facilitate improved airway function.

The complexities of assessing FHP from a dental perspective are that there are studies that have found an association between TMD and FHP[33-35] as well as those that suggest FHP is a compensation for airway compromise.[10,36-40] However, there is also evidence that suggests that FHP has a negative effect on respiration and diaphragm function, which suggests that instead of FHP acting as a compensation, the actual FHP cervical spine positioning is problematic.[11,41] From a chiropractic perspective there are studies that find that correcting a patient's FHP reduces pain and improves function. [14,42] Also Katz et al., note from their pre- and post-MRA case series [n=7] that correction of a subject's FHP "may be associated with an immediate increase in cerebral blood flow." [43]

Conclusion:

FHP has many features. Sometimes FHP is associated with TMD and compensations for airway compromise. Sometimes FHP may be ergonomically instigated or associated with ankle/foot imbalance, fascial tensions, general stress, and other complicating factors. In some instances airway may be improved by FHP and other instances it may be compromised. Differential diagnostic factors need to be developed to determine the causation of a patient's FHP. This would be essential before using a patient's posture to initiate chiropractic care for curve restoration or begin dental care for a patient's possible TMD and airway dysfunction. It is of particular importance that chiropractors are aware that a patient's FHP may be due to airway compromise and TMD, so that curve restoration is delayed until proper airway function is achieved. It may be important that as a dentist is treating a patient's TMD and airway compromise that as stabilization occurs, co-treatment with a chiropractor may be needed to help further reduce a patient's FHP and thoracic hyperkyphosis.

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Intervention in Atrial Fibrillation with Chiropractic Manipulation and Sacro Occipital Technique's Chiropractic Manipulative Reflex Technique (CMRT): A Case Report

William J. Boro, DC

Introduction:

Atrial fibrillation is a heart condition in which there is dysfunction of the sinus node pacemaker leading to increased activity within the atria of the heart, with rapid and irregular activity. Atrial fibrillation (AF) is the most common atrial arrhythmia in adults worldwide. "In Australia, Europe and the USA, the current estimated prevalence of AF is about between 1% and 4%, with lower prevalence evident in Asia (0.49%-1.9%). AF prevalence is highest among Whites. In Western Europe, Australia and North America 70% of people with AF are aged >65 years, whereas the average age of AF patients in other geographical regions is often lower."[1] "As medical advancements continue to contribute to an ever-increasing aging population, the burden of atrial fibrillation on the modern health care system continues to increase."[2]

Causes of AF are continually emerging and have been found to depend on comorbid conditions. Genetic studies report 17 independent signals for AF at 14 genomic regions. Advanced age, male sex, and European ancestry are also prominent AF risk factors. Other modifiable risk factors that predispose to AF include hypertension, thyroid dysfunction, sedentary lifestyle, smoking, obesity, diabetes mellitus, obstructive sleep apnea, and elevated blood pressure. Both heart failure and myocardial infarction increase risk of AF and vice versa creating a feed-forward loop that increases mortality.[3,4]

The pathophysiology of AF centers around "4 general types of disturbances that promote ectopic firing and reentrant mechanisms, and include the following: (1) ion channel dysfunction, (2) Ca (2+)-handling abnormalities, (3) structural remodeling, and (4) autonomic neural dysregulation."[4]

Perhaps there may be a 5th type due to dysfunctional spinal neurological reflexes. To complicate the diagnosis, subsets of AF have been found to be "silent" or subclinical asymptomatic AF (SAF) with electrophysiological and mechanical effect of SAF and AF being similar or the same. SAF is common and may have significant clinical complications, which include emboli, heart failure, and early mortality, which are of paramount importance. "Consequently, SAF should be considered in estimating the prevalence of the disease and its impact on morbidity, mortality, and quality of life."[5]

The widespread incidence of AF worldwide has led to an increasing number of hospitalizations, anticoagulation management, and increasing trend for disposition to skilled facilities, which are drivers of the increasing cost associated with AF.[6] "There has been significant progress in AF management with the release of new oral anticoagulants, use of left atrial catheter ablation, and novel techniques for left atrial appendage closure."[6]

This case report seeks to describe the clinical course, treatment and immediate response of a 64-year-old male suffering from atrial fibrillation of 15-years' duration to the application of

chiropractic care. Over 2-years post-surgery, the patient presented at this clinic (May 2017) with complaints of consistent elevated heartbeat of 120 – 130 range during the previous 16 months.

Methods:

A 64-year-old male patient had been seen the prior year for care at this office, which had an unsuspected positive effect on his heart function.[7,8] When he noted that he was having uncontrollable issues with his atrial fibriliation, he thought coming back for care was "worth a try." During this current round of care the patient was seen for two office visits that consisted of Van Rumpt spinal adjustments[9] to T3, 5, 7, and 9 vertebrae, cardiac reflexes, liver and gall bladder flush and adjustments to the shoulder girdle complex. He was also treated with Sacro Occipital Technique's (SOT) Chiropractic Manipulative Reflex Technique (CMRT) [10] for T1 cardiac occlusal-type. This type of care focused on organ referred pain patterns, clinical findings, and body patterns relating to specific suboccipital muscle righting patterns associated with upper thoracic imbalance. Once determined that the patient had those patterns CMRT treatment focused on adjusting the upper thoracic spine, reducing the occipital vertebral reflex arc, balancing cardiac viscerosomatic/somatovisceral reflexes and vagal nerve stimulation as well as diaphragm relaxation techniques. [10]

Results:

The patient had taken twenty-one random-pulse readings [Figure 1] the week prior to seeking treatment at this office that averaged 134.6 beats-per-minute (bpm). Within 5 minutes of the first treatment his heart-rhythm reduced to 85 bpm and two days later, the pulse rate consistently reduced to 75 bpm. The patient supplied data of 41 random-pulse readings taken over the two-weeks' post-treatment demonstrating an 88.7 bpm average.

Discussion:

This patient presented with a history of AF and arrhythmia dating back to 2002. Catheterization of his left atrium and surgical ablation had been performed in September 2014, which only temporarily controlled his condition. This case is of interest due to the chronicity of the patient symptoms prior to care and the temporal relationship between treatment and response to care. It is currently unclear what portion of patients with complaints of chronic increased heart rate might be due to spinal neurological causes or to related visceral mimicry symptomology. [11]

There has not been much research discussing chiropractic manipulations and its effect on AF. One case study [10] discussed treatment to the upper cervical spine that had a positive effect on 68-year-old female diagnosed by her cardiologist with atrial fibrillation. Treatment was directed to the atlanto-occipital area on 4 separate visits and following the second treatment, the patient's heart rate variability readings showed signs of improvement and her blood pressure normalized so that she was able discontinue her medication. [12]

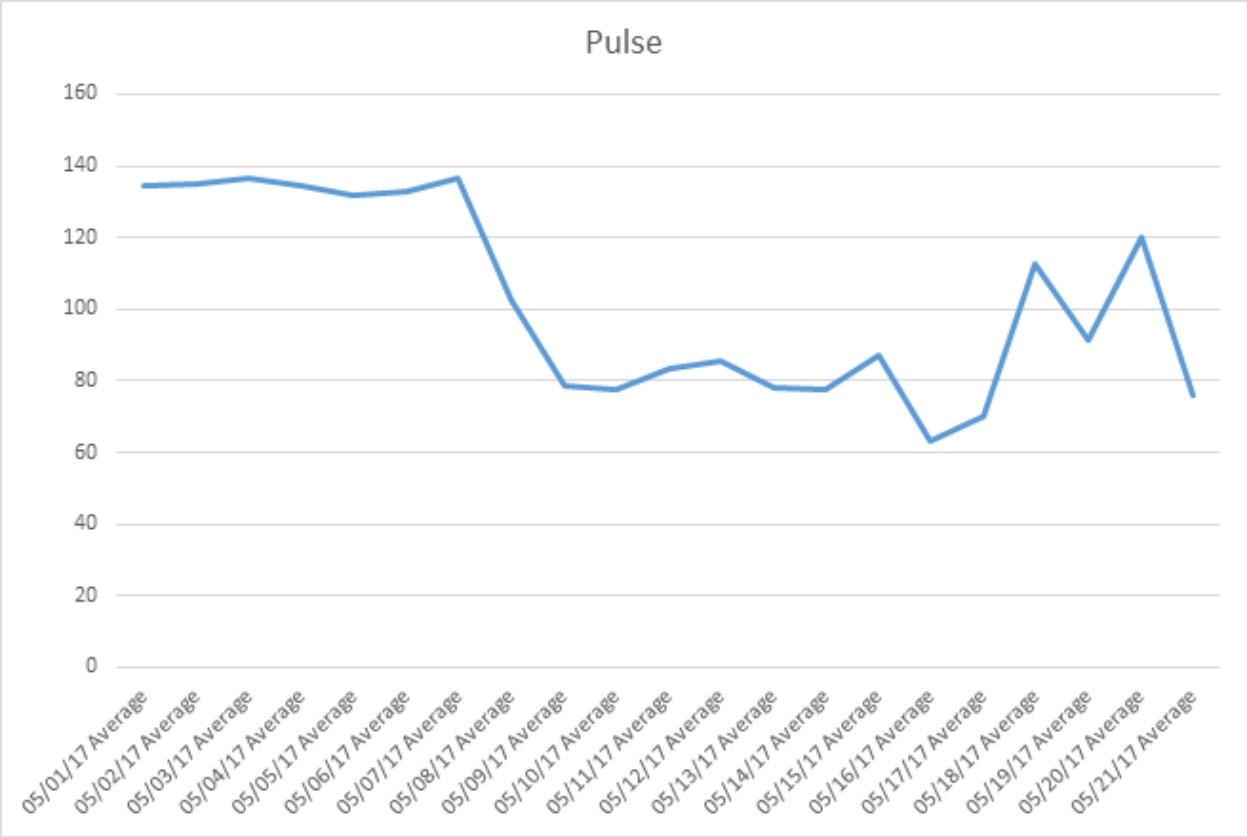

Figure 1: Patient reported pulse rates before and after care at this office.

With this case we cannot rule out the placebo or ideomotor effect, or possible regression to the mean. Therefore, generalization of the results of this study to the AF population at large is inappropriate. However it is interesting that he had been taking his multiple daily pulse readings for a week prior to the first treatment and then continued for multiple times daily for two weeks following care, with consistent findings pre- and post-treatment. The coincidence of the treatment and positive response 5 minutes later does suggest a temporal relationship might be a reasonable consideration.

Conclusion:

This case discusses a 64-year-old male patient with AF of 16-month duration, post ablation therapy. After one treatment significant normalization of his pulse rate was noted which sustained itself during the two-week follow-up. When treating non-musculoskeletal conditions it is important that chiropractors actively co-treat with allied allopathic physicians. Dealing with life threatening cardiac related conditions warrants caution that chiropractors do not presume a chiropractic manipulation will "cure" a visceral presentation such as AF. However there may be a subset of patients with AF that may be responsive to chiropractic interventions, and may represent a subset worthy of further study.

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Chiropractic Intervention in Gallbladder Dysfunction: A Case Report

William J. Boro, DC

Introduction:

Gallbladder disease is one of the most prevalent and most expensive gastroenterologic diseases. It belongs to a group of complex metabolic disorders affecting humans though primary or secondary prevention strategies are limited.[1] Annually in the United States there are greater than 700,000 cholecystectomies and costs of approximately 6.5 billion dollars. The burden of disease is epidemic in American Indians (60-70%); a corresponding decrease occurs in Hispanics of mixed Indian origin." [2] Ten to fifteen per cent of white adults in developed countries have gallstones, and the frequency is further reduced in Black Americans, East Asians and sub-Saharan Africans.[2]

Certain risk factors for gallstones are immutable: female gender, increasing age and ethnicity/family (genetic traits).[1,2] Others are modifiable: obesity, the metabolic syndrome, rapid weight loss, certain diseases (cirrhosis, Crohn's disease) and gallbladder stasis (from spinal cord injury or drugs like somatostatin). Data from recent identical twin, family and linkage studies provide conclusive evidence for a strong genetic component to gallstone disease.[1] A 30-year-old study studied the prevalence of gallstone disease and the behavior of gallbladder volume in childhood and adolescence, which found a positive and statistically significant relationship between gallbladder volume and body mass index in both genders. However the study supported that there is a very low prevalence of gallstone disease in people younger than 20 years old.[3]

Protective factors include diets containing fiber, vegetable protein, nuts, calcium, vitamin C, coffee and alcohol, plus physical activity.[2] Treatment of gallbladder disorders may be treated with surgical repair or the placement of stents to open blocked ducts and even gallbladder removal to relieve painful symptoms and jaundice associated with gallbladder diseases.

Case Presentation:

A 58-year-old female presented to this clinic June 21, 2016 suffering from gallbladder dysfunction/biliary dyskinesia seeking options to recommended gallbladder surgery. Patient had been suffering with epigastric pain, gastroesophageal acid-reflux, and a "twisted-feeling" in her stomach for over 2-years, prior to being seen at this office. She had been under medical care for more than a year. Medications included Protonix, Zantac, Clarinex, Effexor, Valtrex, Celebrex, Klonopin, Ambien, and Pro-Air.

Methods:

Treatments consisted of 30-visits (6-months) including Van Rumpt[4] double-thumb toggle manual manipulation of the spine and related viscera, Sacro Occipital Technique's "Chiropractic

Manipulative Reflex Technique" (CMRT)[5] and Barral osteopathic liver/gallbladder manipulations.[6,7]

Results:

In the initial phase of care, a radionuclide hepatobiliary scan with cholecystokinin (CCK)[8] was performed showing a gallbladder ejection fraction at 60-minutes measuring 11% (abnormally low). While she was noting improvement in her spinal and epigastric pain, further testing was determined necessary to see if her pain reduction had a relationship to her gallbladder function. A follow-up hepatobiliary scan was performed after five-months of care and showed a normal 75% ejection fraction. Her condition has been stable 2-years post-treatment with only occasional complaints of right upper-quadrant abdominal discomfort. The patient reports discontinuation of all medications, excepting occasional use of Celebrex.

Discussion:

Chiropractic treatment of any visceral related condition or viscerosomatic referred pain pattern is challenging since issues of visceral mimicry syndrome complicate determining what is actually taking place. Nansel and Szlazak note that, "it has now been firmly established that somatic dysfunction is notorious in its ability to create overt signs and symptoms that can mimic, or simulate (rather than cause), internal organ disease."[9] They caution that neurologically afferent convergence mechanisms, "can create signs and symptoms that are virtually indistinguishable with respect to their somatic vs. visceral etiologies," which "need to be appreciated by all portal-of-entry health care providers, to insure timely referral of patients to the health specialist appropriate to their condition."[9]

Yet, visceral afferents have been implicated in viscerosomatic referred pain patterns and in one study [n=12] "distension of the gallbladder caused pain in 10 of the 12 patients. In 70% the pain was localized under the right costal margin or in the epigastrium."[10] There has not been much published research of chiropractic[11] or osteopathic[12,13] care of gallbladder related dysfunction or its associated spinal or costal referred pain syndromes. One case described a 70-year-old woman had low back pain, numbness in the left lower leg, and sharp pain in her left heel referred for surgical removal of a "porcelain gallbladder."[14] Another case reported "a patient whose longstanding neck and shoulder region discomfort, whilst relieved by regular chiropractic care, disappeared after she underwent a cholecystectomy."[15]

Heineman reported a 51-year-old woman who presented with midthoracic levels (T6-T9) pain and symptoms consistent with biliary dyskinesia. She determine that the patient's biliary colic completely resolved after osteopathic manipulative therapy and suggested that the care rendered "can remove the feedback related to the somatic component, thereby affecting nociceptive facilitation at the spinal level and allowing the body to restore autonomic balance."[13]

An interesting case involved a patient suffering from long standing gallbladder dysfunction (4-years) with referred pain patterns to the spine, right costal margin, and epigastric region, who

noted an increase in the sharpness of her referred pain patterns following cholecystectomy. Due to the pain chronicity (2-weeks post surgery), severity (at a 8-9 visual analogue scale), and persistence she needed to take pain medication. When the pain medication adversely affected her ability to function she sought chiropractic care for relief of the pain and was treated with CMRT procedures for the gallbladder. Within 15 minutes following care her pain reduced 50%, at 30-minutes post treatment was completely relieved, and 15 years after treatment has not had a reoccurrence.[11]

Essentially viscerosomatic referred patterns from the viscera to the spine and related areas represent complex diagnostic conundrums for the chiropractic practitioner. Visceral referred pain patterns are not discrete and vary from patient to patient. Long-standing spinal pain unresponsive to chiropractic interventions warrants greater investigation of possible contributions of organ dysfunction to the pain. Also even after referred pain is reduced, if organ dysfunction persist, it may be that all the chiropractic intervention achieved was to raise the threshold for afferent referred pain and not necessarily help visceral function. Therefore in any suspected visceral dysfunction co-management with an allopathic physician is indicated.

Conclusion:

This case is of interest due to the chronicity of the patient symptoms prior to care and the temporal relationship between treatment and response to care, though regression to the mean is always a possible explanation. It is of interest that this chiropractic intervention appeared to have not only a positive effect on the patient's spinal and epigastric pain but she was able to discontinue almost all use of her prescribed medications. It is possible that her prescribed medications' potential side effects may have contributed to some of her symptoms. Most significantly her visceral function, as determined by hepatobiliary function tests, went from an abnormal result to a normal finding. Greater study is needed to determine if there is a subset of patients with non-musculoskeletal presentations that might respond to chiropractic care. When treating non-musculoskeletal conditions it is important that chiropractors actively co-treat with allied allopathic physicians.

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SOT cranial therapy for the treatment of pediatric torticollis: A chiropractic case report.

Rachel Hamel, DC, Charles Blum, DC

Introduction:

Congenital torticollis is commonly associated with a musculoskeletal problem or, in more serious cases, an underlying non-musculoskeletal pathology. Typically, it is characterized by a head and neck tilt, often combined with a rotational preference of the neck and unilateral shortening of the sternocleidomastoid muscle.[1] Torticollis is considered to be the third-most common orthopedic diagnosis in childhood.[2] Cabrera-Martos et al note "the incidence of congenital torticollis ranges from 0.3% to 16%"[3] whereas Nilesh and Murkerji report the incidence of congenital muscular torticollis ranging from 0.3% to 2% in newborn infants or young children.[4]

Birth trauma appears to be the main etiological factor in congenital muscular torticollis, and one study found that mandibular hypoplasia may be a useful early sign of this condition with the side affected possibly dependent on the side of shoulder delivered first.[5] Another study supported that "low birth weight, breech presentation, and motor asymmetry are prognostic factors associated with longer treatment duration."[6] A prospective study of all congenital muscular torticollis patients seen in one pediatric facility over a 12-year period isolated and identified "three clinical subgroups of sternomastoid tumor (SMT; 42.7%), muscular torticollis (MT; 30.6%), and postural torticollis (POST; 22.1%). The SMT group was found to present earlier - within the first three months - and was associated with higher incidence of breech presentation (19.5%), difficult labor (56%), and hip dysplasia (6.81%). Severity of limitation in passive neck rotation range was found to correlate significantly with the presence of SMT, bigger tumor size, hip dysplasia, degree of head tilt, and craniofacial asymmetry."[7]

Untreated torticollis may have an affect on a child's motor development, possibly related to delays in crawling, rolling over, and standing skills. Aside from motor delays, the asymmetrical muscular function could be a contributor to plagiocephaly.[8-10] Congenital muscular torticollis has also been implicated in contributing to "permanent craniofacial deformity, facial asymmetry and changes in the cervical vertebrae if not treated during early childhood."[11] In addition, infants with torticollis had a decreased ability to adequately breastfeed or "latch on".[12]

There has been some evidence to support utilizing physical therapy[13,14], soft tissue mobilization[15] and stretching techniques[16], as well as conflicting evidence to support the use of kinesiotape applications.[17,18] The purpose of this case report is to share chiropractic interventions for a child with congenital muscular torticollis utilizing cranial, chiropractic, and visceral reflex/manipulations.

Case Presentation:

A four-month-old female with torticollis and digestive upset was brought to this clinic for chiropractic assessment and treatment. The parent reported their child's four month history of a

right head tilt and torticollis [see pre-treatment picture], difficulty "latching on" when breastfeeding, epigastric discomfort, digestive issues, and blood in her stools. Birth interventions included an epidural, three rounds of Pitocin, and one week of labor with failure to descend, inevitably leading up to the need for a Caesarian section delivery with a vacuum extraction. For four months the parents had tried home massage, caution with head placement when sleeping and feeding, and other types of positional modifications, which were ineffective in reducing their child's torticollis.

Pre-Treatment

Post-Treatment

Methods:

Examination revealed a right head tilt with a functional right leg shortening. Supine position showed an abnormal tonic labyrinth test, in which her hands went into fists, legs into flexion and an attempt to lift her head. An increase in right heel tension was noted and hanging body test was abnormal, revealing her body going into extension and head turning to the right. Normal results were found with grip, Moro, spinal gallant, tonic neck reflex and Babinski testing. Suck testing revealed hypersensitive gagging and very weak posterior tongue movement. It was noted that she would bite with more force in the front of her mouth along with increased pressures from the anterior aspect of her tongue. Upper labial frenum restriction was noted without presence of lingual frenum restriction. Increased right sternocleidomastoid muscle tension was visualized and palpated; right posterior occiput flattening with left orbital compression and left ear flare was visible. Increased muscle tension was palpated at the left lateral atlas vertebral level, and thoracic paraspinal muscle tension and hypertonicity was present from T4-6. Also noted was an increase in muscle tension along the sacrospinalis region bilaterally, with right sacrum posteriority. Tension was also noted in the diaphragm and stomach area with guarding and apprehension to touch.

Treatment consisted of three chiropractic sacro occipital technique (SOT) cranial treatments[19] (over three weeks) incorporating SOT pediatric methods[20], chiropractic manipulative reflex technique (CMRT) for the T5-gastric level[21] and craniofacial balancing[19]. An infant probiotic was also recommended after the initial appointment.

Results:

Immediately following care the patient no longer had any head tilt [see post-treatment picture] and latch improvement was noted. By the third visit all orthopedic testing normalized, symmetry was noted in her sternocleidomastoid muscles, and no blood was noted in her stool.

Discussion:

Chiropractic care for congenital muscular torticollis has been gathering an evidence base of information supporting its efficacy, predominately through case reports.[1,22-37] One case by Pederick[37] describes chiropractic cranial care of a seven-month-old male child with congenital muscular torticollis (wry neck). He described the care as including "long-duration cranial adjusting, and soft-tissue technique to the whole body with special attention to the cervical region, and parental management of home care procedures."[37] At the first treatment Pederick focused on utilizing "longitudinal and cross-fascial release procedures to the trunk and extremities. Core fascial release-procedures were applied to the spinal cord, namely lumbo-sacral stretch and cranial base decompression." The parents were given some home activities to perform to aid in building greater neck symmetry. The infant was treated approximately two times a month for about four months, at which time cranial symmetry was noted along with normal cervical ranges of motion.[37]

Caution must always be exercised with generalizing findings that occur with a case report since there are so many possible confounding variables. This case relies on the parent's description of their child's behavior and function, which may represent some hopeful bias on their part. Ideomotor effects and regression to the mean challenge the finding of this study, since with some cases of congenital muscular torticollis the child can recover without care.

What is compelling with this case is that the parents had been attempting to modify their child's behavior and positioning as well as performing gentle massage to the tensioned muscles prior to beginning chiropractic intervention without effect for four months. A change in her neck and range of motion occurred immediately after treatment, along with reduction in guarding to palpation of her stomach and diaphragm following the third treatment. It is unclear if the reduction in the bloody stools related to the chiropractic intervention or recommendation for probiotic intake.

Conclusion:

This case study discusses the care of a four-month-old female child presenting with torticollis, epigastric discomfort, difficulty latching, digestive issues, and blood in her stools. Her condition was not improving with home positional modification or parental massage, yet responded at the first office visit to chiropractic SOT, cranial, and CMRT interventions with improved cervical range of motion and reduced static tilt of the head.
Greater study is needed to identify if there is a subset of infants presenting with congenital muscular torticollis and digestive issues that could benefit from this approach.

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Two sisters with plagiocephaly treated with one treated with a cranial band and the other with sacro occipital technique (SOT) cranial care: A comparative case report

Keila Nichols, DC, Charles L. Blum, DC

Introduction:

A common therapeutic approach for nonsynostotic plagiocephaly (NP) with congenital torticollis (CT) in otherwise normal children is the utilization of a cranial orthosis (CO). This study introduces SOT Cranial Therapy (SCT) as an additional therapeutic option by examining a case of two-sisters (2-years apart) with NP and CT receiving two-different treatment approaches. The outcomes, costs and practicality of therapy are discussed.

Plagiocephaly refers to an asymmetry or flattening of areas of the skull, often causing a parallelogram formation as observed from the top of the head, referred to as a parallelogram plagiocephaly (PP). The back of the head will generally demonstrate an anterior or flattened occiput on the same side as an anterior frontal and zygoma. This is also referred to as a positional or deformational plagiocephaly (DP), being non-synostotic. Some studies report that the incidence of DP has increased [1,2] while another systematic review reports incidence of being stable over the past 4 decades. [3] Generally a guide for differentiating synostotic plagiocephaly (SP) from DP is that with SP the side of frontal flattening will have an anterior displacement of ipsilateral ear and sparing of the face, whereas with DP the side of frontal flattening will have a posterior displacement of ipsilateral ear and facial mirroring of a flattened frontal bone. [4] Mawji, et al, noted that DP in otherwise normal children is a relatively frequent occurrence (3-61% with mean at 47%) with a common therapeutic option utilizing the cranial helmet (band). [5]

Proposed causes vary. In utero crowding, as in bicarnate uterus or twins, may contribute to a congenital torticollis or skull flattening. The torticollis can create asymmetrical pull on the occiput and/or temporal bones, further predisposing cranial asymmetry. In one study (N=201) they found over 50% of new-borns from a twin birth have some degree of skull distortion. [5] Low birth weight, advanced maternal age, assisted delivery, first born child, male sex, cumulative exposure to the supine position, and neck problems may increase the risk of positional plagiocephaly. [1,3] Genetic factors are suspect as well.

Cranial asymmetry can also contribute to unfavorable supine sleeping positions, which, in theory, may cause further flattening of cranial bones. Most studies suggest that to reduce the risk of DP, infants should experience a variety of positions while they are awake and supervised, and early treatment may be warranted for infants with neck problems and/or strong head preference." [3,7,8] The presence of a concomitant congenital torticollis is not uncommon in cases of DP. Mawji, et al, noted that DP in otherwise normal children is a relatively frequent occurrence (3-61% with mean at 47%) with a common therapeutic option utilizing the cranial helmet (band). [5]

Methods:

Two sisters were seen at this chiropractic clinic. Both had a similar type DP with congenital torticollis in infancy. The older sister first presented at this clinic at age 4-years-old after having used a CO from 4-6 months old for her DP. A cranial orthosis[9] (DOC Band) had been prescribed for her DP, along with neck stretching for a concomitant CT. She wore the orthosis for 3 months, 23 hours/day during 4-6 months of age. She received the prescribed neck stretches for 3 months.

The second daughter, born 1 year 8 months later, presented to this clinic seeking an alternative to CO intervention. She received SCT and infant chiropractic manipulative therapy[10] for 4 months between the ages of 10.5 weeks and 7 months. Cranial sutural techniques were employed to release restrictions; directional therapy was applied to reposition cranial asymmetry; ankle suspension technique reduced meningeal torsion tension patterns, massage techniques rehabilitated imbalanced musculature, and gentle cervical manipulation reduced vertebral imbalance. She maintained cranial and postural symmetry from 7 months to 5-years-old, which was the last time she was evaluated here.

Results:

The older daughter was treated with a cranial orthosis, which was removed by 6 months old. Following CO therapy, improved cranial balance was visualized, although there was still asymmetry of her eyes, ears and comparable widths of the sides of her face. Her cervical curve improved, though her left occiput was still lower on the left compared to the right. [Figure 1] The first time she was evaluated at this office was at 4-years-old. She was still presenting with a low left occiput, and a right anterior frontal and parietal. Additionally, she presented with a mild to moderate compensatory scoliosis. A series of 2 cranial/spinal manipulations were performed when she was 4 years old. She was re-evaluated in my clinic at age 7. At that time full, cranial symmetry was demonstrated though a mild to moderate compensatory scoliosis was still apparent, with the same low left occiput presentation.

The younger daughter had a DP similar to her older sister. The final visit for SCT treatment of her DP and CT showed resolution and symmetry cranially and musculoskeletally. [Figure 2] Cranial/spinal re-evaluations were performed at this clinic as follow-up visits at 2, 4 and 5 years of age, all demonstrating continued cranial, craniofacial, occipital, and spinal balance and symmetry.

Discussion:

Allopathic treatment of DP generally takes three approaches: 1) watch and hope for resolution without intervention, 2) reposition frequently to keep the child off the flat side of the head, and 3) CO therapy (a “helmet” or “band”). Cranial Orthoses attempt to reduce skull asymmetry by inhibiting the expansive areas, hoping to redirect cranial growth into the deficient areas.

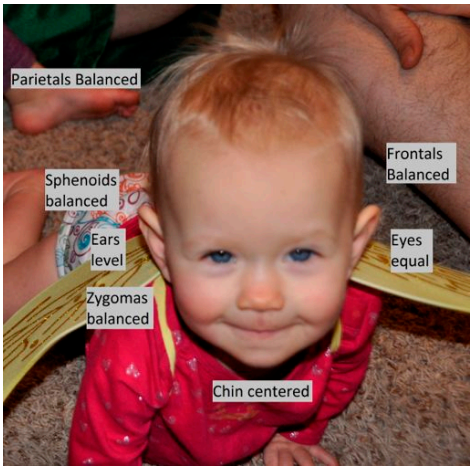
Figure 1. First Daughter Treated with Cranial Orthosis Therapy

First Daughter 3 Months Old – Prior to Cranial Orthosis Therapy

First Daughter 7 Months Old – Post Cranial Orthosis Therapy

Figure 2. Second Daughter Treated with SCT and Chiropractic Care

Second Daughter, 6 Days Old, Prior to Chiropractic Cranial Care



Second Daughter at 7 Months Post Chiropractic Cranial Care

Treatment with a cranial orthosis can last from 5 weeks to 4 months generally in infants 4-18 months of age. Costs are approximately between $2300-4000 and the 6-18 ounce CO is worn 23 hours/day, which would seem to create stress to the head and neck, especially while sleeping. Sixty five percent of subjects reported adverse events in a study by Lee, Kim and Kwon. "Heat rash was most common in 35.4% of cases studied, pressure sores (25.6%), itchiness (7.3%), discomfort (4.9%), bacterial abscess (1.2%) and corneous (1.2%)." [11]

Allopathic treatment for CT tends to focus on strengthening the "weak" muscles and forcefully stretching the shortened cervical muscles. Based on the child's response, this type of intervention does appear to create significant stress, often exhibited by screaming and struggling. When these procedures are not effective, sometimes procedures with greater risks such as injections of Botulinum toxin [12] or even surgical interventions [13] are utilized.

SCT, along with gentle chiropractic manipulation, may be a viable alternative to allopathic treatment of infants with DP and congenital torticollis. Instead of restricting continued cranial expansion to match the deficient cranial areas, SCT attempts to release cranial sutural restriction in the deficient areas so cranial expansion will naturally fill in the deficiencies during normal growth and no restriction to cranial expansion is necessary. Ankle suspension technique uses the baby's weight to reduce torsion in the spinal sleeve and its cranial attachments that can cause an imbalance in the meningeal pull within the cranial vault. Gentle chiropractic manipulative therapy's focus is to restore vertebral malposition associated with torticollis presentation. Therapeutic massage lengthens and relaxes tight musculature, as well as increasing circulation and healing to damaged tissues, ultimately decreasing the drag on the occiput and temporal bones. The practicality and cost savings of a half dozen chiropractic visits at an average of $65 per visits, as compared to the expense, discomfort and inconvenience of wearing a CO 23 hours/day [34] may be a more favorable option to parent and infant alike.

There has been limited research discussing chiropractic care of DP, or comparison studies between CO use and chiropractic cranial care only, or even integrated CO and chiropractic cranial care employed concurrently. Davies studied chiropractic care as an alternative to CO related care and performed a retrospective-study of chiropractic management of 25 cases with DP. He found "under chiropractic care alone, all 25 of the patients reviewed achieved complete resolution." [14] Case reports have noted successful care of children with DP treated with chiropractic manipulation [15-23] as well as with cranial manipulative care [24-29], particularly associated with difficulty breastfeeding, congenital torticollis, and other concomitant presentations. Also, there are specific cranial studies that focused on SCT, which demonstrate successful outcomes treating children with DP. [30-32]

It does appear that cranial palpation might offer a tool to assess and treat DP. In one study [33] the records of 649 children seen in an osteopathic practice in Lyon, France, were reviewed retrospectively, for gender, age at presentation, birth history, obstetrical, presenting complaint, side of posterior plagiocephaly, side of frontal plagiocephaly, torticollis, motion pattern of the occipital bone upon the atlas, and motion pattern of the spheno-occipital synchondrosis. Sergueef et al, "found a significant correlation between the lateral strain pattern of the spheno-occipital synchondrosis and plagiocephaly and between rotational dysfunction of the occiput upon the atlas and the side of posterior plagiocephaly." [33]

SCT and gentle chiropractic manipulation offer a viable option as treatment for plagiocephaly with congenital torticollis. The logic of releasing cranial restriction to enhance normal growth of a developing cranial vault suggests better brain growth and expansion, rather than a cranial orthosis restricting areas (and the growth of their contents) to force expansion elsewhere. Chiropractic infant techniques reduce the risk of damage or stress to already restricted cervical musculature in a congenital torticollis by using massage and gentle vertebra repositioning. The goal ultimately is to offer restoration to the underlying anatomy, more closely addressing the anatomical cause of torticollis. It is also noteworthy that the child and parent would be spared the painful neck stretches.

There are always limitations to case studies such as placebo or ideomotor effects, and particularly with a comparative study. Even with sisters, their natural progression could vary regardless of any chiropractic intervention. It is possible the older sister in this case had some asymmetrical body use preference that was unnoticed, yet still affected her growth and development, or she was genetically predisposed to a compensatory scoliosis. Closer monitoring and improved data collection is recommended.

Conclusion:

In this case study, SCT for DP and chiropractic care for CT gave results comparable, if not favorable to CO care. SCT and chiropractic care was less expensive than CO treatment, and in the parents opinion, more comfortable for the infant and easier on the day-to-day routine. Greater research is needed to determine when SCT may offer consistent and comparable, if not better, outcomes to that of CO therapy (bands or helmets), and if cranial orthoses, while aesthetically improving cranial appearance, might have secondary adverse effects not occurring with SCT. Greater study into SCT for children with DP in a large patient population would be indicated to determine the efficacy of this care both comparative to CO care, or to augment CO care. A trial of SCT care is warranted for reasons of cost, practicality or convenience, or for children that are resistant or unresponsive to CO care.

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Immediate changes to lumbosacral dural regions upon bilateral alternating pressure to the parietooccipital (asterion) cranial region: A dissection study.

Marc , DC, DACNB, FICS

Introduction:

Relationships between clinical application of manipulative techniques to the cranium and sacral region have been questioned[1,2] and some studies suggest that palpation of these regions cannot be adequately reproduced[3-8], while others suggest inter- and intra-examiner reliability .[9-16] An early study by Greenman assessed cranial strain patterns[17] and their relationship to the lumbosacral region via radiograph.[18] Greenman noted in his preliminary study that "it appears that it is possible to demonstrate roetgengraphically side-bending, torsion, flexion, and extension patterns of the skull."[18] He also found an "excellent" correlation between "low occiput on the side of the low sacrum."[18] Blum and Curl discussed an anatomical relationship between the cranium and the pelvis, with suggested clinical applications.[19]

Oleski et al, [20] also used radiographs to explore cranial bone mobility investigated 12 adult patients who had received cranial vault manipulation treatment with a pre- and post-treatment x-ray taken with the head in a fixed positioning device. They found that the degree of change in angle between various specified cranial landmarks as visualized on x-ray was measurable. "The mean angle of change measured at the atlas was 2.58 degrees, at the mastoid was 1.66 degrees, at the malar line was 1.25 degrees, at the sphenoid was 2.42 degrees, and at the temporal line was 1.75 degrees. 91.6% of patients exhibited differences in measurement at 3 or more sites." They concluded that "cranial bone mobility can be documented and measured on x-ray." [20]

Kostopoulos and Keramidas explored possible relationships between forces to the cranial bones and changes in the cranial dura, most specifically the falx cerebri, and found "the relative elongation of the falx cerebri changes as follows: for the frontal lift, 1.44 mm; for the parietal lift, 1.08 mm; for the sphenobasilar compression, -0.33 mm; for the sphenobasilar decompression, 0.28 mm; and for the ear pull, inconclusive results."[21] "In a nonpublished study Rowe et al. measured the relative elongation of falx cerebri in an unembalmed cadaver using a technique of multiple photography. They recorded a 1 mm displacement of the falx cerebri when they applied 48.2 grams of external force on the frontal bone."[21,22] Kostopoulos and Keramidas in another study measured the relative elongation of the falx cerebri during the application of external forces on the frontal bone of an embalmed cadaver and found a positive correlation between the applied force and the degree of relative elongation of falx cerebri.[23]

Pick[24] also attempted to investigate the hypothesis that external cranial manipulation can cause change within the structures of the human brain, using pre- and post- magnetic resonance imaging. He found that with pressure to the hard palate and bregma regions, similar to what is used during cranial manipulative interventions, created significant changes in the internal cranial structures. "Results from the second MRI (administered during the application of external cranial pressure) demonstrated elimination of a 5-mm peak along the superior border of the corpus callosum and a 4-mm reduction in the width of the fornix column. The exposed anterior/superior wall of the lateral ventricle posterior to the fornix column increased 51 degrees

dorsally with manipulative application. The angular surface of the central lobule altered by minus 26 degrees, and the posterior surface of the inferior colliculi varied by minus 7 degrees." [24]

The purpose of this study is not to investigate the clinical applications or inter/intra examiner palpation of the cranium and sacrum but to assess whether an anatomical functional relationship could be demonstrated through a dissection study between the cranium and sacrum.

Methods:

The cadaver was embalmed for anatomical dissection purposes and stored in an emersion tank for over a year.

Dissection technique: Dissection was performed with a #22 scalpel blade to create a viewing window over the region of the sacral dural sac. The incision was performed along the lower region of the fifth lumbar, exposing its lower spinous process and L5 S1 facets. The incision continued caudally along the lateral aspect of the sacral laminar region and terminated approximately 1.5 cm above the sacral hiatus. The incision-viewing frame was completed with a transverse cut connecting the two lower terminal edges of the lateral incisions. Dermal, fascial and muscular tissue (within the framed incision region) was cut and scraped away to expose the bone using the #22 scalpel and the flat edge of a Huber Mall stainless steel probe. After the osseous structure was exposed, a bilateral laminectomy was performed utilizing the 1/2-inch stainless steel prybar chisel placed along the lateral borders of the sacral canal and carefully struck with a brass mallet to crack through the osseous shell.

The bone covering the spinal sacral canal was then carefully removed with the aid of a bone forceps to expose the dural sac. As a final step to enhance the dural sac's visibility, excess fluid was siphoned from the area and surrounding adipose was gently removed.

Cranial hand applications: Lateral to medial pressure was applied bilaterally with cranial contacts just above the asterion. [Figure 1 and 2] The contacts were with the heel of the hands around the hypothenar-pisiform regions while the fingers interlaced over the parietal-occipital-lambda region [Figure 2] for positional stability. Approximately 3-4 kg of force was applied to the cranial contacts. For purpose of comparisons, the force generated during routine mastication of food such as carrots or meat is about 7 to 15 kg of force with the maximum masticatory force in some people reaching up to 50 to 70 kg of force.[25]

Results:

During the application of lateral to medial external cranial pressure (ranging from 3-4 kg) over the parietal-occipital-lambda region, an obvious ballooning or circumferential expansion of the sacral dura around the region of S1 was observed. [Figure 5 and 6] Upon release of the contact cranial pressure there was a visibly significant decrease in circumferential expansion. [Figure 3 and 4] Hence, it appears that with the application of cranial pressure, the sacral dural sac

expanded in its circumference up to twice (100% increase in size) the diameter that it was before cranial pressure was applied or after the pressure was released.

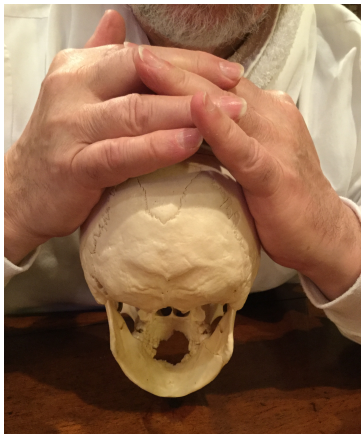

Figure 1: Demonstrates the hand application posture for bilateral, lateral to medial pressure

Figure 2: Demonstrates the location of targeted pressure application.

Figure 3: Exposes the sacral dura below L5, around the level of S1 without the application of cranial pressure.

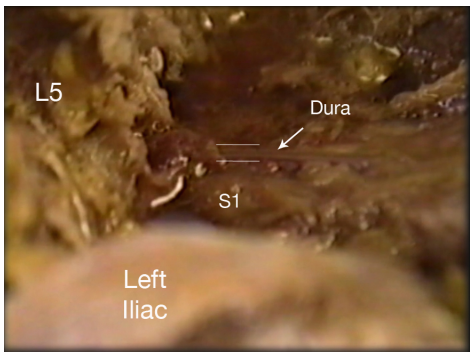

Figure 4: Same image as figure 3, but with landmarks and structures labeled for identification.

These views are visualizing the sacral dural sac (S1 level) from a 5° posterior oblique lateral perspective with the posterior sacral wall removed by a bilateral laminectomy.

Figure 5: Exposes the sacral dura below L5, around the level of S1 with the application of cranial pressure.

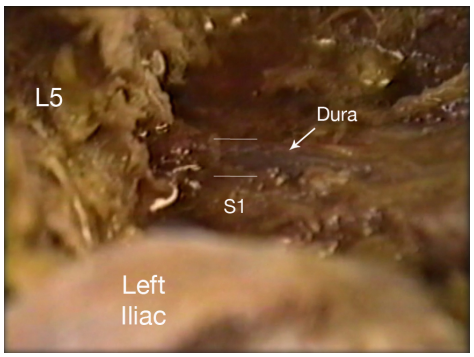

Figure 6: Same image as figure 5, but with landmarks and structures labeled for identification.

Discussion:

Upon application of the pressures to the cranium a virtual immediate change was visualized in lumbosacral meningeal region. While this was performed on a dissected human it is reasonable to assume this relationship takes place in living subjects.[26-28] At this early stage of investigation extrapolating clinical relationships[28] with certitude may be premature. Further analysis with other dissected subjects as well as corroborating these findings in vivo human subjects is necessary to determine the generalization of this current study.

Clinical studies have found relationships between distal ends of the sacral and cranial periosteal/meningeal dura. Ashkenazi et al.[29], described a rare case of a paraganglioma of the filum terminale where the patient initially presented with headache and papilledema. Magnetic resonance imaging demonstrated enlarged ventricles of the brain and a well-demarcated intradural spine tumor. Of interest is that after resection of the tumor, the papilledema and headaches resolved, and the ventricles returned to normal size.[29]

Rhee et al.[30], also described a case of a patient with an intraspinal paraganglioma who presented with normal pressure hydrocephalus and six month history of gait disturbance and cognitive dysfunction. Computed tomography of the brain and magnetic resonance imaging of the spine revealed a paraganglioma of the filum terminale. Radioisotope cisternography revealed a severe delay in cerebrospinal fluid circulation; however, symptoms related to communicating hydrocephalus resolved after tumor resection.[30]

Murthy and Deshpande[31] discussed a histological study evaluating the central canal of the excised filum terminale in seven hydrocephalic children and an equal number from control cases. Their observations indicated that the central canal of the filum terminale dilates in communicating hydrocephalus, and the dilatation is proportionate to the lateral ventricular enlargement.[31] Therefore, based on Askenazi[29], Rhee[30], Murthy[31], and Sankhla[32] studies, a clinical and anatomical relationship appears to be present between the cranial and sacral meningeal regions related to variants in cerebrospinal fluid pressure or circulation in the subarachnoid and/or the cerebral ventricles/spinal central canal.

Limitations of this study are that they were performed on an embalmed human and it is possible tissue restriction might have contributed to changes in the sacral region with pressure to the cranium. It is possible that this patient had anatomical variants that led to the findings in this study and other subjects might have different findings. It is also possible that while a direct relationship can be found in forces to the cranium and sacral dural tissue response, this same relationship may not be taking place in live human subjects.

Conclusion:

This study represents the first attempt to assess if there might be a relationship between pressures to the cranium and a response in the lumbosacral meningeal region. While other studies have found pressures to the cranium had a demonstrable change in the dura, most were assessing structures local to the force application. In this case it appeared that pressures on and above the

asterion resulted in changes in the lumbosacral region almost immediately to the cranial pressure application. Further research is needed to determine if other dissected humans have similar findings and if this can be applicable to live humans.

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Hypertensive 80 year-old male treated with cranial therapy: a case report

Jason Scoppa, DC, CSCP, CCSP

Introduction:

High blood pressure, or hypertension, is a common condition in which the long-term force of the blood against artery walls is high enough that it may eventually cause health problems, specifically cardiovascular disease. According to the CDC's report in 2015-16, the prevalence of hypertension was 29.0%, and that number tends to increase with age. Hypertension remains an important public health challenge in the United States because it increases the risk for cardiovascular disease, the number one cause of death in the US. Effective blood pressure management has been shown to decrease the incidence of stroke, heart attack, and heart failure, making potential solutions to this health issue extremely valuable.[1]

"Despite the vast amount of evidence accumulated to date on the benefits of lowering blood pressure, elevated blood pressure is still the leading risk factor for disease and disability worldwide."[2] "Hypertension is invariably diagnosed along with multiple comorbidities, particularly diabetes mellitus, obesity, chronic kidney disease, coronary artery disease, and heart failure."[3] It is important to note that the, "clustering of these conditions requires a thorough-and often multidisciplinary-approach in the evaluation and management of individuals with hypertension."[3]

Multidisciplinary blood pressure management can take many forms[4], including lifestyle modifications (diet[5] and exercise[6]), numerous medications, or a combination of treatment modalities. A look into the literature suggests some success has been made at controlling or improving hypertension using treatments outside of lifestyle and medications, including paced breathing[7], chiropractic therapeutic interventions[8-10], fasting[11], and nutritional remedies[12,13], though more research is needed to determine their large-scale effectiveness.

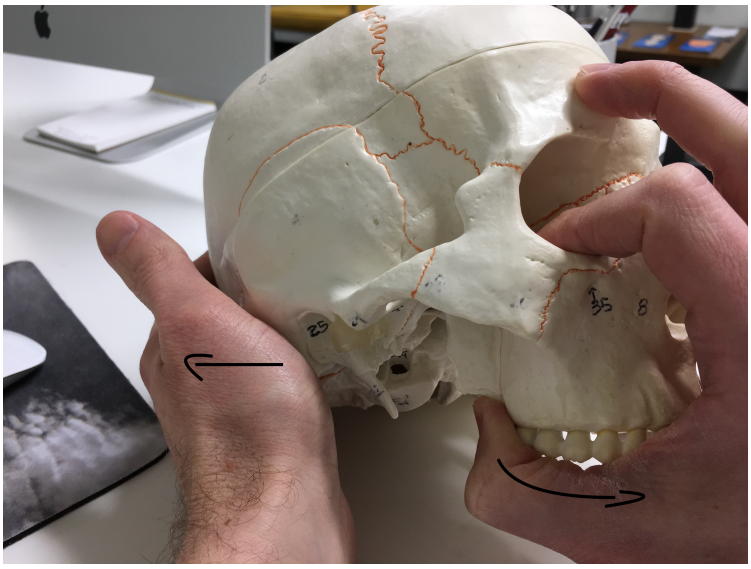
Case Presentation:

A long-time patient presented with a new complaint of high blood pressure, which was unusual for him. It had started a couple of weeks prior to his appointment and had remained consistently high. He had no change in lifestyle or potential life stressors, and it was seemingly insidious in onset. At the time of his appointment he was 80-years-old and had been monitoring his blood pressure regularly using a wrist device. At the time of his appointment, using the same wrist device, his blood pressure was 167/93. The patient claimed that it hadn't gotten below 160/90 for the past couple of weeks.

Methods/Intervention:

The patient was treated a few days earlier using Sacro Occipital Technique (SOT) protocol for Category 1 (balancing pelvic torsion and normalizing sacral nutation), as well as SOT cranial

methods to balance frontal bone tension patterns. At the time of the visit when he let it be known that he was having consistently high blood pressure, he was then reassessed, and found to have sustained the results of his prior treatment, and presented with no pelvic torsion and normal sacral nutation. Because of this, he was only treated with a cranial technique for high blood pressure. This cranial technique was performed bilaterally, by placing the doctor's thenar pad onto the mastoid with one hand, gentling guiding it posterior, while an intra oral contact is made with the thumb of the other hand, which hooks onto the pterygoid hamulus drawing it anterior. This light separation is held for 1-4 minutes, or until a gentle give/release of tension is felt by the doctor.

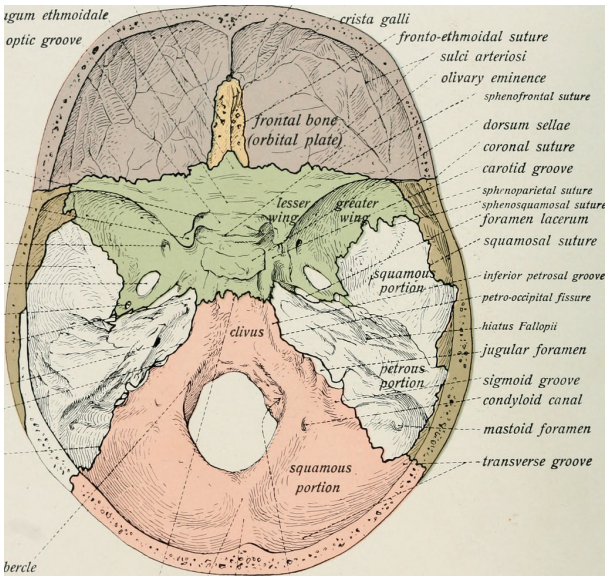


Results:

Immediately following the cranial treatment the patient rechecked his blood pressure using the same wrist device, and it was 117/74. The following day the patient communicated to the office that his blood pressure had remained improved and stable, and had only slightly increased to 126/78. At six-months post treatment he indicated that his condition had remained stable since the time of the cranial maneuver.

Discussion:

It is unknown how this cranial technique might affect blood pressure, but a number of cranial foramen are located between these two contacts, which may provide some insight into how the technique works. The foramen ovale, foramen spinosum, foramen lacerum, and the carotid canal are all located between the mastoid process and the pterygoid hamulus. Some theories suggest that there may be an issue with cranial nerve entrapment or compression syndromes[14], particularly in this case with the vagus nerve, which could represent a parasympathetic affect on blood pressure.



There has also been other case presentations[15-17] that utilized cranial techniques to successfully treat hypertension. One type of cranial technique proposed an autonomic affect, related to what is termed "compression of the 4th ventricle," which was found to have an affect on hypertensive patients.[18] Some studies have found a relationship between location of therapeutic application (spinal level) and its affect on the autonomic system. [19,20]

As the field of chiropractic is expanding its position in preventive care[21] and within multidisciplinary arenas[22], surveys of chiropractic clinics are finding that patients with hypertension represent a significant percentage of their presenting patients. [23-25] Additionally, a number of case studies have demonstrated what appears to be affective in-office care for a subset of patients with hypertension or high blood pressure.[26-34] Of note are two studies discussing a homeostatic effect from chiropractic intervention, which indicated that a similar treatment might raise blood pressure with hypotensive patients and lower blood pressure with hypertensive patients. [35,36]

Although the patient was elated that his blood pressure decreased without medications after just one procedure, precautions and patient education were taken prior to utilizing this technique. This is a patient who was well known to the practitioner, who was not on any medications for hypertension, and had no prior history or explanation for a recent rise in blood pressure. Additionally, the patient agreed that if the procedure didn't lower his blood pressure that he would seek consult with his primarily care doctor to determine if there was some other underlying cause for the sudden increase.

As with any case study it is difficult to rule out the placebo or ideomotor effect, also it is possible that the patient's response represented a regression to the mean. What is compelling however is that for close to three weeks his blood pressure was elevated and he was consistently monitoring his blood pressure with a wrist monitor. Following the treatment he immediately took his blood pressure with the same wrist monitor and noted its "normalization" which has sustained itself for over six months. While one study did not find a relationship between spinal manipulation and blood pressure[37], in this case cranial work was utilized as opposed to spinal manipulation. It is also possible that only a subset of hypertensive patients may be responsive to manipulation to the

thoracic or cervical spine, or cranial regions. This case study presents a case of idiopathic onset of hypertension that was responsive to cranial manipulation, and it is possible we may find some resistant hypertensive[38] patients might have improved outcomes with chiropractic and allopathic co-management.

Conclusion:

This case report discusses an 80-year-old patient presenting with high blood pressure with a consistent reading for 3 weeks. A cranial procedure was applied bilaterally and his blood pressure returned to its normal level immediately, and sustained itself at 6-months follow up. This is only one case study and caution must be taken with anyone experiencing hypertension, however finding what subset of patients may be responsive might limit the need for the chronic use of medication. Since hypertension has multiple comorbidities, many life threatening, it's important that a patient is maintaining regular checkups with his/her primary care doctor. Although the result of this case is very encouraging, more research is needed into the effectiveness and etiology of this technique.

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Conservative chiropractic management of 13-month old patient with facial palsy: A case report

Arthur Tovar, DC, Charles Blum, DC

Introduction:

In the general population facial palsy is a complex condition, which currently lacks a consensus on its optimal management in the healthcare arena.[1,2] Pediatric congenital facial paralysis, though uncommon, may cause multiple problems for the newborn, such as difficulty with nursing and incomplete eye closure. If the paralysis does not resolve, it may affect the child's future speech, expressions of emotion, and mastication.[3] In the pediatric population congenital facial paralysis is generally classified as traumatic or developmental, unilateral or bilateral, and complete or incomplete. Determining the etiology is important because the prognosis and treatment may differ, depending on the underlying causation.[4]

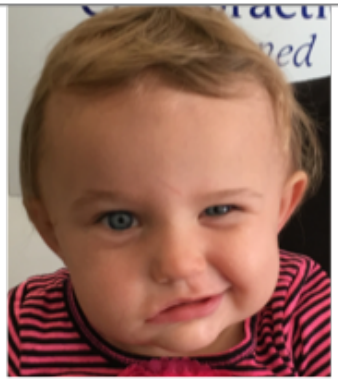
Congenital facial paralysis accounts for 8-14% of all pediatric cases of facial paralysis.[5] The incidence of facial paralysis in live births is 0.8-2.1 per 1000 births, and, of these, 88% are associated with a difficult labor (e.g. many hours, very painful, etc.). Of patients with birth trauma, 67-91% are associated with forceps delivery[6-9] with a lower incidence associated with development causes. While more recent studies have found a relationship between birth trauma and facial palsy[6-9] an early study suggested that "permanent" congenital facial palsy more likely has an intrauterine causation.[10] In for the pediatric population a overall rate of spontaneous complete recovery tends to be approximately 95-98%[9,11,12], so interventions that might offer some risk, such as corticosteroids[11], are considered inappropriate.

Case Presentation:

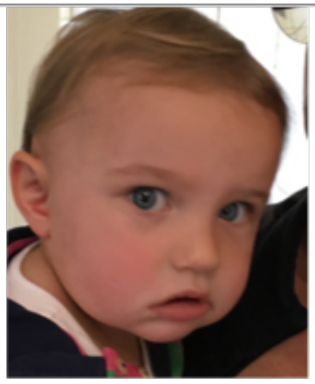
A 13-month-old female child presented to this clinic with facial palsy. According to her mother she had a difficult, long birth with an epidural intervention, described the newborn as being "very large," and was born with a right shoulder dystocia. Of interest the parents did not notice her facial distortion until four months of age, at which time she was seen by a pediatric neurologist who diagnosed the patient with a left-sided facial nerve palsy or paralysis. The parents reported that since birth the child had been very unsettled and a poor sleeper including that she drooled from the left side of her face. The child did not like anyone to touch the back of her head and was always pulling on her own ears since early infancy. Prior to being seen at this office she was being told by other physicians that the condition would resolve on its own; however, the parents were concerned because the condition was ongoing for nine months and appeared stable.

Methods/Intervention:

At each office visit the child was assessed and her spine (T4-8) was adjusted as appropriate for her age, which involved very gentle pressures. She was found to have pelvic torsion and altered sacral nutation (sacro occipital technique's [SOT] category one)[13] and this was balanced, if indicated, on each office visit. Her cervical spine was adjusted using SOT's cervical stair-step and her atlas was adjusted using an Arthrostim on gentle mode. Treatment to the cranial and craniofacial bones had a focus on temporal bone balancing[14] and lateral temporal bone decompression.[15] Cranial tension patterns were also released using Howat's Cranio Fascial technique from his book "Cranio Fascial Dynamics," by pushing on the left palatine bone (posterior aspect of the hard palate) using gentle pressure to the hard palate from left to right, ending on right palatine bone.[16]



1st Office Visit
Pre-Treatment

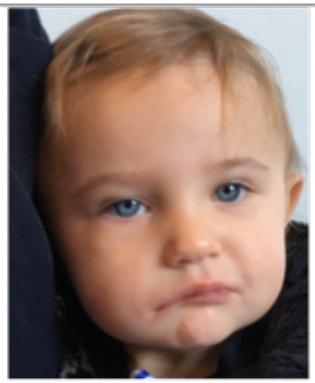


2nd Office Visit
Post-Treatment

4th Office Visit

6th Office Visit

9th Office Visit



12th Office Visit (6-Weeks)

Results:

At the first follow-up visit the mother and grandmother reported a big change from the initial visit with both of the child's eyes appearing more open. By the sixth visit both parents spoke about great changes seen in their daughter, such as not noticing a large crease on her mouth when feeding her with a bottle, as well as her being more calm generally and relaxed through the day and at night. They reported that the back of her head was no longer sensitive to touch and was more "rounded and even."

Noteworthy functional changes occurred following the first office visit as the parents noticed their child was capable of crawling and walking (not just on her toes, as before) with improved coordination and greater ease. Prior to treatment the child was mainly mumbling, but by the seventh office visit she was starting to speak. At twelfth visit parents described themselves as "amazed" that their child was now feeding happily and eating much faster than before. She was able to finish her food in 15 minutes, and prior to care would take her about an hour to feed, which was frustrating for parents and child. The child also no longer salivated constantly on the left side of her mouth.

Since the family lived in another country they had to cease treatment after six weeks, but were very happy with the significant improvements in their child's face and head as well as improvements in function and ability to sleep through the whole night.

Discussion:

This case is of interest since the child was not making progress towards a spontaneous recovery from the perspective of the parents and prior treating physicians. The temporal relationship between the child's presentation and subsequent response to care suggests a compelling relationship between the care rendered and her recovery. It is suggestive that the infant cranium is particularly flexible and may be responsive to pressures to the cranium and craniofacial region, which can be used to facilitate internal cranial bone, suture, and internal meningeal/periosteal dural balance.

There has not been much written about chiropractic care of facial palsy in the literature, with one study discussing the successful treatment of a pediatric patient with an incomplete obstetric palsy of the brachial plexus and facial nerve in a two-week-old male child also with plagiocephaly. Over a four-month period conservative chiropractic care was implemented, which also included cranial manipulative care. The outcome in that case was good with "a gradual reduction in plagiocephaly and improvement in facial symmetry, upper limb posture, and movement." [17]

As with any case study it is difficult to rule out the placebo or ideomotor effect; also it is possible that the pediatric parent's wishful interpretations of the child's progress might be questionable. Since many cases of facial palsy have spontaneous recovery there is the possibility that the child's positive response was a regression to the mean or a natural progression of her condition. What is of interest is that aside from physical changes [see photograph] of before and after treatment that show some significant improvement in the appearance of the her face aesthetics,

the parents also reported positive attitude changes and physical changes such as less sensitivity to touching her head, less fussiness and crying, and improved sleeping which began almost immediately after treatment.

Conclusion:

Case reports are helpful to point out clinical encounters warranting further study. While facial palsy in infants is usually self-limiting and recovery is generally expected, in this case there was a latent onset (four months) and it had sustained itself for nine months without any change. Since the parents did not want to continue the "watch and wait" approach but did not wish to pursue high-risk interventions, they chose conservative chiropractic and cranial care at this office. Both the physical changes in her appearance as well as clinical changes occurring in close association with the treatments rendered suggest chiropractic cranial treatment of children with facial palsy warrants further study.

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SOTO-USA Research Update

SOTO-USA is dedicated to bringing you the most updated and comprehensive research relating to Sacro Occipital Technique (SOT). Research is the future of chiropractic and SOT. Publishing this research sets the foundation for the future of SOT and protects its future worldwide. Understanding the published research allows us to grow, learn and modify our technique and diagnostic methods to fit our discoveries and stay current in the scientific community. The research department of SOTO-USA is goal oriented and focuses on action and results. **Please consider a tax-deductible donation to SOT research so SOTO-USA can help us further SOT's prominence in chiropractic healthcare**.

SOTO-USA is an organization dedicated to the advancement of SOT and the work of Major Bertrand DeJarnette, DO, DC. One of the many ways in which we at SOTO-USA contribute to the chiropractic profession is through the publishing of articles, newsletters, compendiums, and manuals relating to the art, science and philosophy of SOT (please visit our website for a complete listing of publications; www.SOTO-USA.org).

Association of Chiropractic Colleges – Research Agenda for Chiropractic (ACC RAC) Conferences

Papers Presented at the 2018 Conference and to be presented the 2019 Conferences

The ACC RAC conference is one of the most prestigious chiropractic research conferences regularly attended by college presidents, research and technique chairs, and many other influential doctors and practitioners affecting the future of chiropractic and healthcare. Since SOTO-USA's inception in 1999 we have attended every conference and had a paper accepted at every ACC RAC conference possible. The 2017 marked the first year ever that the Biennial World Federation of Chiropractic Conference took place with the ACC RAC. It was a monumental event for sacro occipital technique, cranial, and chiropractic manipulative reflex technique research, since we had 22 papers presented.

This past year we had 14 SOT related papers and a workshop accepted for the 2018 ACC RAC Conference:

Bloink T, Blum CL. Chiropractic care for TMJ and extreme tongue fatigue: A case report. J Chiropr Edu. 2018;32(1):53.

Blum CL. The polyvagal theory: A rational for psychological and chiropractic interdisciplinary care. J Chiropr Edu. 2018;32(1):69.

Blum CL. Sacroiliac joint hypermobility syndrome and chiropractic: A preliminary survey. J Chiropr Edu. 2018;32(1):70.

Blum CL. A preliminary survey of chiropractic college use of table sanitizers in their clinic: Are there green alternatives? J Chiropr Edu. 2018;32(1):69.

Blum CL. Chiropractic care of a rock climber's shoulder with FHP (forward head posture): A case report. J Chiropr Edu. 2018;32(1):53.

Blum CL. Study on inducing fifth lumbar vertebra malposition by M. B. DeJarnette: Historical development of sacro occipital technique. J Chiropr Edu. 2018;32(1):69.

Blum CL, Benner CD. A survey of sacro occipital technique (SOT) practitioners: Pediatric patients and their presenting symptoms. J Chiropr Edu. 2018;32(1):69.

Edwards E, Ohm J, Blum CL, Union A. Identifying the frequency of perinatal sacroiliac hypermobility indicators in a chiropractic clinic. J Chiropr Edu. 2018;32(1):72.

Gleberzon B, Roecker C, Blum CL, Good C, Cooperstein R. Toward the Development of a Standardized Chiropractic Technique Program Workshop - Association of Chiropractic Colleges 25th Educational Conference and Research Agenda Conference. March 8-10, 2018.

Hamel R. SOT cranial therapy for the treatment of abnormal sensations of the tongue, tinnitus, TMD and neck pain. J Chiropr Edu. 2018;32(1):56.

Hamel R. SOT cranial therapy with an occlusal splint for the treatment of low back, leg and neuropathic pain: A chiropractic dental co-treatment case report. J Chiropr Edu. 2018;32(1):73.

Lane J, Union A, Edwards J. Chiropractic care of a pediatric patient with twin to twin transfusion syndrome. J Chiropr Edu. 2018;32(1):69.

Mersky JA, Blum CL. Dizziness in a patient with airway compromise and TMD: A case report. . J Chiropr Edu. 2018;32(1):77.

Perry K. Unresponsiveness to sacro occipital technique (SOT) procedures suggested possible pathological contribution to patient presentation: A case report. J Chiropr Edu. 2018;32(1):63.

Serola R, Blum CL. Sacroiliac joint myoligamentous interrelationships: Implications of sacral nutation dysfunction on whole body kinematics. J Chiropr Edu. 2018;32(1):65.

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At this year's ACC RAC 2019 Conference we have twelve papers and one workshop accepted:

Thomas Bloink, DC, Charles Blum, DC. Mal de Debarquement Syndrome an atypical vertigo: A Case report [Platform]

Thomas Bloink, DC, Charles Blum, DC. Chiropractic care for a patient suffering a slip and fall and craniofacial trauma: A case report. [Platform]

Thomas Bloink, DC, Charles Blum, DC. Chiropractic care of professional hockey player suffering from multiple concussions: A case report [Poster]

Charles Blum, DC. A survey of chiropractic students or recent graduates on their experiences in chiropractic college adjusting lab or class [Poster]

Charles Blum, DC. Cranial therapeutic applications to facilitate dentofacial growth and development in a 50-year-old adult female A case report. [Poster]

Charles Blum, DC. A chiropractic and dental perspective the three faces of forward head posture: Differential diagnosis is the key for optimal outcomes [Platform]

William Boro, DC. Intervention affecting atrial fibrillation through chiropractic adjustment, sacro occipital technique's chiropractic manipulative reflex technique: a case report [Poster]

William Boro, DC. Intervention in gall bladder dysfunction through chiropractic adjustment and nutritional therapy: a case report. [Poster]

Richard Gerardo, DC, Charles Blum, DC. Interdisciplinary care of a 44-year-old male patient with obstructive sleep apnea (OSA) secondary to a class two division two malocclusion. [Platform]

Brian Gleberzon DC, Charles Blum DC, Christopher Good, DC, Robert Cooperstein, DC, Toward the Development of a Standardized Chiropractic Technique Program. [Workshop]

Rachel Hamel, DC. SOT cranial therapy for the treatment of pediatric torticollis: A chiropractic case report. [Platform]

Jeffrey Merksy, DC, Charles Blum, DC. Conservative chiropractic care for a post-traumatically induced C6/7 intraforaminal disc herniation in a 43-year-old female," was accepted as a platform. [Platform]

Keila Nichols, DC. Two sisters with plagiocephaly accompanied by torticollis - one treated with a cranial orthosis (helmet); the other with Sacro Occipital Technique (SOT) Cranial Therapy: a comparative case report. [Poster]

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At this year's 2019 World Federation of Chiropractic Congress in Berlin, Germany: March 20-23, 2019 we have five papers accepted:

Thomas Bloink, DC, Charles Blum, DC. Chiropractic care of professional hockey player suffering from multiple concussions: A case report

Thomas Bloink, DC, Charles Blum, DC. Mal de Debarquement Syndrome an atypical vertigo: A case report

William Boro, DC. Intervention in Atrial Fibrillation with Chiropractic Manipulation and Sacro Occipital Technique's Chiropractic Manipulative Reflex Technique (CMRT): A Case Report

William Boro, DC. Chiropractic Intervention in Gall Bladder Dysfunction: A Case Report

Robert Straub, DC. The posterior/inferior (PI) ilium and the short leg: A retrospective review (n=110) of records

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The Following was an SOT Related Presentation for the Australian Chiropractic Association (ACA) National Conference Research Symposium: October 20-21, 2018 - Hobart, Tasmania

Shaun Cashman, DC, Charles Blum, DC. Trapezius fibre muscle analysis: A preliminary inter/intra-examiner reliability study

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The **SOT Research Conference Proceedings** (Now fully indexed and searchable!)

All of the SOT Research Conferences have now been published in the Annals of Vertebral Subluxation Research and is available for searching through MANTIS (a major alternative healthcare search engine) and chiroindex.org (a major chiropractic search engine). All abstracts from the conferences will be published in the Quinquennial SOT Compendium of Peer Reviewed Research and full conference proceedings are offered free to every chiropractic college library nationally and internationally.

1st Annual Sacro Occipital Technique Research Conference Proceedings. Las Vegas, Nevada October 22, 2009. Annals of Vertebral Subluxation Research ~ Sept 29, 2011 ~ Pages 104-132.

2nd Annual Sacro Occipital Technique Research Conference Proceedings. New Orleans, Louisiana 2010. Annals of Vertebral Subluxation Research ~ October 17, 2011 ~ Pages 133-164.

3rd Annual Sacro Occipital Technique Research Conference Proceedings. Nashville, Tennessee May 19, 2011. Annals of Vertebral Subluxation Research ~ Nov 10, 2011 ~ Pages 165-182.

4th Annual Sacro Occipital Technique Research Conference Proceedings. Atlanta, GA May 3, 2012. Annals of Vertebral Subluxation Research ~ May 24, 2012 ~ Pages 41-59.

5th Annual Sacro Occipital Technique Research Conference Proceedings. Atlanta, GA May 2, 2013. Annals of Vertebral Subluxation Research ~ March 27, 2014~ Pages 22-48.

6th Annual Sacro Occipital Technique Research Conference Proceedings. Redondo Beach, CA May 15, 2014. Annals of Vertebral Subluxation Research ~ July 14, 2014 ~ Pages 129-144.

7th Annual Sacro Occipital Technique Research Conference, New Orleans, LA May 7, 2015. Annals of Vertebral Subluxation Research ~ June 8, 2015 ~ Pages 135-145.

8th Annual Sacro Occipital Technique Research Conference, New Orleans, LA May 7, 2015. Annals of Vertebral Subluxation Research ~ November 23, 2017 ~ Pages 254-274.

9th Annual Sacro Occipital Technique Research Conference, New Orleans, LA May 12-13, 2017. Annals of Vertebral Subluxation Research ~ November 23, 2017 ~ Pages 275-286.

10th Annual Sacro Occipital Technique Research Conference, Kauai, Hawaii, February 28 – March 2, 2018. Annals of Vertebral Subluxation Research.

Many thanks go to the editors of the Annals of Vertebral Subluxation Research, Drs. Pamela Stone and Matthew McCoy. Their continued support of chiropractic clinical research and of SOT is greatly appreciated.

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At the inaugural 2009 Sacro Occipital Research Conference, Las Vegas, Nevada we had 28 abstracts accepted. At subsequent Sacro Occipital Research Conferences many of the submissions have led to paper submissions to various other research conferences and peer review journals. All SOT practitioners and allied healthcare partners are encouraged to be a part of our next research conference that will occur in 2020. Check the SOTO-USA website for the call for papers: www.SOTO-USA.org

Our ongoing commitment continues into the future with papers submitted to chiropractic and allied healthcare conferences and journals. One of the easiest ways research can be facilitated by a doctor in clinical practice is through the publishing of individual research papers and case histories. These lay the groundwork for future research directions and projects. If the need arises, we will be happy to assist the doctor in writing the paper or case history in order to get it submitted for publishing.

Please take a moment to review our landmark SOT and cranial research texts, which will eternally preserve SOT, related published research, which will have updated volumes every 5 years. These can all be purchased online at www.soto-usa.org or by calling (336) 793-6524.

1st Sacro Occipital Technique Research Conference Proceedings: 2009.

2nd Sacro Occipital Technique Research Conference Proceedings: 2010.

3rd Sacro Occipital Technique Research Conference Proceedings: 2011.

4th Sacro Occipital Technique Research Conference Proceedings: 2012.

5th Sacro Occipital Technique Research Conference Proceedings: 2013.

6th Sacro Occipital Technique Research Conference Proceedings: 2014.

7th Sacro Occipital Technique Research Conference Proceedings: 2015.

8th Sacro Occipital Technique Research Conference Proceedings: 2016.

9th Sacro Occipital Technique Research Conference Proceedings: 2017.

10th Sacro Occipital Technique Research Conference Proceedings: 2018.

11th Sacro Occipital Technique Research Conference Proceedings: 2019.

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Soon in Print - The Compendium of Sacro Occipital Technique: *Peer-Reviewed Literature 2005-2010.*

Soon in Print - The Making of a Chiropractor: The Biography of Major Bertrand DeJarnette by Ken Wheat

In Print:

The Compendium of Sacro Occipital Technique**: *Peer-Reviewed Literature 2000-2005.***

The Compendium of Sacro Occipital Technique**: *Peer-Reviewed Literature 1984-2000.***

The SOT Collection: *To the Year 2000.*

The SOT Collection: Supplement: *To the Year 2000.*

SACRO OCCIPITAL TECHNIQUE

Its Past, Present and Future

By Charles L. Blum, DC

Sacro Occipital Technique (SOT) is an assessment and treatment method of chiropractic developed by Major Bertrand DeJarnette, DO, DC in the late 1920s. Prior to beginning a career in chiropractic, a nineteen-year-old DeJarnette embarked on a career as an engineer within a group of elite engineering students hired by the Ford Foundry for research and development. One day not long after beginning his employment at the foundry, he was walking up the steps to his work when an explosion occured in the building. He was thrown nearly 30 feet and barely survived his injuries, everyone else was killed.

During that era in American history, anyone involved in an explosion was considered "bad luck" by potential employers and society at large. He felt despondent about his future engineering career, confused as to why he alone survived, and in excruciating pain due to the injuries he sustained. Contemplating suicide while standing on the highest bridge in town, he felt something touch him and tell him that he had important things yet to accomplish. At the time he was not an especially spiritual person, but he was shaken enough by the experience to get down to the bridge. He walked around aimlessly until he collapsed in front of a house, exhausted. In the morning the homeowner, who fortuitously happened to be an osteopath, discovered the young DeJarnette asleep on his front steps and offered to help him[1].

When the osteopath realized how injured DeJarnette was, he suggested that he attend an osteopathic college where he could learn and continue to receive care. After graduating with an osteopathic degree, he later attended chiropractic college. Upon graduating, he established his chiropractic practice in Nebraska City, Nebraska. He always felt there was a reason why he survived, and that he had a duty to make his life meaningful by improving the welfare of others[1,2].

DeJarnette had a photographic memory and could read a full page, rather than a single word, at a time. His abilities likely led to why he was able to write over 140 books and articles. For DeJarnette, research was an essential part of being a chiropractor, and essential to the future of the chiropractic profession. As early as July 1935, he was a featured speaker at the 40th Anniversary Convention 1895-1935 of the National Chiropractic Association, presenting clinical research. Always,

Photo: ***Major Bertrand DeJarnette, DO, DC***

research was his passion. 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[3]."

When Dr. DeJarnette began to study the treatments he rendered, he realized that if any meaningful information was to evolve from his experience, he would have to resolve it himself. He realized that explaining how his discoveries evolved was more difficult than the process of developing new diagnostic and therapeutic interventions[4].

"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[5]." "Research in Chiropractic must go on forever. Someone must do this type work, for it simply will not take care of itself.

A profession cannot stand still. Momentum must constantly be generated. Chiropractic research needs many things it does not now have[6]."

Three Novel Concepts[1,7]

DeJarnette utilized concepts of evaluating the body's presentation as a three dimensional holograph which is affected by a matrix of integrative activities. He investigated how sustained stressors to the body create distinct retained patterns of distortion in the neuromusculoskeletal system. He ultimately used his experiences to develop methods of categorizing three specific primary body distortion patterns.

1. He factored Osteopathic principlies relating to cerebrospinal fluid (CSF) circulation, dural membranous tensions, and cranial bone dynamics into chiropractic analysis and treatment.
2. He determined that there are two parts to the sacroiliac (SI) joint, a posterior weightbearing supportive hyaline structure and an anterior synovial membranous joint that allows for joint nutation.
3. From an engineering standpoint he realized that the majority of the weight or stress from structures above the SI joint rests upon the posterior SI joint, whereas inferior to the SI joint the stress is spread 50% to each hip joint.

DeJarnette's three novel concepts led to the development of three specific categories of analysis:

Category One: relates to the anterior synovial SI joint's nutation and its relationship to dural tension and CSF circulation.

Category Two: relates to the posterior SI weightbearing joint.

Category Three: relates to the body's adaptation to the inability to distribute weight through the posterior SI joint and its subsequent transmission (via iliolumbar ligaments and sacrospinalis muscles) to the lumbar discs and spine.

Integrating Viscerosomatics and Cranial Biodynamics into SOT

Utilizing the categories of analysis and treatment, DeJarnette found specific ways of incorporating treatment relating to viscerosomatic and somatovisceral reflexes, and specific organ manipulation into an indicator based system of care entitled Chiropractic Manipulative Reflex Technique (CMRT)[8].

Incorporating cranial, meningeal, and CSF analysis and treatment[9] into a systematized methodology of care was also integrated into his category system. This allowed the doctor to use pre- and post-adjustment indicators to assess when and where care is needed and whether the care rendered was successful. His cranial system of analysis involved palpation for pain, functional assessments, and palpation of cranial compliance[9]. This allowed for a generalization of patient presentations into a system of analysis and care that followed a logical and reproducible progression[7].

With persistent extremity imbalance due to trauma, asymmetrical function, and various other possibilities, DeJarnette developed a system of extremity analysis and treatment relating to the feet, ankle, knees, and hips as well as from the scapula, shoulder, and elbow. Since imbalanced function can be specific to a joint or factors, distal or proximal, the whole kinematic chain of influence is considered with SOT extremity analysis and treatment[7].

Therefore while SOT is considered a chiropractic technique, it is more an inclusive paradigm of health that attempts to integrate whole body function, nonmusculoskeletal interrelationships, and preventative care.

Sacro Occipital Technique Organization (SOTO) – USA was formed in 1999 to disseminate the teachings of DeJarnette, and bring SOT into the evidence based chiropractic community. That involves responsibly performing research to support the findings of SOT doctors, being circumspect about our claims, and modifying SOT to fit the current research. SOTO-USA has been able to teach SOT according to DeJarnette's completed works, while bringing his work into 21st century language.

SOTO-USA focuses continuing its SOT certification program, with systematized syllabi, books, lesson plans, and certified instructors, along with written and practical SOT and cranial certification examinations. One aspect that SOTO-USA believes is important for the future of SOT is researching its clinical outcomes as well as its reliability and validity. Another crucial aspect for the future of SOT is interdisciplinary care.

Certification Program

In 2014-15 SOTO-USA is presenting SOT and Cranial Certification Programs at the University of Western States, Palmer College of Chiropractic Davenport, Palmer College

> DeJarnette analysis and techniques helped establish chiropractic as more than just a spinal based therapy but a wholistic method of spinal care incorporating cranial bone, viscera, meningeal, and extremity interrelationships.

of Chiropractic Florida, Southern California University of Health Sciences, and in Northern California. Our annual SOT and Cranial Certification examinations will be given this year at the SOTO-USA Clinical Symposium May 7-10, 2015 in New Orleans.

Research

SOTO-USA has a three-pronged focus with regard to research publication: (1) regularly presenting research at chiropractic (ACC/RAC[10], WFC[11], ECU[12], IRAPS[13] COCA[14], and ACH[15]) and interdisciplinary research conferences, (2) having annual SOT Research Conferences[16] (May 7, 2015 will be the 7th) that give doctors the ability to become familiar with submitting, preparing and presenting SOT related research in a professional and collegial manner, and (3) submitting research for publication in peer review journals.

Interdisciplinary Relationships

Pioneering dental/chiropractic co-treatment of temporomandibular joint disorders (TMDs), SOTO-USA is a member of the Alliance of TMD Organizations[17], a group of predominately dental based groups totaling 14,000 members that specialize in treatment of temporomandibular joint disorders. SOTO-USA has regularly been presenting research at the Interdisciplinary World Congress on Low Back and Pelvic Girdle Pain18, at the North American Brain Injury Conferences and John Hopkin's Integration of Complementary and Alternative Medicine into Clinical Practice Conference. Multiple papers have been presented at many chiropractic research conferences sharing how SOT care can integrate with various interdisciplinary fields such as dentistry, medicine (e.g., cardiology, neurology, gastrointestinal, gynecology, etc.), osteopathy, optometry, acupuncture, ayurveda, pediatrics, and pregnancy.

At this time, SOTO-USA is not just about furthering the work of DeJarnette, but about helping chiropractic and chiropractors move forward. This is accomplished by aiding doctors in clinical practice to share their findings in the research community, as well as sharing up to date findings from the research community with doctors in practice. Developing an understanding of chiropractic's role in nonmusculoskeletal therapies and how to integrate with allied healthcare providers, will ultimately offer patients improved therapeutic low risk options. Expanding chiropractic's role in healthcare delivery through education of our allied healthcare partners will also facilitate care of patients with secondary head, neck and back pain conditions associated with oncology, menstrual syndromes, pregnancy, brain trauma, TMD, and other conditions/syndromes.

SOT is an inclusive chiropractic paradigm of care that easily integrates various adjusting methods and methodologies. DeJarnette's life's work offers chiropractic an indicator based system of analysis and treatment to expand and enhance any chiropractors current practice. Please consider becoming a member of SOTO-USA, attending an SOT certification series or our annual symposium May 7-10, 2015, or simply becoming more familiar with SOT by visiting the SOTO-USA website at www.SOTO-USA.org.

Charles L. Blum, DC is in private practice Santa Monica, California, director of research for Sacro Occipital Technique Organization – USA, adjunct research faculty at Cleveland Chiropractic College and teaches the Sacro Occipital Technique (SOT) elective class at Palmer College of Chiropractic - West and Southern California University of Health Sciences.

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13. *International Research And Philosophy Symposium. [http://www.sherman.edu/chiropractic-training/iraps/] Last accessed September 26, 2014.*
14. *Chiropractic and Osteopathic College of Australasia Conference.[http://www.coca.com.au] Last accessed September 26, 2014.*
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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.

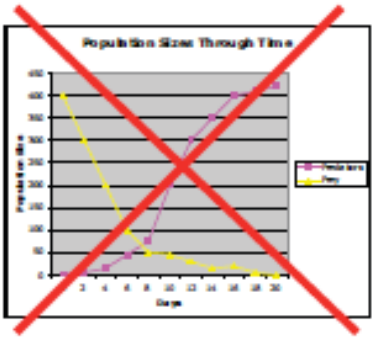
An effective poster will help you …
… engage colleagues in conversation.
… get your main points across to as many people as possible.

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, and 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!



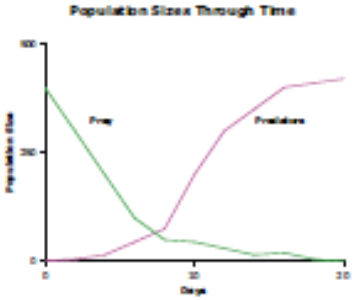
Desired message: Prey decreased as predators increased. Focus on relationships – exact values are usually not important.

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

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Sacro Occipital Technique Research Conference

To be Announced

Call for Scientific Submissions
Sacro Occipital Technique Organization - USA
12th SOT Research Conference

This call for scientific submissions invites the submission of original research that will promote the dissemination and discussion of new information. The categories for the 2020 conference are:

1. **Research (Integration)** integrated/integrative healthcare, integration related research topics (e.g., policy, healthcare programs, quantitative/qualitative research, etc.)

2. **Research (Basic Science)** (e.g., experimental trials, quantitative basic science research, etc.)

3. **Research (Clinical/Health Care Systems)** (e.g., experimental clinical trials, quantitative clinical research, case reports, qualitative clinical research, public health, etc.)

4. **Research (Innovative)** (e.g., experimental sacro occipital technique or cranial integrative methods assessed with reliable and valid assessment tools, etc.)

Submission Requirements

1. **Blinded submission for peer review - due electronically October 31, 2019**

a. The submission must be a completed study. Incomplete work (e.g., concept proposal, a proposed idea for a research project that has not begun yet, a project has started but no data) will not be considered. If you are uncertain or have any questions about this, please contact the Peer Review Chair prior to the submission deadline.

b. Word limit: submission may be up to approximately **2000 words** (but may be shorter). The 2000 word count allows authors to demonstrate the data/results of their findings and the scholarship quality of their completed work. One file in Word or rich text format (RTF), 12-point type font, double-spaced, maximum 2MB.

c. Do not include author names or institutional affiliations anywhere in title or text.

d. The submission must include appropriate sections such as: Title, Introduction (e.g. Background, Objectives, Purpose), Methods, Results, Discussion, Conclusion, and References sections. References are expected, but are not included in the word count.

e. Due to file size limitations, it is preferred that you submit up to 2 of any combination of the following embedded in the Word/RTF document: diagrams, figures, pictures

(JPEG, TIFF or BMP), graphs or tables (e.g. one graph and one table.) Only submit these if they are essential for the peer reviewers to evaluate the proposal. Do not submit tables, graphs or pictures as separate files. Do not submit other visual aids (no videos or power point).

f. Your accepted paper will be published in the Sacro Occipital Technique Research Conference Proceedings 2019 but you will not sign over copyright to this conference and reserve the right to publish your article at another research conference or journal.

2. **Abstract for proceedings if accepted and author information - due October 31, 2019**

a. The abstract should be a structured abstract and include appropriate sections such as: Introduction (e.g. Background, Objectives, Purpose), Methods, Results, Discussion and Conclusion sections.

b. Word limit: **200 words maximum**. No pictures, tables, figures, or references are included in the abstract.

c. Do not include author information or institutional affiliations in the abstract.

d. The abstract will be published on the *SOTO-USA.org* website and within the SOT *Compendium of Peer Reviewed Literature 2010-2015* if submission is accepted.

3. **Signatures of all authors - due postmarked or faxed by October 31, 2019**

a. Signatures of all authors shall be submitted on the authorship statement form

b. Presentations of accepted works are expected. Presenting author(s) must register and attend the conference to present. Only authors may present the study. All presenters must register for the conference. We strongly recommend that funding is secured or confirmed in advance of submission. Submission is a commitment for presenting authors of accepted submissions to attend the conference and be present at the scheduled session.

4. **For studies involving human subjects – a copy of IRB/Ethics approval, expedited, or exemption letter – due postmarked or faxed by October 31, 2019**

a. All studies involving human subjects must go through appropriate IRB/ethics review and state these processes in both the blinded submission and abstract. Case reports are exempt. Any questions should be directed to your institution's IRB or Ethics Committee.

b. For studies involving human subjects research, provide a photocopy of the approval, expedited review or exemption to the peer review chair. For studies not involving human subjects, this document is not required.

Submissions that do not meet the above requirements will be returned to the submitter.

Submission Information

All paper submissions shall be submitted electronically via email to Dr. Charles L. Blum – drcblum@aol.com. A website link relating to the SOT Research Conference and registration for this conference will be posted on the website www.soto-usa.org. The primary author is responsible for proper submission of all items. Non-authors (e.g., staff) are not allowed to submit or query about submissions.

Important Information:

1. If the submission does not meet the submission requirements (e.g., not a completed research study, missing items), the SOT Research Conference Peer Review Chair will contact the authors. If however the paper cannot be accepted for this conference then notification will be sent to the submitting author. Concept proposals and incomplete works will be returned to the authors and those authors can contact Dr. Blum at drcblum@aol.com for further information.

2. It is the responsibility of the primary author to ensure that all requirements are met. The primary author will be the contact person responsible for submission of all required materials and all correspondence. Do not send communications through a third party, staff member, or co-author.

3. If the Peer Review Board confirms that there is an inappropriate submission, it will be disqualified. Examples of inappropriate submissions include but are not limited to: one that has been presented before at this conference, incomplete submissions, concept proposals, duplicate submissions, no human subjects/ethics review when one was necessary (includes expedited review), non-authors listed as authors, plagiarized work, etc.

4. Only electronic submissions will be considered. No faxed or mailed submissions will be considered.

5. Presentations of accepted works are expected. Authors must register and attend the conference to present. An author who does not register and present an accepted work will be disqualified from submitting/presenting for the following 2 years. It is the author's responsibility to find funding to register and attend the conference. We strongly recommend that funding is secured or confirmed in advance of submission. Presenter information and registration for the conference is required or the invitation to present will be revoked. Only authors may present their work at the conference.

6. Due to time and space limitations, and ability to cover poster presentations, there may be a limitation for the number of poster presentations per primary author/presenter.

All submissions will be evaluated for completeness, strength of contribution to the profession and relevance to the SOT research conference. Submissions will be reviewed by the peer review committee based upon the following criteria:

1. Practical significance
2. Originality
3. Theoretical/conceptual framework
4. Quality of experimental or descriptive design
5. Discussion/findings/results - clarity of presentation of findings
6. Conclusions, interpretation of results, implications for chiropractic education, theory, research, or practice
7. Citation of appropriate literature
8. Applicability for: the chiropractic profession, classroom use, further research, current/critical concerns, etc.
9. Completed study
10. Overall rating of the paper.

Notification: Primary/corresponding authors will be notified of peer review results by November 2019. If accepted, an acceptance communication and other information of the presenting author must be returned to the peer review committee. For submissions that are accepted, an author is required to register and present the work at the conference. If you have any questions or would like to request forms please contact the Peer Review Chair: Dr. Charles L. Blum at drcblum@aol.com

OTHER INFORMATION:

If accepted, the **200 word** maximum *abstract* will be printed on the SOTO-USA.org website and within the *Sacro Occipital Technique Compendium 2015-2020. The paper will be published within the proceedings of the* SOT Research Conference 2020. This will still allow you to publish your completed paper in any journal you wish.

Email a pdf or jpeg scan to drcblum@aol.com by **October 31, 2019** to:

SOT Peer Review Committee 2020
Attn: Charles L. Blum, DC Peer Review Chair
Email: drcblum@aol.com
Multiple authors involved with one submission may send their forms in separately

The following two submission forms can all be found on the SOTO-USA website by going to www.SOTO-USA.org and clicking on SOT Research Conference Proceedings Submission box.

Authorship Signatures Form

Sacro Occipital Technique Research Conference XI
To be Announced

INSTRUCTIONS: This form must be completed, signed, and submitted by **October 31, 2019**
Submission title (print):

_____

By signing this form:
1. I/We confirm that each of us qualify as an author of this submission, am/are responsible for all of its content, and give permission for: 1) its presentation if accepted to the SOT 2013 research conference, 2) the publication of the *abstract on the SOTO-USA.org* website and within the SOT *Compendium of Peer Reviewed Literature 2015-2020*, 3) your accepted paper to be published in the Sacro Occipital Technique Research Conference Proceedings 2020 but you will not sign over copyright to this conference and will retain the right to publish your article at another research conference or journal, and 4) am/are capable of presenting/defending all of its content (for information about authorship visit www.icmje.org)

2. If accepted, I/we understand that registration and presentation of this work at the conference is required and that funding should be secured or confirmed in advance of submission. Submission is a commitment for presenting. Authors of accepted submissions must attend the conference and be present at the scheduled session. I/We understand that withdrawing after acceptance may prevent us from submitting to future SOT Research Conferences.

For studies involving human subjects – a copy of IRB/Ethics approval, expedited, or exemption letter – due postmarked or send to drcblum@aol.com by October 31, 2019.
Evidence of IRB or ethics review approval/exemption is required for all research studies involving human subjects. It is recognized that projects that use human subjects are expected to follow appropriate human subjects review procedures depending on the type and nature of the research (more information about human subjects review/ethics review/IRB can be found at http://cme.cancer.gov/c01 and http://ohrp.osophs.dhhs.gov/irb/irb_guidebook.htm).

Primary Author Print name Email address Signature Date
Other Authors Print name Email address Signature Date

_____

_____

_____

If more authors, please sign and date on an additional form. If multiple authors, each may send in their completed forms separately (need not be on the same form).

Patient Case Report Consent for Publication and Presentation

Title of case study/series: _____

Author(s) names:_____

As the patient in this case study/series, I hereby give my consent for clinical information relating to my case to be reported at a scientific conference, in a conference proceedings, and/or published in a scientific journal.

I understand that my name, initials, and/or any protected health information such as my identification number, billing information, address, etc. will not be published and that efforts will be made to conceal my identity, but that anonymity cannot be guaranteed.

I understand that the material may be published in a journal, a website of a journal, and/or in products derived from the publication. As a result, I understand that the material may be seen by the general public.

_____ _____

Name of patient (print) Date

_____

Signature of patient (or signature of the person giving consent on behalf of the patient if patient is a minor or deceased)

If you are not the patient, what is your relationship to him or her? (The person giving consent should be a substitute decision maker or legal guardian or should hold power of attorney for the patient.)

_____

Why is the patient not able to give consent? (e.g., is the patient a minor, incapacitated, or deceased?)

_____

If images of the patient's face or distinctive body markings are to be published, the following section must also be signed in addition to the section above:

As the patient stated above, I give permission for images of my face or distinctive body markings to be published and recognize that I might therefore be identifiable even though my name and initials will not be published.

_____ _____

Signature of patient (or signature of the person giving consent on behalf of the patient) Date

Please keep a copy of this completed form for your records.