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CLINICALEXPOSITION

Buccinator Stretch Challenge

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Narrative: The buccinator muscle may be a significant factor in cranial and temporomandibular joint involvement with a reactive muscle type of relationship with the masseter. Frequently there is an associated hypertonic temporalis muscle.

The buccinator may be challenged with stretch by filling both cheeks as full as possible with air. Lateralising the full cheek gives an indication of the side of involvement; rarely bilateral. Confirmation by therapy localisation is possible. Treatment is by approximating the muscle belly.

This procedure should be a screening test in the evaluation of the stomatognathic system. For patient management in difficult cases the patient can be instructed to maximally expand the cheeks with air and hold the expansion for 30 seconds to two minutes, resulting in reduction of jaw muscle tension and symptoms.

Indexing terms: Chiropractic; buccinator m.; temporomandibular joint; TMJ; stomatognathic system.

Introduction

The buccinator muscle has long been recognised as a significant factor in cranial and temporomandibular joint involvement, and was reported by Goodheart early on in the development of TMJ related Applied Kinesiology procedures. The buccinator muscle also known as the 'bugler's muscle' lies above the risorius m., and is covered in part by the fat pad that lies in the cheek.

> *... the patient can be asked to perform the buccinator stretch ('puffed cheek' exercise) for 30 seconds to two minutes away from the office, any time they begin to experience associated symptoms ...'*

Location

The buccinator's origins are from both the maxilla and the mandible, and posteriorly, from the tendinous bundle stretching from the medial pterygoid plate to the mandible known as the pterygomandibular raphe. Forming the lateral walls of the oral vestibule, it is pierced by the duct of the parotid gland on its path inside the oral cavity. Some of the fibres insert into the upper and lower lips both directly and in a criss-crossing pattern, becoming continuous with the orbicularis oris.

The buccinator allows air to be blown out of the mouth, pulls laterally on the angles of the mouth, and prevents folds in the mucous membranes of the cheeks. It is involved in laughing and crying, and when contracted produces a facial expression of satisfaction. It is proposed that the buccinator acts to hold food between the teeth during mastication. Goodheart has also proposed that it may have a role in mouth closing. It has also been suggested that there may be a reactive muscle type of relationship between the masseter muscle and the buccinator.

Testing

Standard testing of the buccinator as reported by Walther in Applied Kinesiology Vol. II, is to palpate the buccal pressure exerted when the patient attempts to contract the muscle.

A second approach is to have the patient purse the lips and apply maximum air pressure within the mouth while the examiner palpates externally for buccinator contraction and bulging.

Discussion

Based on Goodheart's observation of the relationship between the buccinator and the masseter, I was in the habit of evaluating the buccinator whenever treating a patient with temporomandibular joint disorders, or in the presence of recurring cranial respiratory dysfunction. For many years, my evaluation would be the testing method given by Walther with good results. Reasoning that the muscle might respond to a stretching challenge, on one occasion I tested a patient's pectoralis clavicular after having asked the patient to 'puff the cheeks'. To my delight and surprise, the indicator muscle went weak. Therapy localisation to the buccinator belly was found to be positive, and muscle spindle challenge was also observed. After successful treatment of the muscle spindle, retesting of the indicator muscle with 'puffed cheeks' remained negative. Since that initial observation many years ago, I have used this procedure on hundreds of patients as a screening tool to elicit buccinator involvement.

A frequent finding has been a hypertonic temporalis muscle with its attendant positive muscle spindle therapy localisation and challenge, together with the 'puffed cheek' challenge for the ipsilateral buccinator. Treatment of the buccinator muscle spindle has relieved the hypertonic temporalis and negated the positive therapy localisation a high percentage of time, with no further treatment being given.

A clinical application

A further development in understanding this procedure came when I began asking patients to puff their cheeks on their own, away from the office any time that they began to experience jaw muscle tension or related head pain. This has been effective at relieving the tense masseter and temporalis muscles and helping patients cope in a pain free manner with the tension that they would otherwise carry in these muscles. It appears that the buccinator stretch inhibits the jaw closing muscles. For example, it can be reasoned that if the mouth is full of food or liquid to the point where the buccinator is stretched, there would be a need to relax the closing muscles to make room, just as contraction of the respiratory diaphragm inhibits the abdominal muscles to allow expansion for the displaced abdominal contents. Once the stretch is taken off the buccinator

by the increased opening dimension, the buccinator could resume its normal function in pushing the food bolus toward the teeth and tongue for normal mastication or swallowing.

According to Walther ...

Dr. Walther reported on the work of Blanton and co-workers showing that the activity of the buccinator was asynchronous with the contractions of the masseter and temporalis during normal chewing measured by electromyography. This would support the buccinator's activity in opening rather than closing as suggested by Goodheart.

A side benefit of this 'cheek puffing' homework has been that patients occasionally will self-correct cranial faults, presumably due to the increased intra-oral pressure exerted on the palate inducing cranial flexion, as well as the closing muscle inhibition which occurs. Further research on this aspect would be beneficial.

Procedure

Buccinator muscle involvement may be suspected any time that there is a cranial or TMJ related dysfunction. Signs and symptoms which might be expected are sunken cheeks, a tendency to bite the inner cheek with attendant scarring on the buccal oral mucosa, diminished interincissal opening, speaking with lips close together and barely moving. See Walther for others.

Ask the patient to purse the lips and puff, or fill both cheeks as full as possible with air. When the stretch challenge is present, a strong indicator will weaken, or a weak associated muscle will strengthen, as is typical with challenge procedures. Then ask the patient to lateralise the full cheek, first to one side, then to the other, with testing of the indicator muscle. This will give indication of the side of involvement. It will rarely be bilateral. The buccinator involvement can be confirmed by therapy localisation over the muscle's belly as is typically done for muscle spindle evaluation.

Treatment is undertaken by approximating the muscle belly toward the middle with a pinching type of motion to 'turn down' the muscle spindle servo-mechanism. Goodheart reported that he observed the buccinator muscle spindle to respond to transverse rather than parallel stimulation, however I have had good results with the parallel approach.

This procedure should be done as a screening test in the total evaluation of the stomatognathic system or as history, symptoms or other findings may dictate. Detailed examination procedures go beyond the scope of this paper, and are well documented elsewhere in the Applied Kinesiology literature, however, attention should be paid to the masseter, pterygoids, temporalis, and the hyoid musculature, as well as the craniosacral respiratory system.

In difficult cases, or those where there is a significant recurrence of symptoms due to jaw muscle tension, the patient can be instructed to expand the cheeks full of air as much as possible, and hold the expansion for a minimum of 30 seconds up to a minute or two. This will result in a marked reduction of the jaw muscle tension and associated symptoms when the patient is away from the office.

Summary

The buccinator has been recognised to have a role in TMJ dysfunction with a reactive muscle type of response theorised between it and the masseter. I have also recognised a frequent relationship with the temporalis muscle. The buccinator stretch challenge has been found to be an effective screening tool to elicit buccinator involvement.

In the course of stomatognathic system evaluation, have the patient purse the lips and forcefully expand the cheeks with air as much as possible ('*puff the cheeks*'). Testing of an indicator muscle will yield a positive response if buccinator hypertonicity is present.

Ask the patient to lateralise the expanded cheek, first to one side, then the other, with simultaneous testing of the indicator muscle. This will give an indication of which buccinator muscle is involved. This may be verified with therapy localisation to the buccinator muscle belly. Perform a muscle spindle technic on the involved buccinator with approximation of the ends toward the middle of the muscle. Retest the indicator with maximum cheek expansion to verify correction.

Clinical Pearl

In difficult or recurring cases, the patient can be asked to perform the buccinator stretch ('puffed cheek' exercise) for 30 seconds to two minutes away from the office, any time they begin to experience associated symptoms. This will generally result in relaxation of the jaw closing musculature and significant relief of the associated symptoms.

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