

# Temporomandibular Joint Dysfunction

## Overview, Assessment and Treatment

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*Editor's Note: This article is a revision of one originally published in the July 2009, Vol: 29 No: 3 issue of Structural Integration: The Journal of the Rolf Institute.*

### PREFACE

This paper is being presented with the tacit understanding that the reader is a trained professional in the field of health care. That is, you have a working knowledge of gross anatomy, are trained to identify and assess deviations in structure and function, and possess the basic manipulation skills required to address issues and restore function in a wide range of cases.

### INTRODUCTION

For the purposes of this paper, the phrase "temporomandibular pain disorder syndrome" (TMPDS) is used for what has commonly been called "temporomandibular joint (TMJ) syndrome."

TMPDS is defined by a triad of primary symptoms:

1. Pain and tenderness of the muscles of mastication.
2. Joint sounds with jaw opening.
3. Limited mandibular movement.

Secondary characteristics include referred pain to other areas of the head causing headaches, and retro-orbital, bitemporal, and occipital pain.

This paper will present an overview of TMPDS, offer instruction on how to identify it in your clients, and offer several treatment approaches that effectively reduce the client's complaints. The case will also be presented for taking a detailed case history and performing an adequate physical examination.

There are a number of considerations that must be addressed before attempting to render aid to a suffering pain client of any type. Is the work that you are considering going to be done within the context of a traditional Rolfing® series or will it be stand-alone work? Will you be working with this client as a solo practitioner or as part of a treatment team? Is the client's complaint based on trauma or is it cryptogenic? Another serious consideration is whether this person is a pre- or a post-surgical case. I will address these issues briefly, but I believe that each case will present other aspects of the individual that must be closely examined.

The language I use is from the allopathic perspective. Most of the TMPDS clients we see are referrals from allopaths or have extensive history in the allopathic system. The allopathic language format is the one the client is most familiar with. With improved communication comes efficacy in treatment, and a common language is the first step towards better communication.

### THE TMJ CLIENT

We have all seen them in our office. As many as four out of five of these clients are women. They are usually young: fifteen to forty-five years of age.<sup>1</sup> Their complaints are common; they have pain in the TMJ region that is exacerbated by movement of most any type, from talking to eating. Headaches are also very common as is "clicking," and in some cases the jaw actually locks. Many complain of waking up with sore or tired jaws.

They describe their pain as on one or both sides of the face around the ear, in the cheek, or temple. Generally characterized as a dull, continuous, poorly localized ache of moderated intensity with a boring or gnawing quality, it may vary in the degree of discomfort through the course of the day.

They have tried over-the-counter medications, dental equilibration and plastic devices to go inside the mouth when they sleep. Many, especially in the past twenty years, have tried multiple surgeries. Most of the clients that I see have found that these remedies have been to little or no avail.

It is not uncommon for the cryptogenic TMJ client to suffer from deviations from their ideal posture. One of the most common contributors to TMPDS is the forward-head syndrome, distortions in function of the transitional units of the spinal column as well as a multiplicity of structural and functional issue throughout the body.

In general, remember that craniofacial pain of a musculoskeletal origin may arise from the muscles of mastication, the TMJ or directly/indirectly from the neck bones/musculature, but the entire body must be assessed for contributory factors.

### CLIENT HISTORY

Identifying TMPDS is usually achieved based on the client's history and clinical findings. In general, extensive radiographic evaluation is not necessary. Yawning, chewing or moving the mandible will often result in stabbing or severe pain, precipitating cramping or locking of the jaw. Long-term pain may also include cyclical periods of remission. Be aware also that chronic TMPDS clients will often present psychological characteristics that include anxiety, stress, depression, anger and frustration. The majority of the idiopathic-based clients are women in the childbearing years of age.

Taking a detailed case history and performing a competent physical examination are critical to the successful treatment of any condition by any practitioner. Specifically, you will need to know how and when this complaint was first noticed. What were the events surrounding inception of the complaint? Is this complaint idiopathic or trauma-based?



What type of trauma precipitated the onset of the complaint? Was it a direct blow to the chin, or was it a lateral blow, such as the head hitting the side window in a side-impact motor vehicle collision? Knowing the details of the initial insult that the client suffered will better help you understand how the biomechanics of the region you are working with have changed from their prior given structure and arrangement. With this information you will be better able to bridge/integrate what you understand of body mechanics with the altered anatomy before you. Frankel<sup>2</sup> found that 37.5% of whiplash patients had symptoms of TMJ trauma. Did they have time to react before the event happened? If so, the musculature that was contracted at the time of impact will have to be addressed before the damaged joint and immediate tissue can be manipulated.<sup>3</sup>

Is this client pre-surgical? If there has been no surgical intervention, then you have the advantage of having a clean anatomical theater in which to work. Your anatomical atlas will be a valid map for the presentation. If the client has a TMJ surgical history, you need to be aware of the types of invasive procedures that TMPDS patients commonly undergo; whether they have had a disectomy, a tissue implant and/or hard appliance implantation. Implant devices will be discussed later in this article.

If you understand the process and the possibilities, you and your client will be much happier. Taking a competent case history will bring about the increased possibility of a significant decrease in your client's suffering.

## PHYSICAL EXAMINATION

### Anatomy

Now what are we looking at here when we examine the TMJ? One of five joints in the body that functions with an intra-articular meniscus, it is considered by many to be one of the most overused and abused joints in the entire body. Therefore it follows that it is subject to the same type of pathological changes that any other joint goes through when insulted. It also follows that this joint can be treated just as you would treat any other joint, because like all other joints it is activated through direct muscular action and responds to manipulative therapy.<sup>4</sup>

Basically, the TMJ is a universal joint operating about an incongruous joint structure with a shifting axis of rotation. The

surface of the condyle is ovoid and the fossa surface is sellar. Movement occurs as a combination gliding motion rather than an all-arch rotation. Opening the jaw is really a two-stage event: first the mandible rotates with the radius at the joint itself for about 25 degrees or so, then the condyle slides/glides anteriorly on the glenoid fossa cartilage for the rest of the opening action.<sup>5</sup>

The disc of the TMJ is fibrocartilage in structure and is held and elongated by the superior division of the lateral pterygoid muscle. The disc requires definitions in structure and function since it needs to remain soft and pliable and withstand physiological deformation every time the jaw opens or closes.

### Function

Your examination will reveal the functional status of the mandible. First check the range of motion of the mandible. The client's first three fingers will serve as a general rule of thumb for this assessment. You will often find a limited mouth opening of less than three fingers.

Next, check the line of tracking of the mandible in motion. Does it deflect to one side? This will generally be the result of muscle splinting or spasm. Does it deviate in the middle of its range and then correct back to midline? This is often the result of a meniscal displacement where there is a failure of the condylar head to capture the meniscus appropriately during opening of the jaw. This can be caused by a damaged or distorted disc.

Check for lateral deviation by asking the client to slightly open his or her jaw and move the chin right and left. This will address issues related to contractile tissue. Next, have the client open the jaw again in the same directions to assess the ligamentous, osseous and cartilage structures.

Audible soft clicks and pops are not considered significant, but hard clicking consistently occurring late in opening coupled with periodic closed locking may indicate pathologic changes in the meniscus or joint.<sup>6</sup>

Notice any differences in the outward appearance of the joint itself. Look for swelling, heat, redness, any significant alteration from what you would consider normal in your daily practice. Click your thumb and middle fingernail close to the

external meatus for a gross hearing test. Palpate the muscles of mastication. Note the bony landmarks of affected structures. This would, at the least, include the atlantooccipital joint (AOJ), the atlantoaxial joint and the cervicothoracic joint. Note also the relationship of the greater angle of the mandible to the styloid process and the transverse processes of the atlas.

You will be more successful in your efforts if you complete your examination with a structural and functional assessment of the client *in toto* and see how the TMJ region and its issues fit in with the whole person as he or she presents before you.

## PALPATION AND TREATMENT

### Approach

In a process generally termed "the self-teaching" cycle, a practitioner assesses by palpating and at the same time, as you palpate, you treat. In utilizing this process, the practitioner depends on direct feedback from the client, observation of same and further palpation. If necessary, you then modify your strategy to correct or further refine your line of work, or take another tack. Most practitioners utilize this process daily, but may not have put it into so many words.

### Specifics

In the cryptogenic cases of TMPDS, the client's complaints are really about a symptom(s). Most failures in allopathic treatment of this disorder come from focusing on joint dysfunction as the problem. This approach rarely brings about a permanent resolution to the issue.

It is important to understand the tissue's response to injury. Generally, intracapsular inflammation stimulates the sensory innervation of the capsule. This is because this is the same nerve as the motor innervation to the muscles that bring about movement in the joint itself. As a result, the musculature goes into spasm, which in effect splints the joint.<sup>7</sup> In turn, pain and trismus are produced, which are cardinal signs of TMPDS.

Usually the problem stems from one or two issues: a disruption of the integrity of the AOJ and/or an imbalance in the tone of the pterygoids. The AOJ disruption, more often than not, involves a rotational displacement of the occiput on the atlas or a rotation of the atlas itself. When this occurs



very often the anterior transverse process will be much closer to the posterior aspect of the ramus and the angle of the mandible, and there will be pain on palpation in this region. It appears that when these two osseous bodies get close to one another, connective tissue webbing forms and seems to lock these bodies into their intimate positioning. Any time the body suffers pain, it attempts to lock down the area and keep it from moving/hurting any more than it already is.

The atlas and occiput are anatomically coupled and designed to rotate on the axis. This functional unit becomes bound onto the neck of the mandible, but only on one side. Binding of a rotational component (the transverse process of the atlas) to a component that swings in an arc and translates anteriorly/posteriorly (the mandible) results in a torquing of the mandible when it moves in any direction. What you find in palpation, you will not find drawn in Netter's *Atlas of Human Anatomy*. It will most often feel like a tight band or a stringy mass of connective tissue between and attaching to the transverse process of the atlas and the angle of the mandible. Sometimes it will appear to be a thickening of the platysma; don't be misled – it is on the next layer down and has horizontality to its fibers. Acknowledge and *be very careful of the styloid process* of the temporal bone. Do not confuse it with the transverse process of the atlas. If you do, you could wind up with a nasty case of Bell's palsy augmenting the TMJ problem on your table. Your goal here is to free the mandible from the spine, nothing short of that.

To create the appropriate relationship between the atlas and the occiput, release the fascial adhesions in the atlantooccipital and atlantomandibular proximities. Your hallmarks will be an occiput that moves independently of the atlas and one that is in the appropriate anatomical relationship with the atlas. Create space and movement according to the joint's design. Utilize myofascial release techniques as well as joint mobilization. One modality alone will not achieve your goal.

To attain this goal you will have to appreciate the suboccipital musculature. This includes the trapezius, spleni, semispinalis capitis and cervicis as well as the multifidi and rotatores. These are six pairs of muscles that must be addressed for overall tone, right/left balance and length. Traditional myofascial release techniques are usually

sufficient to bring about the appropriate relationships and facilitate the appropriate positioning of the atlas in relation to the occiput. Assess carefully and if you have not attained your goal, refer the client to another team member for the appropriate osseous work.

Anterior to the suboccipital musculature is the floor of the mouth. The hyoid group must be addressed for anterior/posterior balance with the suboccipitals. This is not just a metaphorical relationship, it is literal. Palpate and understand this relationship. See how the anterior/posterior articulation of the atlantooccipital joint is balanced with these two sets of muscles once the extrinsics have been balanced.

Remember that earlier I said the problem of TMJ pain stemmed from the dysfunction of the AOJ and/or an imbalance of tone of the lateral and medial pterygoids. To get to the pterygoids we must first address the musculature of mastication. In many cases the temporalis, masseter and buccinator are secondary or compensatory muscles to the pterygoids.

After a traditional approach to releasing these muscles is completed, look at the tone of the lateral and medial pterygoids. The medial pterygoid is addressed first from an external approach, looking first from the angle of the mandible posterior and superior. Look for balance in tone right/left. If absent, create it. I use my ring finger; it is more sensitive and less powerful. Ask for the jaw to open and close gently and slightly and release the contractures in the pterygoid as well as all of the affected hyoids. Ask for anterior/posterior translation of the mandible and repeat process until balance is attained.

The intraoral medial pterygoid work follows the muscle from the angle of the ramus to the belly of the muscle. This is accomplished by placing the pad of your gloved index finger on the same-side medial aspect of the client's mandible and working from the greater angle medial up the belly of the pterygoid toward the palatine.

Next, use same-side forefinger, with jaw opened moderately, and place the distal phalanx posterior to the last molars and ask the client to close his/her jaw and squeeze your finger out of that space between the gums. This will cause more discomfort to the client than you will experience from being clamped down upon, and you will facilitate the work by sliding your finger

out, but not too quickly. Encourage slow and gentle complete closure. The work needs to be done.

What is "the work?" Your finger will serve as a fulcrum and the TMJ will be leveraged open with very little movement. This action opens the capsular joint space in the most effective manner that I have found to date. Clients report that there is more space in the joint itself and a significant reduction in perceived pain. Do this work on yourself on both sides several times to practice. You will learn quite a bit about this technique that you won't by working on others.

The masseter, temporalis and buccinator groups have a balanced action in that they are stretched and flexed as they go through their normal TMJ range of motion. The lateral pterygoids, especially the upper fibers, do not benefit from this action. The upper fibers contract to translate the disc back and forth in conjunction with pressure from the mandibular condyle. The disc changes shape to serve function with assistance from the lateral pterygoid, and then in the closing phase of the TMJ cycle it releases its tension. Posterior to the disc is a highly innervated fibrovascular zone full of blood vessels, lymphatics and dense connective tissue fibers. The disc has an elastic attachment that is affixed to the temporal bone and a non-elastic attachment that affixes to the superior and posterior aspect of the mandibular rami inferior to the condyle, according to Gorman.<sup>8</sup>

The lateral pterygoid has a limited range of motion. External manipulation is mandatory. The practitioner will find many TMPDS clients with masseters that are painful upon palpation, but I will venture to say that *all* lateral pterygoids are painful upon palpation.<sup>9</sup> Release this tension and balance the tone and you will reduce the client's subjective complaint. You will not get these results by manipulation of the masseter, temporalis and buccinator alone.

Manipulation of aspects of the lateral pterygoid can be achieved from both extra- and intraoral approaches. From outside, open the jaw wide and you will find the posterior aspects medial to the masseter. With your fingertip, the intention of work is directly medial. This is tender material, approach compassionately. Here you are working perpendicular to the plane of the surface of the molars with the pad of your finger on the mandibular notch, the dorsum



of the digit under the posterior maxillary arch and the tip of your finger on the surface of the lateral pterygoid.

From inside the mouth, open the jaw only slightly to allow work on the inferior division of this muscle. It has a broad origin, as any strong muscle does, and a focused insertion. The only aspect that you can touch effectively is the lower aspect of the inferior division coming from the lateral pterygoid lamina of the sphenoid. Run your contralateral index finger superior and posterior until you can go no further; your index finger will be on the muscle in question, posterior to the last molar. Wisdom teeth make this manipulation more difficult, needless to say. Once touching the muscle your intention will be medial.<sup>10,11</sup> Have compassion, but get the work done: re-establish balance and function.

Understand that the pterygoids are the muscles of TMPDS. Both pterygoids originate from the sphenoid. When hypertonicity exists bilaterally the tendency is for the sphenoid to rotate on its horizontal axis. If one side is hypo- and the other hypertoned, then there is a torque on the mandible and the sphenoid as well. There are many negative and far-reaching consequences to any displacement of the sphenoid beyond the scope of this paper, but take note: this is not a good thing. Take a moment and survey the tone of the pterygoids and psoas. You will be surprised, but that is another paper.

Travell shows the posterior attachment of the superior division of the lateral pterygoid attaching to the capsular ligament and the articular disc as well as the upper one-third of the front of the neck of the condyle.<sup>10</sup> This component of the pterygoids is directly responsible for the placement of the disc in the TMJ. If you study the dynamics of this disc and the nature of its task you will be amazed that it lasts as long as it does in the average structure. Joe Breck, my illustrious colleague of the past decade, pointed out that this disc must be made of very unusual material to last as long as it does while undergoing the radical structural and physiological changes that occur every time the jaw is opened.

## CARTILAGE

The disc and the articular cartilage play a predominant role in normal joint motion and also in TMPDS. Glenoid fossa cartilage and the material covering the condyle are both fibrocartilagenous. This composite

is different from the condylar surfaces and menisci of other synovial joints in the body. Physiologically, these tissues deform in all directions of TMJ movement. Most significant deformation is seen in flexion, extension, protrusion, retraction, lateral motion and circumduction.<sup>12</sup>

In the knee joint the meniscus moves with the femur in rotation and with the tibia in flexion-extension.<sup>13</sup> The TMJ disc actually changes its shape during all movement of the jaw and then returns to its original shape at the end of the movement. The posterior aspect of the disc is directly affixed to the mandibular condyle. With this understanding, the practitioner can see how the joint "locks" only when the disc doesn't go through the deformation and reformation phases that define its function. By definition, the disc must change shape and return to the original state to be optimally functional.

By unloading the TMJ through an ordered process such as the Rolfing series, the surrounding structure is balanced in tone. When this happens the components of the joint move towards order. This encourages the cartilage to reshape and function closer to its ideal state. This is especially true of the TMJ disc.

## CLICKING AND DISC MOVEMENT

Is there clicking? Without locking? Is there lateral deviation upon opening/closing of the jaw? From this you can easily ascertain the status of the disc. Is it being captured properly? Has its structure been compromised and lost function? These issues have their origins in disc damage. Assessing major disc damage is not difficult for trained eyes. If you have gotten this far in your reading, you more than likely have trained eyes.

Once it has been ascertained that the disc is damaged, create space, as usual. If you can decompress the joint area, you have a chance at training the mandible by tracking it manually through its range of motion. With your client standing with his/her back against a wall, stand directly in front and with eight fingertips pointing medially with moderate force on the masseters and thumbs on the chin, call for motion. The fingers bring balance to the superficial and some of the deeper jaw muscles while the thumbs, with help from the fingers, keep the jaw tracking in a more ideal anatomical plane. This work is usually done at the end of the treatment. It helps "ground" the

client as well as significantly improve the mandibular tracking.

Given that the soft tissue holds bones in any particular arrangement, what I have found is that the contralateral lateral pterygoid is most often at the base of etiology of common TMPDS. That is to say, if the left TMJ is the affected joint then look for the right lateral pterygoid to be more contracted than the left.

## CONSIDERATIONS

Idiopathic or cryptogenic-based TMPDS more often than not will necessitate a longer time in treatment. This is due to the fact that over time clients unconsciously compensate for pain and dysfunction and the trauma in the primary tissues becomes more deep-seated. Results of this are often found in the form of scar tissue, adhesions, lesions, fixations and anatomical distortions. Trauma-based issues, depending on the type and severity, can oftentimes be resolved within a much shorter time frame, especially when promptly addressed.

Are you seeing this client in the context of a traditional Rolfing series or doing only what I call "manual medicine?" Are you working alone or are you part of a team? I strongly suggest teamwork. Research has shown clearly that the chronic pain client will only respond to a multi-disciplinary team approach when a long-term solution is being sought. Psychologists, sex therapists, chiropractors, osteopaths, dentists, oromaxillaryfacial surgeons, and general practitioners should be strongly considered when dealing with chronic TMPDS clients. Without a team, you are only putting band-aids on a bad situation.

## DIFFERENTIAL DIAGNOSIS OF TEMPOROMANDIBULAR JOINT PAIN

Generally, there are two types of problems that define TMJ arthralgia: intracapsular and extracapsular. Intracapsular arthralgia issues include fixed or locked jaw, degenerative joint changes, subluxation and/or a displaced disc creating clicking. Extracapsular issues include dysfunction of both pterygoids, masseters, and temporalis musculature.

There are two basic types of joint or intracapsular-type injuries: those that permanently deform the disc and essentially render it dysfunctional, and those injuries



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that only temporarily alter shape and/or function of this disc.

When there have been repeated disc dislocations, the cartilage of the glenoid fossa as well as the mandibular condyle wind up being damaged to the point of being classified as degenerative arthritis. This often leads to extracapsular arthralgia where the soft tissue reacts to the pain in the joint and the client often presents with multiple myofascial contracture patterns in the muscles of mastication shortly after the initial insult.<sup>14</sup>

### BRIEF SUMMARY OF CURRENT TMJ IMPLANT DEVICES

Since 1934 various materials have been used to replace failed components of the TMJ. Autogenous graft surgeries utilizing the patient's own tissues such as ear cartilage were performed as late as the 1990s.<sup>15</sup> Ear cartilage has some of the consistency of the disc if you don't look too closely. The trouble was that it did not have the physiologic property of being able to change shape and form, and then return to its original state over and over again, without disintegrating. Later strands of the tendons of the temporalis were pulled down to use as disc material. The temporalis tendons at least had a blood supply to them and had a remote chance of living until the patient's first bowl of hospital gruel. It is difficult for the writer to understand how

the FDA approved these two procedures even on an experimental basis.

Hard appliances (see Figure 1) became available soon after repeated failures of these earlier methods started rolling in. The "Morgan" (Figures 4 and 5) and the "Christensen" (Figures 2, 3 and 6) devices are the most common types used in the past two decades. Due to a combination of politics, failed appliance history (81% in the case of the Christensen device<sup>15</sup>), litigation, and poor (in my opinion) medical-case management, both of these have been removed from the AMA-approved list of devices. I do not believe that you will see many other types of devices in your practice for some time to come.

The only device that is approved for use at the time of this writing is the ANSPACH device. It utilizes a titanium-mesh fossa component that is designed to encourage bone growth around and through it. The condylar component is made of polyethylene. Very few surgeons have been trained and certified to perform this implantation.

The recipients of these fossa devices will present a surgical site anterior to the articular capsule and inferior to the maxillary arch. An incision is made along the greater angle of mandible, the patient's condyle is removed, and the device is screwed in place onto the upper portion of the ramus.

Obviously the musculature of mastication will be disturbed as a result of these procedures. The temporal and mandibular branches of the trigeminal nerve will be disturbed as well. One of my clients presents as affected by Bell's palsy due to damage sustained to the trigeminal nerve during a fossa device implantation. In the case of the condylar implant it is necessary to remove the patient's natural condyle and fix the appliance with multiple screws. Christensens were typically affixed with short screws that went through only the outer lamina. The Morgans used longer ones that went through both laminae somehow. Be careful on intraoral work. You can imagine what the tips of these little sharp screws feel like when they are drilled into the lateral aspect of the pterygoid attachments on the rami of the mandible.

Early screws were stainless steel and patients complained with changes in the weather. The screws also had a tendency to back out frequently, so that the screw heads were no longer sitting flush with the condylar appliance and continually tore into the masseter. In some cases the screws back completely out of the lamina and create a total implant failure. Later procedures utilized titanium screws with fewer problems of this type.

According to *The TMJ Association Newsletter*,<sup>15</sup> a company called VITEK bought a substance called Proplast from Dow Corning in the 1970s and 1980s in

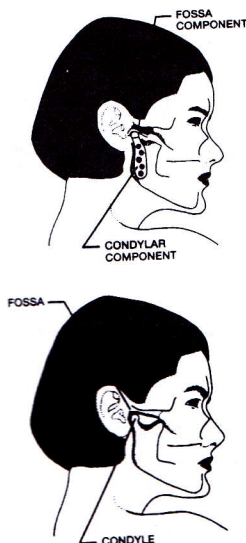


Figure 1: Schematic of typical total TMJ implant.

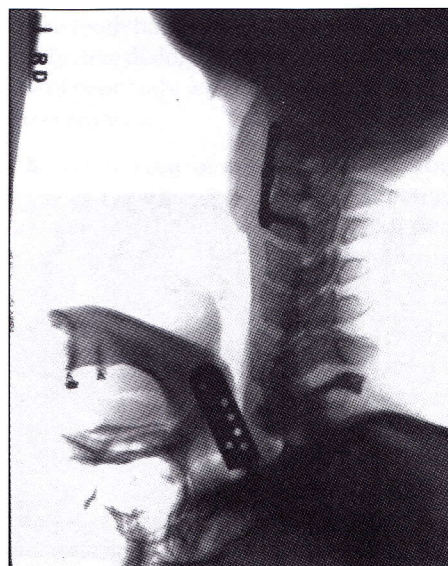


Figure 2: Total "Christensen" device implant: fossa and condylar components, right lateral view.

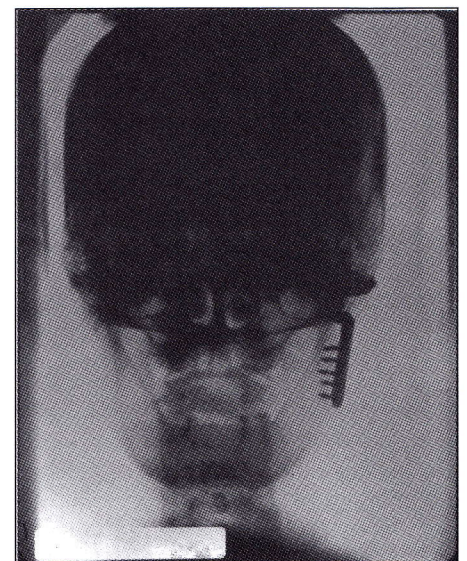


Figure 3: Total "Christensen" device implant: fossa and condylar components, anterior view.



an attempt to avoid some of the previous failures. VITEK marketed this material to be used to form the fossa component in TMJ surgeries, figuring that it could conform to the natural condylar surface that was different with each patient.

Like product-failure issues with Bridgestone/Firestone/Ford of late, evidence and history of Proplast's failures in Canada when used to repair other joints was suppressed, probably for business reasons. It was certainly not in the best interest of patients. The substance was, as a result, successfully marketed in the United States as the most promising procedure in TMJ repair at that time.

In short, Proplast implantations failed in joint repair in the U.S. as they had in Canada. Failure in most patients, including two of mine, involved primarily the splintering of the Proplast material. The natural fossa region of the skull is very thin. In both of my clients cases, splinters of Proplast material were driven into the cranial cavity – and in one case into the brain itself – as well as dropping down into the musculature of mastication. Dow Corning essentially played dumb as to what VITEK was doing with their product, and they both filed for bankruptcy when one of my clients took them to court.

Not all patients who received Proplast implants had them removed. You need to

know the history of your client. If your client was a recipient of Proplast and it is still in place, you need to operate with caution in the TMJ region as well as in the muscles of mastication. There may be foreign-body splinters in these regions. The myofascial contracture pattern in these patients may be secondary to Proplast splintering.

One of my clients, after ten or more surgical failures, wound up having a five-inch section of her fifth rib incised on both sides. These bones were attached to the rami, bilaterally, with the sternocostal aspect being used as the condylar component in a titanium fossa. At thirty-plus years of age no one expected the ribs to begin growing again, but they did. Since this procedure in 1987, the ribs were removed from the mandible and replaced with total "Christensen" devices. She has completed three residential treatment stays, works full time as a local business owner dealing with the public, takes twelve to sixteen Vicodin daily and drives to work.

## CONCLUSION

This paper has presented an overview of the issues and problems related to a very complicated and painful syndrome. It has also provided some basic tools to add to your repertoire in the treatment of craniomandibular pain conditions.

There are many related issues that have not been addressed, including: re-balancing the involved musculature through specific exercises, dietary changes, postural corrections, client education, and lifestyle changes. People with TMPDS are chronic pain sufferers. They need a good Rolfing series as all of their systems are strongly affected. A team approach is the only intelligent way to provide these folks with any significant, long-term relief. Establish a network that includes dentists, oral surgeons that specialize in TMJ reconstruction, biofeedback practitioners, psychologists, and the whole host of physicians out there who know how and want to help people who have suffered for a long time. A good resource to start with if you are interested in working with these clients is: The TMJ Association, P.O. Box 26770, Milwaukee, WI 53226, Fax: 414-259-8112, E-Mail: info@tmj.org.

Another important aspect of TMPDS is prevention. Whatever your modality or specialty in facilitating improved health, you will find that helping people create competent structure, better balance and improved function will be the biomechanical hallmarks by which you can measure your success. We all have a responsibility to make sure that we do our best to prevent TMPDS. We will do it by assisting others in their efforts to bring order to what Dr. Rolf called "randomness."<sup>16</sup>

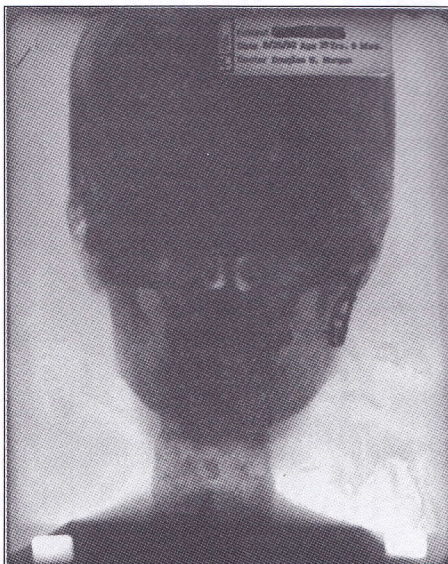


Figure 4: Total "Morgan" device (box-type) implant: fossa and condylar components, anterior view.

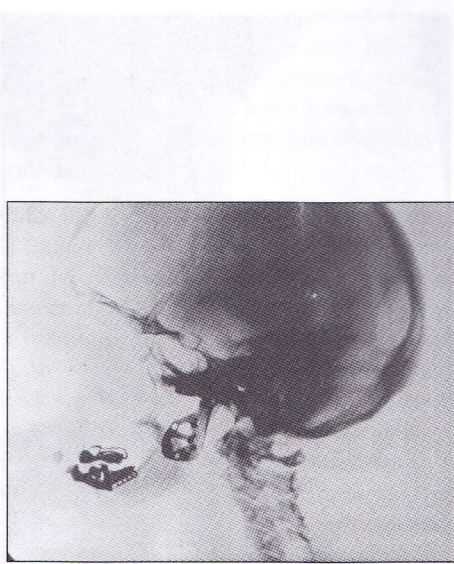


Figure 5: Total "Morgan" device (box-type) implant: fossa and condylar components, left lateral view.

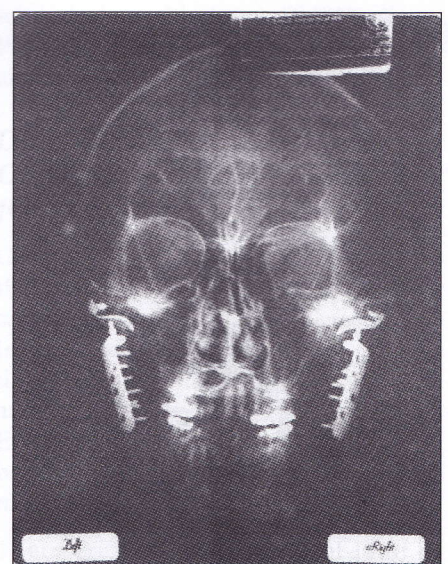


Figure 6: Bilateral total "Christensen" device implant: fossa and condylar components, anterior view.



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# The Temporomandibular Joint in the Context of Structural Integration

By Christoph Sommer, Certified Advanced Rolfer and Peter Schwind, Ph.D., Certified Advanced Rolfer

*Editor's Note: Christoph Sommer interviewed Peter Schwind in Munich, Germany on September 25, 2008. While it was the time of year that Munich celebrates Oktoberfest, they report that they did not!*

**Christoph Sommer:** Peter, you gave me a session last Monday – I had a sore tooth extracted three months ago and I had started suffering from headaches two months ago. I was tired and I started getting sinus infections. Can you tell us something about the relationship of the jaw and mandible into the cranium and the rest of the body's organization?

**Peter Schwind:** When you entered my work room and told me about your situation with the temporomandibular joint (TMJ) and your cranium, it was important for me first to recognize whether these, let's say, microtraumas caused by the extraction of the tooth had started some kind of non-productive dialogue with restrictions in the rest of your body which had been "waiting" there anyway.

**CS:** What kind of restrictions did you find, and what were the unproductive dialogues that this tooth extraction caused in connection with already existing restrictions?

**PS:** I think that the way in which the deep intrinsic tensions traveling from the upper part of the neck into the cranium connect with the tensions of the lower part of the pelvis, connecting with the lower extremities, represents a productive or non-productive dialogue in a person who is integrated or well-compensated, as I would say is the case with you. And when I say dialogue, I mean relationship.

**CS:** What was it that you actually found and what did you work on?

**PS:** I found a motion restriction around the coccyx, related laterally to one of your sit bones, and to my big surprise I found a restriction inside your left lung. I say "to my big surprise" because I have known you for quite a while and I have never seen that in you. Whenever you had a restriction in the thorax, deep inside the thorax, it was usually related to your right main bronchus inside the lung. That you showed a restriction in the left side of your lung told me that there must be either an incredible imbalance in your body or something new had arisen, creating a kind of confusion and causing a restriction inside the left side of your thorax I had never recognized before.

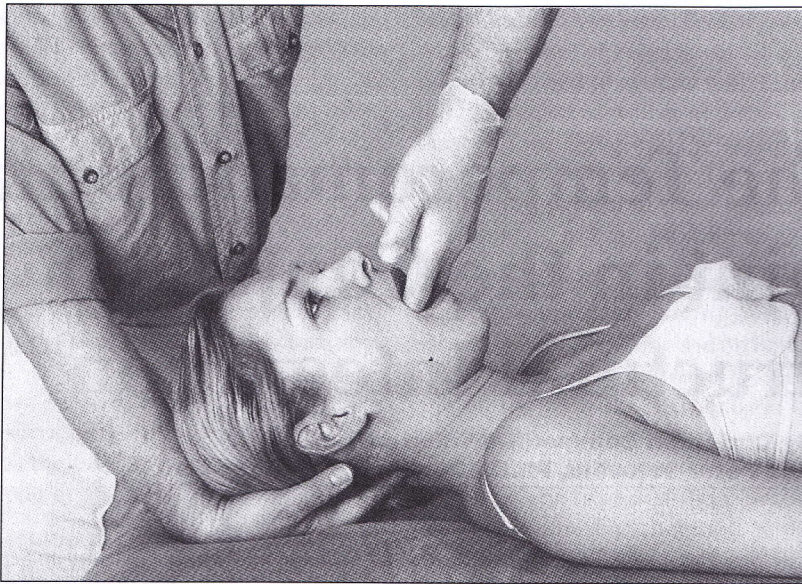
**CS:** Peter, what does that mean for the actual trouble I had in my head?

**PS:** It means we have to check first how the trouble, the acute trouble, within your head has started a dialogue with restrictions manifesting farther down in your body – restrictions which had been manifesting long ago.

**CS:** Can you elaborate on anatomical or physiological reasons why lower restrictions manifest in the cranium or vice versa, and why higher restrictions in the cranium manifested down into my left lung, for example?

**PS:** As we are always seeking horizontal orientation with our eyes, many unilateral restrictions in lower parts of the body do





**Treatment of the spatial relationship between the maxillae, the base of the skull, and the neck:** Patient in the dorsal position, legs bent, arms lying next to the torso; therapist at the head. Contact: With one palm in the region of the occiput on the nuchal ligament; with the index and middle fingers of the other hand intraorally in the center section of the palate. Action: The goal of this treatment is to guarantee that both halves of the maxillae provide adequate orientation as the stable pole of the mandibular joint while the internal membrane lining and exterior fascial layer of the base of the skull display equivalent tension patterns.

The precondition for such a global and, at the same time, detailed strategy is that the therapist use one hand to produce intensive contact with the origin of the nuchal ligament on the occiput without compressing the intracranial cavity in the process. The ligament originates as a large surface from the occiput and is attached to each of the posterior processes of the cervical spine before it ends in the fascia of the trapezius muscle. It is essential that we not limit the dynamics of the base of the skull. In other words, all tension modifications that become evident at the occiput during our treatment will be followed but not inhibited. As soon as the supporting hand has found sufficient contact with the occiput, we adapt the index and middle fingers of the other hand intraorally to the form of the center of the palate and create a spatially tangible connection between the two hands. While the occiput remains stable, it is important to sense the dynamics of both halves of the maxillae: it is as if we were placing our hands below two wings of an airplane and pushing against them in order to gradually stretch inflexible membrane layers (the wings) until the impression arises of an even spatial distribution of forces.

During this process, we should bear in mind that "normal" mobility of the bones in tissue is not forced: the index and middle fingers of the intraoral hand come into intensive and, at the same time, slightly elastic contact with the center section of the palate. As soon as one half of the palate moves, the contact finger allows it. If a twisting of the two halves occurs axially, we can "exaggerate" it without risk until the "wings" of the maxillae find a harmonic movement.

*Image and text reprinted from Peter Schwind's book Fascial and Membrane Technique (2006, Churchill Livingstone / Elsevier), pp. 187-188, with permission.*

create a sort of counter-reaction in the upper part of the body to make upright movement possible. But addressing the TMJ, there is another very essential aspect. The temporomandibular joint manifests itself as a suspended hinge, meaning it's hanging up there on the cranium, and we know that joints which are built as suspended hinges tend to take tensions from below.

But there's another aspect that I think is even more significant. It's a fact that many fascial and membranous layers that run vertically – or, more precisely, diagonally – through the body end laterally underneath the tongue, at the floor of the mouth, and that's just one part of the game. There are plenty of, let's say, longitudinal structures. Look, for example, at the esophagus.

It's usually not running straight down through the neck to the stomach, but it takes very characteristic curves within the neck and thorax until it finally arrives at the entrance of the stomach. However, the esophagus is not a static structure, it is actually something like a very long closed sphincter that doesn't open until something travels through. We have an ongoing inner motion within the neck. As soon as a person swallows, a similar very significant deep connection is manifested in the way that the prevertebral fascia, sometimes called the deep cervical fascia, travels all the way up into the nose. I don't know how that happens, but in practice our hands may feel that this tension inside the deep cervical fascia is also connected to deep tensions we find in the main bronchus inside the lung.

**CS:** But do those anatomical structures you just mentioned have an influence on the TMJ, and if so, in what way?

**PS:** I think what is important about the TMJ is that we have to evaluate it while it is moving, while it is in functional action. Look at that passage in *Ida Rolf Talks about Rolfing and Physical Reality*® where she describes how she developed intra-oral work, mentioning the singer who wasn't able to open his mouth along a central vertical line and who had lots of differences in the tensions on the right and the left TMJ. I think this was the starting point for all the work Ida Rolf had developed around the cranio-mandibular relationship, the neck, and the whole upper pole.

But you are right, the question is what is behind the anatomical details? I owe a lot of thanks to Dr. Sebastian Schmidinger, a dental surgeon who has always been ready to build a bridge between his dental and surgical work and what we are actually doing in the manual field. I remember writing a letter to Upledger in the early 1980s when he had just opened his institute. He responded by saying he couldn't come to Munich to teach but he could send one of his assistants. That was how we started to study cranial work. This first course in craniosacral therapy took place in the home of my friend, the dentist and oral surgeon Sebastian. After all those years we are still asking ourselves again and again, where is the most significant structural frame for all this detailed work done in craniosacral therapy in all its different schools?

**CS:** How does all this relate to the traditional seventh hour of Rolfing?



**PS:** To a certain degree I tried to describe that in my book *Fascial and Membrane Technique*. My hypothesis is that, in various respects, the independent dynamics of the craniosacral system are able to develop as a micromovement only as far as the membranes in the region of adjacent sections of the body allow for that. The tension of the intracranial membranes extensively depends on the pressure of bodily fluids arriving in the interior of the cranium by way of the neck and flowing back out by way of the neck into the thoracic cavity. In order to maintain the intracranial equilibrium of the membranes, unrestricted inward and outward flow is necessary. I think that, to a certain degree, the complexity of the craniosacral system can be circumvented if, in the course of our treatment, we first concentrate on freeing the inward and outward paths of restrictions.

**CS:** What you say sounds very dynamic and intriguing, Peter, but what does that have to do with this structural grid we are looking for in the seventh hour of Rolfing?

**PS:** Well, it's not so simple to really describe it as a structural grid, because it's in permanent functional activities. However, what I wanted to mention is there is one observation I made in particular when cooperating with my friend, the oral surgeon. His theory is that for mammals, including humans, the roof of the mouth is in relationship upward to the neural cranium and downward to the mandible and the front side of the neck, that this relationship is the keystone for the head. And I have to say that this, let's say, very clear and almost simplistic statement has accompanied me for more than twenty years now and continues to lead me to all sorts of interesting investigations.

**CS:** What does that mean for you practically when you do work on, i.e. inside, the head?

**PS:** For me it means, in a way, that I go back to the very early roots of traditional Rolfing work in the seventh hour, where we paid a lot of attention to, I would say, the capacity of springiness of the roof of the mouth; we compared that on both sides. We didn't look for craniosacral motion thirty years ago, but we looked for the missing springiness of the right side and the left side of the maxillae, and I believe it was a very intelligent thing to do.

**CS:** Peter, now that you have compared the springiness of the right and left side of the maxillae, what does that tell you about the seventh hour you are going to give to the client?

**PS:** The maxillae, especially the posterior part, are made of extremely thin bone, but the way in which they are connected with membranes and actually situated between the neurocranium and the mandible gives orientation for almost everything. The maxillae with their membranous connections are very stable, much more stable than the thick bone of the mandible. In the 1980s we thought that we had to do very detailed work on the individual muscles involved in the motion of the TMJ.

**CS:** So, what do you think now?

**PS:** In 1993, I was invited to participate in a fairly big international conference about TMJ problems. There were many people, more than 460 surgeons and dentists, and there was an incredible amount of knowledge and research present. But one of the really interesting statements in this conference was a lecture given by an anatomist from Tübingen, Professor Dauber. He tried to describe that the main dysfunctions are not related to a disorder of the activity of individual muscles, he was talking about a unifying layer of connective tissue lateral to the TMJ. In his understanding, a global imbalance between those layers on the left and right sides is more significant for the trouble we have with the motion, with the function of the TMJ, than the individual muscle activity. That was a big surprise for me to hear! When you relate this connective tissue plate on the two sides, lateral to the joint, to the inner construction of the roof of the mouth, what you get is indeed a three-dimensional view to recognize function and dysfunction of that joint.

The difference nowadays is that I am not talking anymore about the lateral pterygoid and the medial pterygoid and related fascia. In fact, we are just observing how the roof of the mouth separates everything above it from everything below it and whether the two parts of the mouth have an almost equivalent elasticity. We also check how that is related to the big layer of connective tissue lateral to the TMJ. In a way things have become much simpler. The way the arch of the maxillae relates upward to the neurocranium and especially backward to the base of the cranium and downward to all

the longitudinal structures within the neck and thorax is what provides orientation for all the muscles around the TMJ.

**CS:** So this is in a way the keystone of the cranium?

**PS:** I think that for the structure of the cranium and for the function of the cranium, the maxillae and the relationship of the arch they describe to everything around them is just as significant as the neck of the uterus, the cervix, in the female pelvis is for the whole pelvic structures. So in a way, the maxillae are the "cervix of the cranium," both for men and women.

**CS:** Would you describe in greater detail what you just said about the cervix?

**PS:** When you look at the female pelvis, it looks like a basin, like the dome of a Romanesque cathedral turned upside down, since the uterus is falling backward, forward, and to the sides all the time. The uterus is very dynamic. And the uterus is reaching up from below into the peritoneum, but it is below and outside the peritoneum and moves around all the time. Now, the cervix has very deep fascial or ligamentous or membranous fixations which go three-dimensionally all the way, i.e., laterally, backward and forward to connect with the pelvic bones. So, from a fascial perspective, with the dome of the cathedral turned upside down, the cervix is the very keystone from an architectural point of view. That is why in gynecological surgery, when you have to remove the uterus, let's say because of a tumor, and you also remove those membranous and fascial components of the cervix, you create a very difficult situation for the lower back of that woman. By the way, some surgeons became quite aware of that a few years ago and significantly changed their techniques, the approach of this surgical intervention.

Anyway, I think just like the cervix in the female pelvis shows us the keystone in the pelvis, the "cervix of the cranium," for both men and women, is the maxillae and related membranes. And in my observation, if we don't get this balance of the two sides of the maxillae, the balance to everything related above and below it, if we don't get that balance to start with, we have to work very hard and we won't achieve such good results...

**CS:** ...And not such sustainable results...

**PS:** ...Exactly.



**CS:** Coming back to my session, you started working on the “neck of my uterus,” which I don’t have as a man, then you approached my thorax and the connections through the esophagus and trachea into my nose and lungs. Finally, you worked on one side’s maxilla, what I would call the “big move” in that session. Can you say more about why you built the session from below?

**PS:** I had to build it from below because we had realized in your treatment that one side’s maxilla was in total restriction. It didn’t show resilience when I touched it – I am not talking about craniosacral motion, I am just talking about something you touch and you check whether it gives in like a small trampoline or it doesn’t – and one side didn’t give in. I realized that this was in dialogue with two or three other deep restrictions you had in your body, which tried to disturb your good alignment or your relatively good movement function, and it is good to start the treatment from far away. So we had to start on the side of the coccyx, we had to go up to the inside of your lung, then we had to go to some of the very, very small functional pieces of muscles around your thoracic spine, and finally we arrived at that pronounced fixation inside your mouth.

What we did was very simple. We tried to balance the two sides of your maxilla in relationship to all the tissues which end at the base of and around the occiput. So, when you think statically, we tried to have the same space between your front teeth on both sides in relationship to the base of the cranium. When you think functionally, we tried to give the same spatial orientation even for your tongue on both sides of the mouth.

**CS:** Peter, you talk about the maxilla as the keystone you didn’t touch until at the end of the session to make it springy, but what is this maxilla built of?

**PS:** What is behind this keystone should be very flexible and resilient, but sometimes it’s sort of a fixed point for the whole inner construction of cranium and neck. Above the keystone we find an incredible dynamic situation inside the sinuses – I had not been aware of that until I had the chance to assist surgery in that field.

When you do an implant in the upper jaw, sometimes, if you don’t have enough bony substance to do an implant, what the surgeons do is they have to put some bone granules inside there, and they have

to create a new bony base to put the screw of the artificial tooth in. In order to do that they have to open the maxillary sinuses from inside the mouth.

When I assisted these surgical interventions for the first time, I was quite amazed to learn that inside the sinuses membranous components can be found which move five millimeters to seven millimeters forward and backward during inhaling and exhaling. The inside of the sinuses is not as solid or fixed as we imagine, so behind or above the fixed point of the two sides of the maxillae we come across tremendous functional dynamics related to our breathing activity. I didn’t find that in dissecting dead bodies, I really had to go with a surgeon and look inside the living body to observe a reality we don’t find in anatomy books because these are far too static and not dynamic enough for this kind of observation.

By the way, it is due to these dynamics inside the maxillary sinuses that nose work might be so efficient. I remember that when I started studying this work thirty years ago, we were wondering what nose work was about, and I think it is a little bit too simplistic when we believe that we just widen the inside of the two conchae. I remember Emmett Hutchins saying in one of my very early advanced trainings that nose work was done to stretch the membranes inside the maxillary sinuses and in order to arrive there we had to do it in the most elegant way possible.

**CS:** Speaking of how I experienced the session, especially the last part of the treatment in the maxilla, it was quite intense.

**PS:** Was it particularly painful?

**CS:** No, but the effect was that within a minute after your intense direct intervention my whole cranium started to breathe again, which I realized it hadn’t been doing for a couple of weeks. I had the feeling my “juices and my thoughts” can flow again. Was this the intention of your intervention?

**PS:** I think when we work with the outside fascia and the inside membranous construction of the cranium at the same time, we may arrive at a result where the cranial mechanism re-establishes by itself in a better way, because we offer enough space for it. However, we have to be careful in a certain way using this kind of direct approach, and I think it is a very traditional

Ida Rolf approach. When I was working on you, intervening as I did, I certainly had to use three to four kilograms of pressure inside your mouth to “suggest” an inner correction to that maxillary system.

We always have to go indirect! It would be a big mistake if one tried to widen the restricted side of the maxilla directly. In the cranium, which is different from other parts of the body, we always have to go in the direction of the restriction first and wait until what we touch with our hands starts to flow further into the direction of the fixation. As soon as we feel the moment approaching, when it starts to stumble around and wants to get out of the fixation, at that moment we can encourage the system to move into the right direction, and we can actually go much further. Thus we not only encourage it, we can actually add a lot of pressure and make it move further.

**CS:** Thank you for this interview, Peter. I was just thinking that we didn’t really talk about the TMJ as such.

**PS:** I am not sure whether it was Ida Rolf or Hans Flury who said that a joint is everything that crosses it. And I would add: The joint is everything that acts around it.

**CS:** Thank you very much.



# Rolfing® and the Seventh-Hour Head Work

By Jim Asher, Certified Advanced Rolfer™

## INTRODUCTION

Traditionally, the seventh hour of the Rolfing structural integration Ten Series is focused around the neck and head. We address the neck to increase circulation into and out of the cranium, balance the cervical curve, work on the cranium itself, do the mouth and the nose work, and complete the session by balancing the spine and sacrum. In this article I will explain the specific benefits of mouth and nose work and give some examples of its importance in sessions with babies, children and adults.

Dr. Rolf taught head, neck and nose work for the seventh hour. Due to the time constraints of the early classes, and because these classes were limited to six weeks, there simply was not enough time to discuss when and where one might do head work earlier. Dr. Rolf would sometimes work on a baby, child, or adult's head outside of the "Recipe" if she felt that it was critical to the person or that they might not be able to receive an entire Ten Series.

As an example, Dr. Rolf had me come to New Jersey to assist her with a twelve-month-old baby. Dr. Rolf's health was failing, so she decided to address the child's two major problems that day and then have me or someone else follow-up. She started with a little leg work, because the legs had some distortion along with the pelvis. Then, after some brief neck work, she put on finger cots and had me look into the mouth at the upper palate. The nurse of a pediatrician I had invited also examined the baby's palate. (The pediatrician could not attend.)

The baby had a distorted palate and twist in the midline of her facial bones. After a few minutes of mouth work, the palate and face looked amazingly better to everyone in the room – the grandmother, the nurse and myself. We were all astounded at how much

change happened in such a short period of time. The palate was more aligned between the right and left sides, coming together and looking more balanced. Prior to this work, the two sides had looked distinctively crooked and misaligned. Remembering this case has often helped me over the years.

In another case, a woman brought her three-month-old daughter in for a treatment. This baby had been in the hospital almost since birth. She had no sucking reflex and was being fed by a tube into the stomach. The first thing I did was go into her mouth and do some light maxilla work. I then did a midline release to stimulate the sucking reflex and release the facial bones, which seemed jammed back into the cranium. I then did some light mouth work and addressed the anterior compartment of the neck, thoracic inlet and diaphragm. After the third session the baby was able to start eating orally and was able to swallow. The family moved away, but I get a photo from the grandmother every couple of years expressing her appreciation and thanks.

The thing to remember when working with babies and children is that the touch is generally so light that you could work on them while they were sleeping. Also, you would never do inner nose work on a baby or child. I have worked on over four hundred babies and always check the midline of the palate for jamming, which frequently occurs during birth. Obviously, not every baby will have as dramatic a change as the one described in the last paragraph. Also of important note, I've referred every child I've ever worked with to a cranial osteopath.

Dr. Rolf started me working with babies and children in 1971, and I was lucky enough to observe and assist her every year from 1971 until her passing. With babies, I seldom do a Ten Series, but I do use the template of Dr. Rolf's work to guide me.

When doing mouth work with adults, I find that each person has his own set of problems and distortions that need to be resolved, making the work a very dynamic puzzle to be solved. Traditionally, some mouth work is done before the inner nose work. When working in the mouth, we are loosening the soft tissue to allow the head and face to breathe. This allows for a rebalancing of the facial bones, which may have been compressed and jammed into the cranium due to various accidents.

There are many elements to balance in the mouth:

- Do the maxillae spread, and do they need decompression?
- Does the vomer rock on its axis?
- Are the vomer and ethmoid aligned?
- Does the ethmoid breathe?
- Does the ethmoid-frontal complex need decompression?

Everyone has had various blows to the face that create distortions. These distortions can be grouped into the following categories (based on the work of cranial osteopaths, such as Dr. William Garner Sutherland):

- (1) compression
- (2) lateral strain
- (3) torsion
- (4) inferior or superior vertical strain
- (5) stuck inflection
- (6) side-bending strain pattern
- (7) loss of inflection or extension

These categories were initially used to describe the sphenobasilar mechanism; however, we can feel many of these patterns within the facial compartment and within each facial and cranial bone. It is not unusual to have a combination of these. An example is a compression – a compressed head with a lateral strain, inferior vertical strain and torsion (very common).

I first read about the motion in the cranium and these various strain patterns in October 1970 while preparing for a class I would be teaching at the request of Dr. Rolf; she had loaned me her copy of Sutherland's *The Cranial Bowl* as a reference. During the class, she passed around her copy of the book and stated that while she found the ideas useful, if we wanted to learn the specific techniques, we should take a class from an osteopath. Whenever Dr. Rolf worked on someone's head, you could see she had a vision of the head breathing while she worked.



# ROLFING® AND THE STRUCTURES OF THE HEAD

During mouth work, we are affecting the axial and meningeal fascial layers and the tubes of the esophagus and trachea. Clients have reported a visceral-tube change from mouth work as a feeling of the lungs opening up. Another common result is the feeling that the jaw moves more easily and that the tongue no longer feels like it is jammed up to the roof of the mouth.

Dr. Rolf sometimes demonstrated throat work as part of a seventh session. She taught us that throat work can be done

before or after mouth work, working with the suprahyoid and the infrahyoid muscles. She encouraged us to feel the hyoid bone for balance to make sure that it is not pulled to the left or right. In her demos, she sometimes included work with the larynx and the esophagus, working the esophageal tube from the sternum upward to the hyoid.

Nose work is certainly very beneficial to a number of people, but some find it intimidating. I personally give my clients a choice, and therefore teach students how to do "inner" or "outer" nose work, depending on the client's needs and wishes. If an adult has an objection to inner nose work, we can have an effect on the nose by working on the outside using these and other steps: lifting the zygomatic bones, releasing the frontal-ethmoid sutures and releasing the vomer-ethmoid suture.

In my practice in Colorado, the facial and mouth work is especially useful due to a large number of bicycling and hiking falls in the client population. As an example of what results, clients will frequently come in feeling foggy, having difficulty putting thoughts together, feeling lethargic, slurring words; they also tire quickly when doing any computer work or reading. These people typically need multiple sessions focusing on the head, mouth, inner or outer nose work, neck, and thoracic inlet, and of course work to guarantee that there's some support below.

In closing, mouth and nose work are essential for many clients, yet often neglected because of a lack of understanding, education and emphasis.

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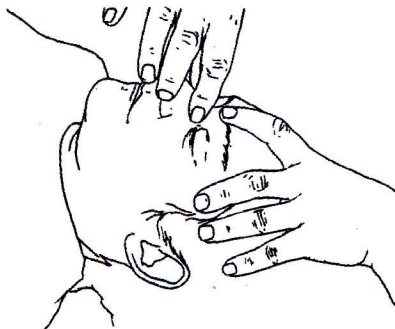
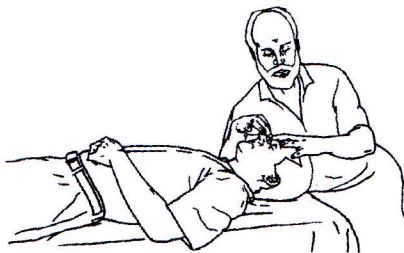
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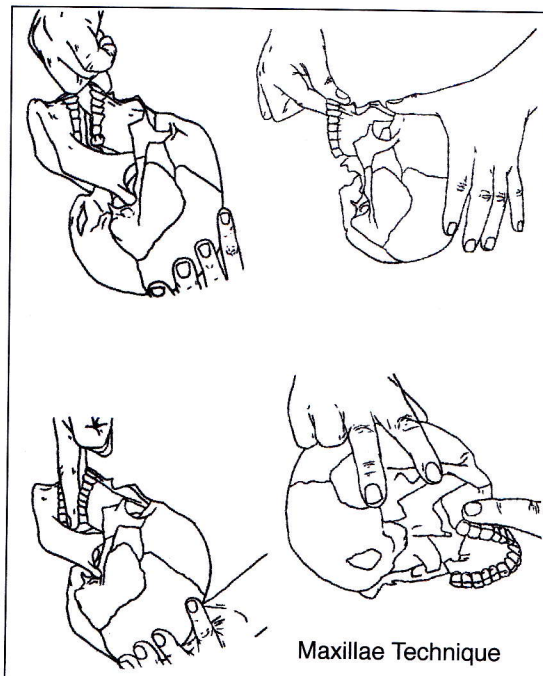
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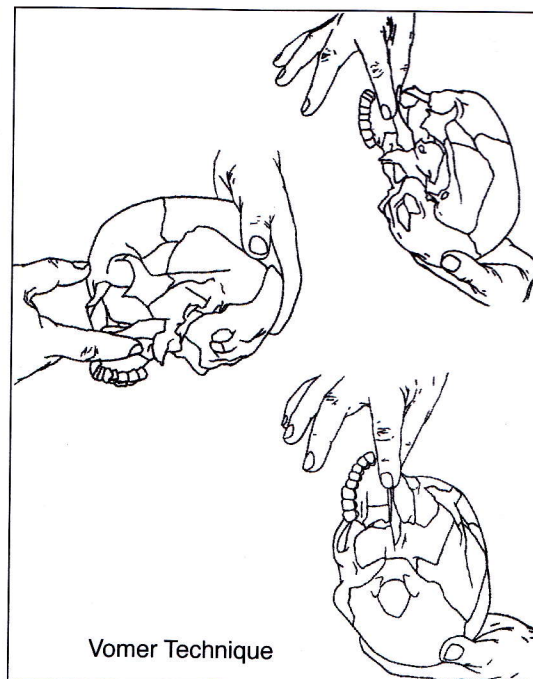
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Jim Asher demonstrates ethmoid lift



Maxillae Technique



Vomer Technique