

Manual Therapy prior to & after release of Tethered Oral Tissues (commonly called Tongue and Lip ties)

*This document serves as a brief guide for **practitioners** providing manual therapy around the cranium & associated structures for patients with tethered oral tissue who are to receive surgical release of these restrictions. Treating this area comprehensively (intra and extra-oral areas including the dorsal and ventral areas of the upper body) allows for more thorough rehabilitation, and optimises patient outcomes surrounding surgery.*

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Prior to the release of restricted frena (tongue or lip ties), patients with tethered oral tissue of all ages have commonly developed a dysfunctional posture, swallow and breathing technique as compensations for anatomical deficiencies.

The Tongue at Rest

A restrictive tongue often means that rather than sitting against the palate at rest position, the tongue sits in a descended posture somewhere on the lower part of the mouth. Such a tongue posture predisposes open mouth postured breathing (mouth breathing) rather than nose breathing.

The Tongue during Function

When the tongue attempts to elevate for various functions but is unable to fully do so, the surrounding muscles that are connected from the tongue to the hyoid bone and beyond (including but not exclusive to genioglossus, hyoglossus and geniohyoid) develop excessive tone and tension in the area under the jaw and the chest. This is because a limited range of movement of the tongue causes disproportionate pulling or retraction of the hyoid bone during function, and the other supportive intrinsic and extrinsic muscles of the tongue and jaw attempt to compensate for the limited tongue movement.

Compensatory mechanisms may lead to postural change

The combination of this compensatory process and the pulling back of the hyoid bone may restrict the airway, which initiates a forward head posture in order to maintain an open airway. Further postural compensations include an altered shoulder and scapula position, due to tension in the omohyoid muscle which inserts on the hyoid bone after passing through a fibrous "sling" attached to the clavicle.

An elevated or retracted hyoid results in excessive tightness of the infrahyoid and suprathyroid muscles as well as the middle pharyngeal constrictor muscles. Muscular tension combined with a restricted airway results in laboured breathing, which often causes excessive negative pressure in the maxillary sinus and nasopharyngeal airway. This causes insufficient development of the mid-face (visualised as a high palatal vault, narrow face, narrow dental arch with a greater chance for dental crowding requiring expansive orthodontics) and predisposes the child to sinus congestion and infections.

The role of Manual Therapy prior to release of a tethered tongue & lip

In general, manual therapy of related intra-oral and extra-oral tissues allows the various muscles of the tongue, jaw, head and neck to become more agile and functional for better feeding. Practitioners may also provide cranial-sacral therapy to optimise the structural alignment of the child, paying particular attention to the alignment of the head, neck, jaw and thorax, to restore as much functional stability to those areas as the tongue and lip ties allow.

In particular, manual therapy prior to frenulum release helps the surgery by loosening the attachments of the muscles of the tongue, allowing better elevation during the procedure as well as better visual and manual access. This results in a more efficient and thorough surgical technique.

The role of Manual Therapy and Retraining Exercises following release of tethered tongue and lip

Following surgical release, manual/cranial therapy and retraining exercises* provided by the practitioner assist in continuing to stretch and relax the tightened tissues of the mouth and to improve the dysfunctional acquired movement patterns associated with sucking, swallowing, speaking and breathing. (*Please Note- these are different from Active Wound Management stretches provided by the surgeon.*)

Even though the actual cause of the dysfunction may have been addressed through the frenectomy, without addressing the compensatory muscular and joint tension through manual therapy, and retraining to establish healthy normal movement patterns, it can be expected that the aberrant swallow, breathing habits, speech impediments and altered postures discussed earlier will either remain or take much longer to improve in function.

With the appropriate rehabilitation of the orofacial and associated muscular/joint compensations, the newly released tongue has a supportive mechanism to maintain its full function. This will assist in minimising any unwanted tissue re-attachment post surgery.

Retraining exercises take different forms in patients of different ages. For infants, the therapist will recommend home exercises for parents to carry out to help the rehabilitation of tissues in between visits to the therapist. These encourage the activation of formerly inactive and weakened muscles and the relaxation of tightened over-active compensatory muscles. Home exercises become the “practice sessions” of the various components of speech, eating or nursing. They allow the embedding of new patterns of movement and formation of new neural pathways for a new and complete way of functioning.

For older children, further oral exercises will help tongue function to be restored (e.g. through oral myofunctional exercises). A speech therapist or the surgeon may provide these exercises. Alternatively patients may be referred to see an oral myofunctional therapist.

It is important to recognise that where dysfunction has come to exist due to a tongue or lip tie, the removal of the source of the developing dysfunction (ie a restrictive tie) will help the rehabilitation process and restoration of functional competencies. As such all therapies including manual therapy will likely have a more enduring result when the physical restriction is removed via a Frenectomy.

Additional general benefits of Manual Therapy for infants and children

A constrained or abnormal position in the uterus, and spinal stress incurred during the birth delivery process, commonly result in muscular tightness and strain, joint restrictions, tension of the dura within the spinal canal and cranium, along with irritation or pressure to the nervous system including the cranial nerves. These impact on the general functioning of the body, and depending on which areas are affected may be contributing to poor latch and feeding difficulties, reflux and digestive system issues, breathing weakness and sleeping problems amongst others. Manual and cranial therapy benefit the patient by normalizing musculoskeletal and neurological function to assist the body in coordinating these body systems and activities.

Areas of focus and treatment

- Examine baby/child's features for symmetry and form.
- Evaluate whether normal infant reflexes are present (rooting, suckling).
- Evaluate spinal ROM and joint integrity, including the clavicle, shoulder and rib cage.
 - o Difficulties in turning the head, upper cervical subluxation and torticollis will encourage the favouring of one breast with feeding or result in difficulty in feeding.
 - o Laboured breathing results in overactivity of accessory muscles of respiration (SCM, scalenes, pecs), tension within the diaphragm, reduced mobility of upper thoracic spine and ribs.
 - o Forward head posture, compensatory muscle imbalances, narrowed airway and hyoid pulling result in altered clavicle, shoulder and scapula position.
- Examine cranial (skull) bones and sutures. Molding will cause flattening or coning of the skull, and possible changes to the hard palate and temporal bones affecting the Eustachian tubes.
- Examine degree of restriction of the lip and tongue tie. Look and feel inside the mouth.
 - o Does elevating and flaring the top lip mimic the normal flanging motion needed to latch onto the breast when feeding?
 - o Does the tongue only have normal movement in one direction? The tongue should be able to extend to lick the lips, lift the front half of the tongue to touch the roof of the mouth, sweep along the gums and the sides should be able to draw up to assist swallowing.

- Examine jaw and how wide the baby/child can open their mouth.
 - o Babies will compensate by using the jaw to increase positive pressure on the breast and bite or chew instead of suck resulting in altered jaw position, tight masseter and pterygoid muscles.
- Examine the muscles that attach to the hyoid. When the tongue attempts to elevate but cannot fully do so, the surrounding muscles that are connected from the tongue to the hyoid (including but not exclusive to genioglossus, hyoglossus and geniohyoid) result in extra tone and tension in the area under the jaw and the chest. A retracted or elevated hyoid results in tightness of the infrahyoid, suprathyroid and middle pharyngeal constrictor muscles.
- Lip and tongue ties often present in tension +/- weakness of the following muscles required for normal suck/swallow:
 - o orbicularis oris
 - o buccinator- flattens cheeks and pulls on the corners of mouth
 - o genioglossus
 - o styloglossus- enables cupping of the tongue
 - o palatopharyngeus- soft palate
 - o temporalis- elevates and retracts jaw
 - o stylohyoid- draws the hyoid backwards and elevates the tongue
 - o styloglossus- draws sides of tongue up to create trough for swallowing
- Remember, the anatomical structures used for feeding are also used for breathing and speech. Thus lip and tongue ties and the associated motor patterns and postural adaptations have long standing effects beyond simple breastfeeding.

For more information

This is a broad topic that cannot be completely addressed in such a summary form. Dr Jones holds regular seminars on the identification and treatment of TOTs and the vital importance of supportive therapies. For the next upcoming seminar, please email smile@enhancedentistry.com.au

A brief reference list of literature is available at

<http://www.enhancedentistry.com.au/wp-content/uploads/2015/08/Reference-list-for-UTT-2015.pdf> which includes Tongue/Lip ties and its treatment, the effects of a descended tongue posture, chiropractic and breastfeeding.

