# Osteopathic Manipulative Treatment (OMT) after Vestibular Schwannoma Resection: Methods and Framework from a Recent Retrospective Study

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## Introduction and Objective

- A recent retrospective study showed that **adding osteopathic manipulative treatment** (OMT) to the acute postoperative care of patients after vestibular schwannoma (VS) resection was **associated with a shorter hospital length of stay and lower daily opioid consumption over time** [1].
- The objective of this poster is to describe an osteopathic approach to evaluate and treat patients after VS resections. It is informed by traditional OMM training and our clinical practice.
- By providing a more detailed description of this procedure, we hope to improve the effectiveness of OMT use in skull base surgery and other neurosurgery practices.

## Context and OMT Training

- Osteopathic manipulative treatment (OMT) is manual medicine performed by physicians.
- The term "OMT" currently includes 40 types of different manual techniques [2].
- These techniques aim to treat "somatic dysfunction", which is defined as impaired or altered function of the body, including the skeletal, arthrodial, and myofascial structures and their associated vascular, lymphatic and neural elements [2].
- **OMT based on the premise that the body has a natural tendency to revert to normal when balance is restored and factors preventing return are removed** [3].
- All doctors of osteopathic medicine (DOs) received a minimum required 200 hours of coursework in osteopathic practice. Continued specialized training can be obtained through an "Osteopathic Neuromusculoskeletal Medicine" residency or continuing medical education.
- UC San Diego Health has an inpatient Osteopathic Manual Medicine consultation service staffed by licensed and board-certified physicians with advanced training in anatomy, palpatory diagnosis, and inpatient populations.

## Phase 1. Detailed Evaluation

**Somatic effects of surgery**

- Intubation, intraoperative positioning, and soft tissue dissection can contribute to postoperative musculoskeletal strain, including but not limited to neck, shoulder, and back discomfort.
- Surgery itself creates a controlled acute inflammatory cascade, which can contribute to acute nociceptive pain and findings such as suboccipital, cervical region, and supraclavicular tissue edema and strain.
- From our clinical experience, different surgical approaches are associated with different patient symptoms and somatic dysfunction patterns. For example, the translabyrinthine approaches often report jaw pain and restriction of jaw motion. The retrosigmoid approaches often report more cervical pain.

**Evaluation and examination process**

- **Evaluation informed treatment is key** as OMT is tailored to each patient's unique clinical picture.
- History, charts, imaging are reviewed. Incisions, lines, drains, graft sites are inventoried and avoided.
- Somatic dysfunction (SD) findings are identified via a **standard TART criteria** (**T**issue texture changes, **A**symmetry in paired musculoskeletal structures, **R**ange of motion differences, **T**enderness) [2].

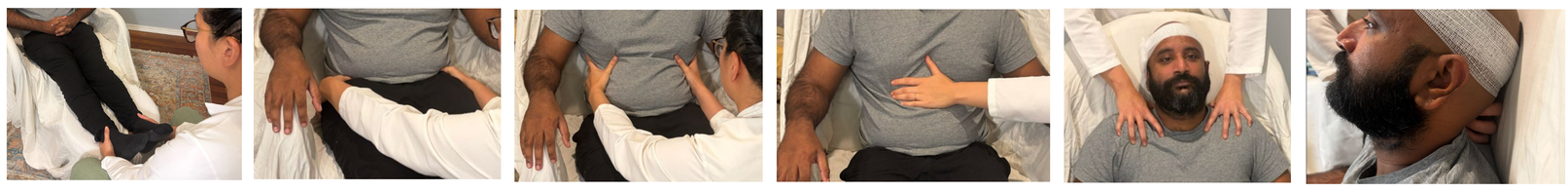

**Figure 1. Pictures above provide some examples of hand contact during structural examination.**

- Patient is usually seated in recliner or laying in hospital bed with head of bed elevated.
- First, we take note of the general condition of the patient's posture and positioning at rest.
- Examination includes the entire body, including lower extremities, pelvis, sacrum, entire spine, ribcage, clavicles, upper extremity, diaphragms, abdomen.
- Associated motion testing is passive and does not require active patient participation.
- Hand contact is gentle, minimal pressure is used and comparable to pressure used when palpating a pulse or testing the ripeness of an avocado.

**Scan to watch:**
Video demonstration

## Phase 2. Treatment Procedure

- The approach used by our OMM consultation team is called "**balanced ligamentous tension,**" based on the writings and teachings of William G. Sutherland, DO [3].
- **Goal of OMT is to restore healthy motion and function in the tissues**. It is informed by anatomy, biomechanics, and understanding associated relationship with underlying physiology. Steps identified in table below.

**Table 1 Steps of BLT and BMT techniques according to Sutherland's description** [4]

| Phase | Operator status | Description |
|---|---|---|
| 1. Disengagement | ACTIVE | The practitioner uses a compression or decompression method to disengage the area with SD. |
| 2. Reaching the balance point | ACTIVE | The area or the segment with SD is moved through the existing range of motion in every direction, with close attention to whatever restriction may be present. |
| 3. Balance point | PASSIVE | The dysfunctional area is brought in the balance point and the body's inherent power is monitored. |
| 4. Tissue release | PASSIVE | An increase of local temperature and a rebalance of joint mobility is achieved. |

- **Advantages:** This approach does not utilize any joint articulation or force to mobilize tissue or bony structures [3]. It has a low risk profile and can be considered a non-pharmacologic adjunct in post-op care.
  - It is appropriate for a hospitalized patient as active participation and mobilization of the patient is not requested and the approach can be applied in the seated or supine position.
- Each OMM consultation last ~30-60 minutes, with 10-20 minute on evaluation and 20-40 minutes on OMT.
- Given the limited research in this area, please note these points are made from clinical observation and experience.

*"Surgery treated the tumor, OMT supported my recovery and healing from the surgery."*
*– UCSD VS Patient*

## General Treatment Components

**1. Help with autonomic regulation and surgical stress support**

- Treatment begins with gentle contact with intent to support autonomic regulation.
- Decreasing sympathetic tone may rebalance the vasomotor effects of acute stress.
- Treating allostasis allows for restoration of fluid dynamics, which can in turn support a more expedited and comprehensive move towards homeostasis and recovery.

**2. Restore whole-body musculoskeletal mobility**

- Addresses musculoskeletal effects of surgery, surgical positioning, and intubation by treating tissue tension in body regions remote from craniotomy, including diaphragms, spine, ribcage, pelvis, etc. This may alleviate other pains and decrease need for pain medications, support respiratory-circulatory function, and facilitate early mobility.

**3. Supporting venous and lymphatic return**

- Restoring motion of the pelvic and respiratory diaphragms can restore the mechanics involved in venous and lymphatic return.
- Brain glymphatic drain into cervical lymphatic channels, which converge into the central venous system. Addressing tissue tension at the thoracic inlet and cervical soft tissues may support this drainage [5].

## Discussion

- From 2019 to 2025, this approach has been used to evaluate and treated ~1000 patients at our institution.
- Integrating OMT in an acute care setting includes synergistic collaborations with patient care teams that considers acute care needs.
- Relative contraindications to OMT include practitioner experience and patient needs for other acute interventions.
- Future studies may explore effects of OMT on physiologic parameters and effects of OMT on dizziness, balance issues, vestibular dysfunction, and facial nerve recovery.

## References

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