

# The Scientific Osteopathic Approach To Patients With Headache



*Luc Peeters, MSc.Ost.*

## The same author also published books on:

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- Fascial Chains
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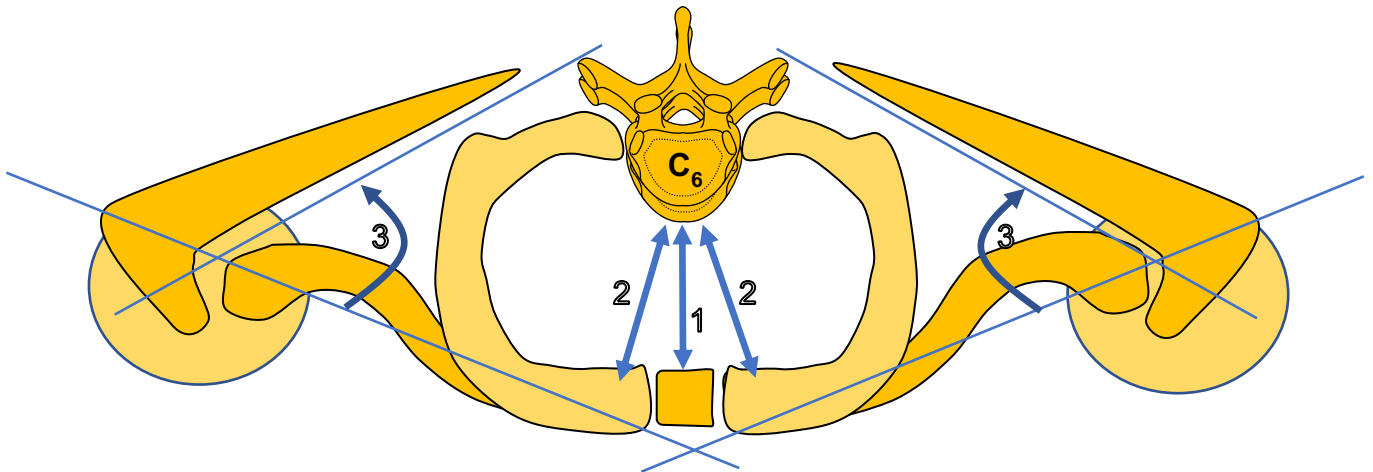
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- Improve all neurological aspects towards the head in general. Hereby the osteopath seeks a correct balance between the sympathetic (segment T<sub>1-6</sub>) and parasympathetic (occiput-atlas-axis (OAA)) nervous system by treating the mobility of both segments.
- Improve vascularization and tissue oxygenation. Hereby the osteopath treats:
  - Lung area (to increase the exchange surface).
  - Heart area to increase the perfusion.
  - As well the arterial supply of the head:
    - Sympathetic (segment T<sub>1-6</sub>).
    - Possible entrapments.
  - As the venous drainage:
    - Possible entrapments.
    - Fascia of the neck.
    - Thoracic outlet.
    - Heart region.
  - As the lymphatic drainage.
- Improve all possible metabolic disfunctions.

**Beside the manual osteopathic treatment, the osteopath will instruct the patient concerning:**

- Balance between sport and rest.
- Reduction of chronic stress.
- Correct diet.
- Keep a correct BMI (body mass index).

**Thoracic outlet: enlarge the following distances:**



**Figure 4 - Thoracic outlet distances**

*1 = distance C<sub>6</sub> ventral body / posterior side manubrium.*

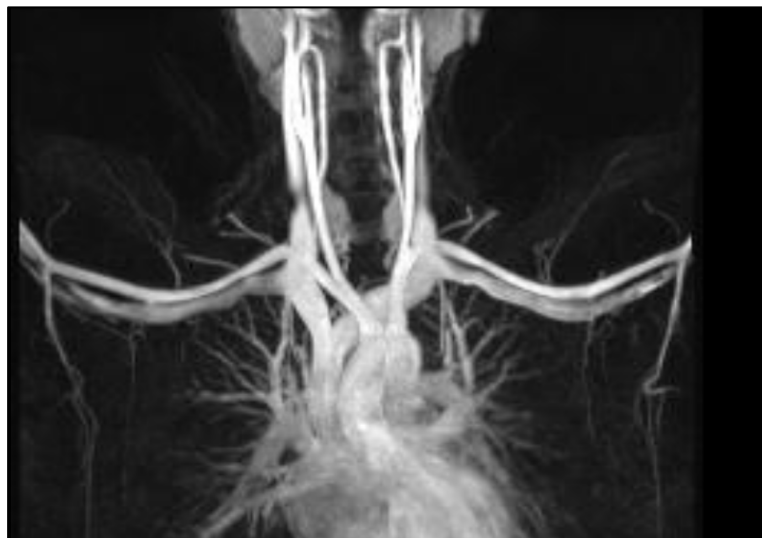
*2 = distance C<sub>6</sub> ventral body / posterior side medial clavicle.*

*3 = angle between axis clavicle / spina scapula.*

*4 = distance acromion / humerus.*

**Thoracic outlet syndrome:**

- C<sub>6</sub> translates anteriorly.
- Distance C<sub>6</sub> ventral body / posterior side manubrium diminishes
- Distance C<sub>6</sub> ventral body / posterior side medial clavicle diminishes.
- Angle between axis clavicle / spina scapula reduces.
- Distance acromion / humerus reduces.



**Figure 5 - Vascular structures in the thoracic outlet**

The ascending pathways of the trigeminovascular system project to multiple cortical areas. This suggests a role in motor clumsiness, difficulty focusing, transient amnesia, allodynia, phonophobia, photophobia and osmophobia.

## Osteopathy

In all these symptoms (migraine, motor clumsiness, difficulty focusing, transient amnesia, allodynia, phonophobia, photophobia and osmophobia) it could be important to treat the mechanics of the upper cervical spine and possible entrapments or dysfunctions of the trigeminal nerve.

This means that the Trigeminovascular Complex and The Trigemino-cervical Complex play an important role in the occurrence of migraine. Lots of the above-mentioned items explain also the diversity of neurological disturbances associated with migraine.

The trigeminal doesn't play a major role in the regulation of blood flow under resting conditions. The system acts in times of stress and has been described as a sort of 'watch dog'.

In migraine, there is an important sensitization which shows through hyperalgesia and allodynia. (airbrushing becomes painful for example)

There can even be an extracephalic allodynia (clothing is painful, blanket can't be put on, shower is painful).

Migraine type photophobia means that there is exacerbation of the headache by light. The convergence of photic signals from the retina trigger onto the trigeminovascular thalamocortical pathway.

## Osteopathy

In cranial techniques, treating migraine or other complaints, be careful to not stimulate too much on the V1 portion of the trigeminal nerve because this could produce reflex action of the cranial parasympathetic outflow.

Then we see vasodilatation of the internal carotid artery and watering and redness of the eyes or nasal congestion.

## Aura

In the 'aura' phase (transient focal neurological symptoms that usually precede or sometimes accompany the headache) of migraine there is a **spasm** of the cerebral arteries and during the headache phase (mostly 1 hour later but aura can be

Pain afferents from the trigeminovascular system traverse the ophthalmic division of the trigeminal nerve, taking signals from the cranial vessels and dura mater.

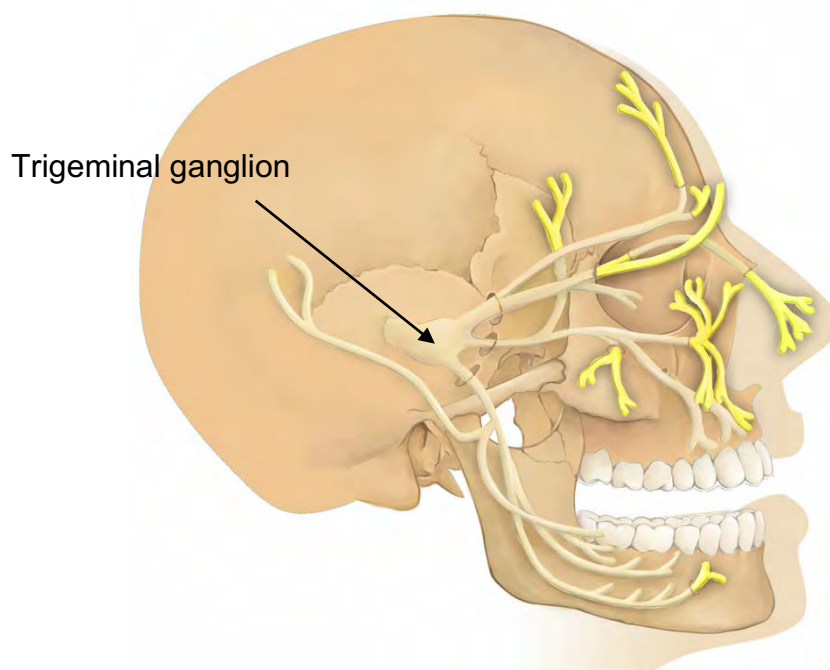
These inputs synapse in the trigeminocervical complex and project to higher brain structures such as the thalamus and cortex resulting in pain perception.

Activation of the trigeminovascular system by stimulation of dural structures also causes neuronal activation in the superior salivatory nucleus within the pons, which is the origin of cells for the cranial parasympathetic autonomic vasodilator pathway.

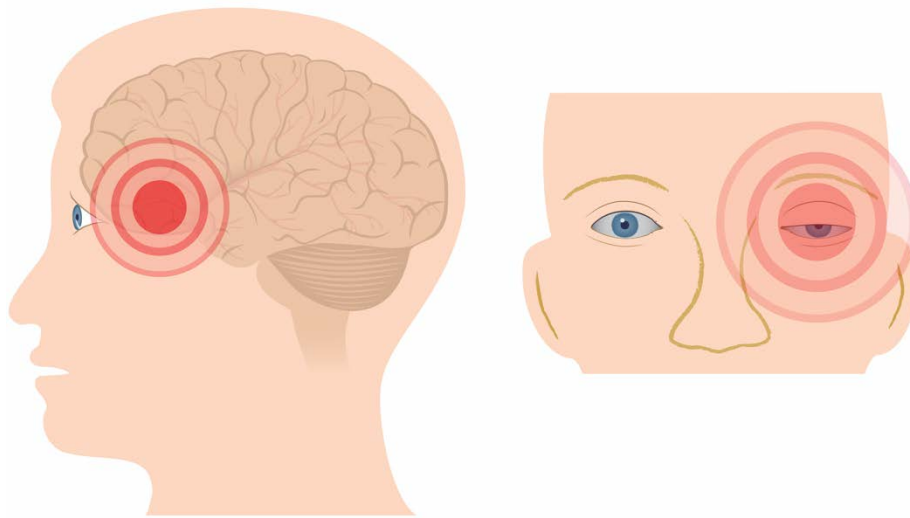
There is subsequent activation of this parasympathetic reflex through the outflow from the superior salivatory nucleus and is relayed through the sphenopalatine ganglion and also through the facial nerve.

Activation of both trigeminal and autonomic nerves defines the trigeminal autonomic reflex arc, which is integral to the pathophysiology of cluster headache.

A third-order sympathetic nerve lesion thought to be caused by vascular changes to the internal carotid artery in the cavernous sinus with subsequent irritation of the local plexus of nerve fibers, can give rise to sympathetic symptoms (incomplete Horner syndrome).



**Figure 10 - Trigeminal ganglion**



**Figure 12 - Cluster headache**

### **Episodic cluster headache**

In about 80% of people with cluster headache the clusters of head pain last for 4 to 12 weeks once a year often at the same time and often in the Spring or Autumn.

It may then disappear for several months or even years. This is known as episodic cluster headache. The reason for this seasonal timing is not completely known, although it is one of the key aspects of diagnosis and may involve a brain area called the hypothalamus.

Acute attacks involve activation in the region of the posterior hypothalamic grey matter.

Patients with cluster headache are often unable to keep still during an attack and often try to relieve the agonizing pain by pacing the room or walking outside, sometimes even banging their heads against a wall until the pain subsides.

### **Triggers for cluster headache:**

- Alcohol.
- Smell of certain products such as petrol, paint fumes, perfumes, bleach or solvents.
- Exercise or overheating.
- Heavy smokers are at risk.

In the schedule below, you can see that when the headache emerges during specific periods in the menstrual cycle, there is a good chance that the cause is:

- Endometriosis.
- Pelvic congestion.
- Ovaria.
- Primary dysmenorrhea.

Also observe the 'estrogen drop' period (red arrow).

Ask the patient which contraception method is used. Some contraception pills can cause this type of headache. When you think that this is possible, refer to the patients' physician.

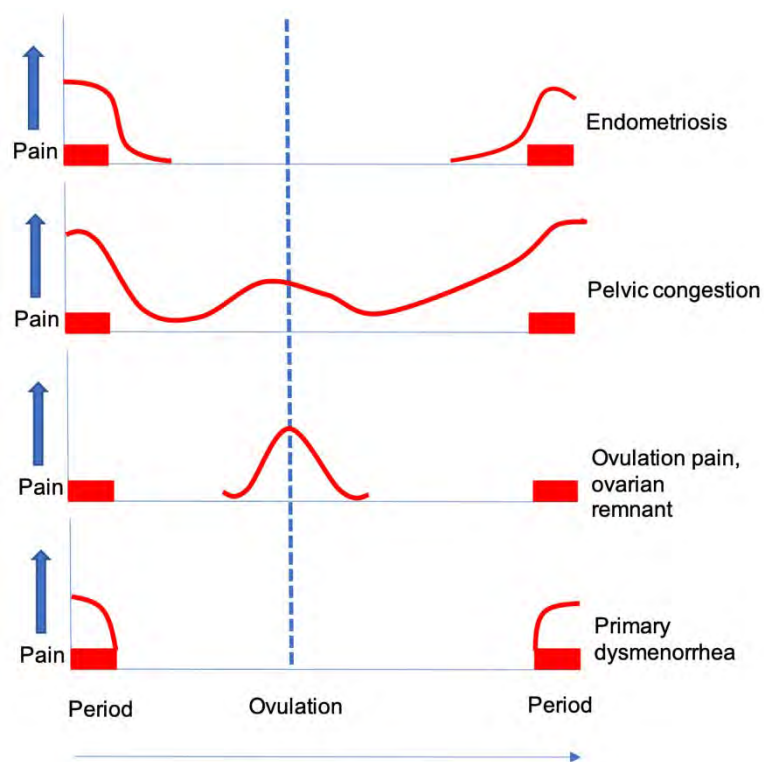


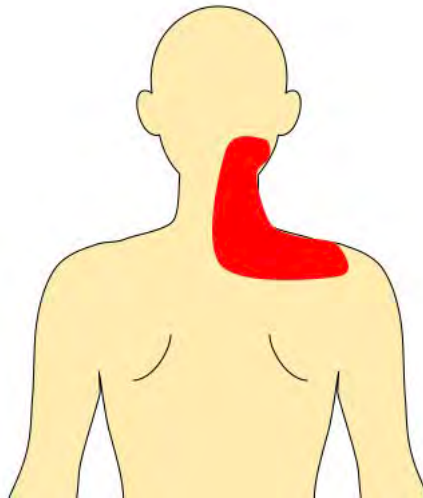
Figure 15 - Headache (pain) moments and possible causes



## C<sub>4</sub>

The sclerotome referral pattern is presented.

We give here the referred pain region when bone, ligament or capsule of the spinal segment is irritated



**Figure 21 - Referred pain pattern from C4**

## Osteopathy

**In the case of cervicogenic headache, the osteopath investigates the cervical spine in search of:**

- Inflammation of:
  - Facet joint(s).
  - Disc(s).
  - Uncovertebral joint(s).
  - Soft tissues such as periost, ligaments, muscles, dura.
  - Structures in the vertebral foramen.
  - Vertebral dura mater at the level of the attachments with bones and soft tissues in the upper cervical region.

To find these inflammations that are often low graded, the osteopath performs typical provocation tests, specified per tissue.

**The osteopathic treatment goal then is:**

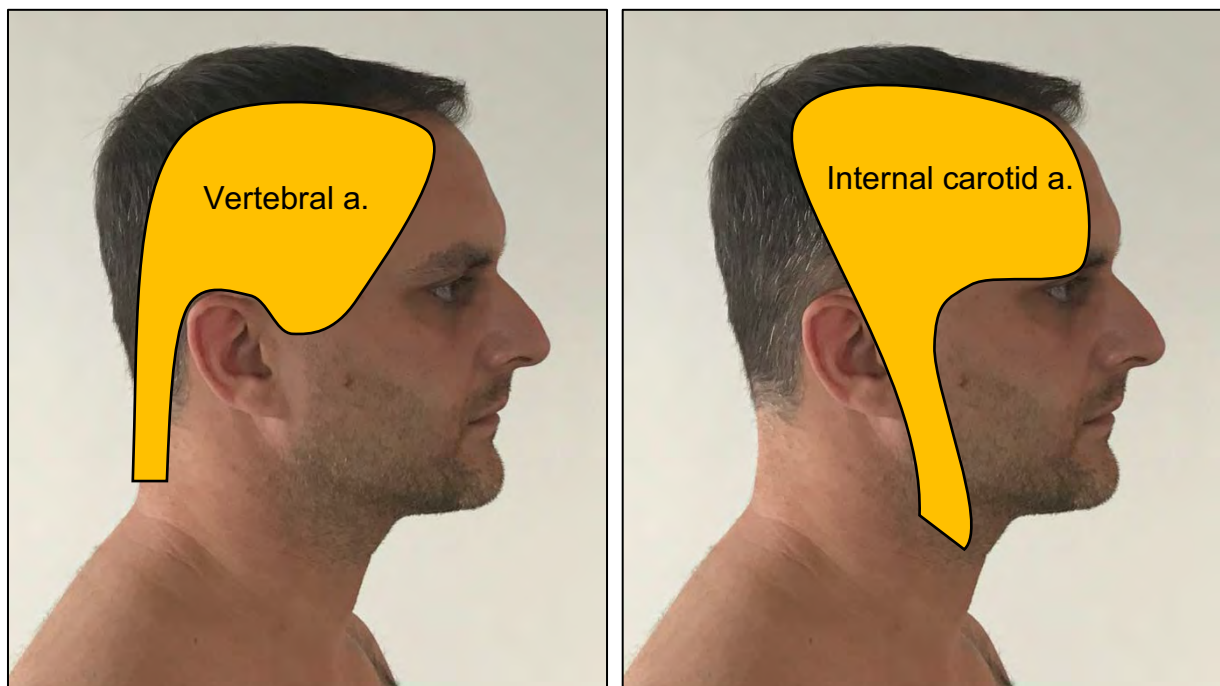
- Heal the inflammation by:
  - Decompress compression lesions in facet joints, intervertebral joints, uncovertebral joints, intervertebral foramina.

This can be done with mobilizations, manipulations, tractions, ...

Beside these specific treatment regions, the general osteopathic approach is used as described in the introduction.

## **2.9. Referred Pain from Vertebral and Internal Carotid Artery**

In the case of inflammation of the vertebral or internal carotid artery there can be referred pain.



**Figure 22 - Referred pain area vertebral artery and internal carotid artery**

### **Vertebral artery pathology**

The vertebral arteries originate from the subclavian artery and ascend through the transverse foramen of the upper six cervical vertebrae.

- The fascia of the neck.
- The thoracic outlet.
- The heart/lung region.

## 2.11. Sinusitis Headache

Inflammation in the normally air-filled sinus cavities in the face can cause pressure and pain that leads to a sinus headache.

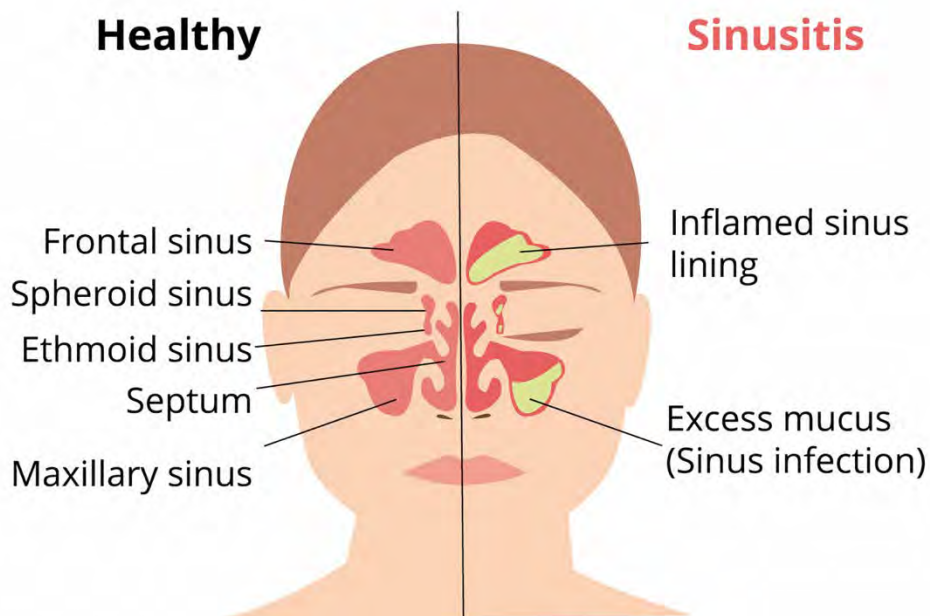


Figure 28 - Sinusitis

### 2.11.1. Acute Sinusitis

The most important complaint is pain above the eyes and in the face.

The pain increases by bending over forwards and by lying down.

The complaints mostly start after a cold.

#### Other possible signs are:

- Running nose.
- Reduced smelling capacity.
- Coughing.
- Teeth pain.
- Nasal congestion.

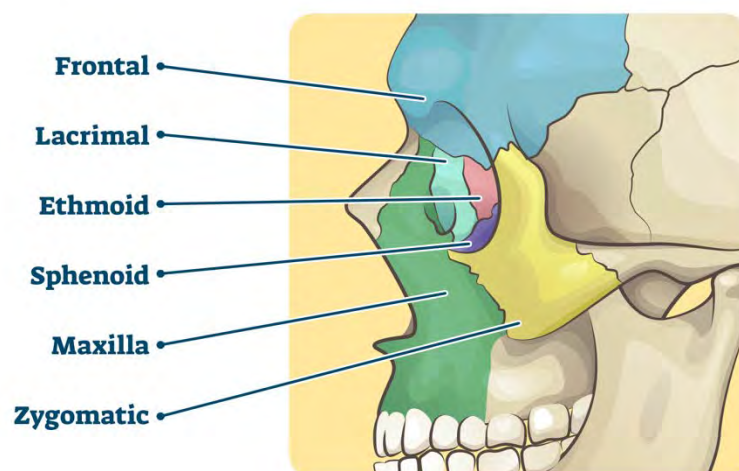


**Video 28 - Nasal bone mobilization**

The patient lies supine on the table and the osteopath sits at the head of the table.

**Procedure:**

1. The osteopath places the hands over the patient's eyes with the thumbs contacting the bridge of the nose. The physician's thumbs are crossed.
2. With the thumbs in this position, he/she gently applies alternating pressure medially to the side of the nose in a translatory manner to articulate the nasal bones.
3. This motion is repeated 3 to 4 times.

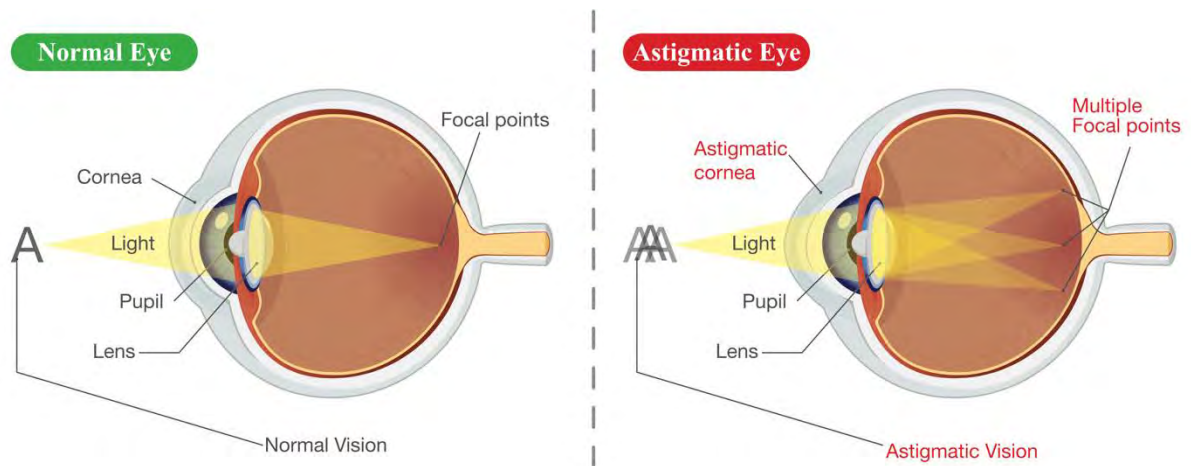


**Figure 32 - Different bones**

## 2.15. Eyestrain Headache

This headache is mostly frontal, bilateral and directly related to eye strain.

It concerns a muscular disbalance, incorrect vision or astigmatism.



**Figure 33 - Astigmatism**

The treatment is the correction of the vision.

### Osteopathy

In eyestrain headache it is important that the patient visits an eye doctor.

Osteopaths can train the eye muscles, but this doesn't always lead to correction of the vision.

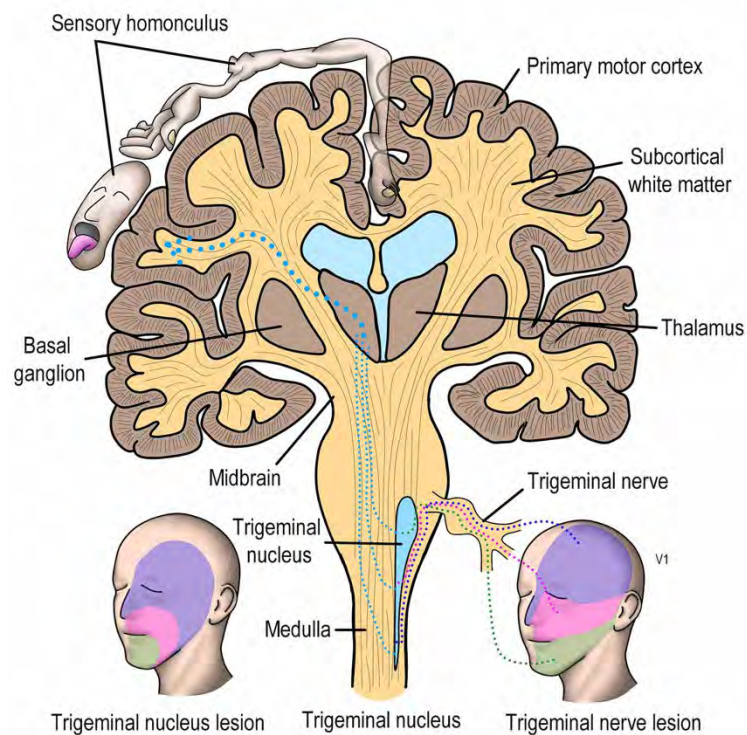


**Video 35 - Cornea reflex test**



**Video 36 - Glabella reflex test**

- Findings:
  - Motor:
    - Unilateral atrophy.
    - Masseter reflex lost.
  - Sensory:
    - Hypo or anesthesia.
    - Cornea reflex lost.



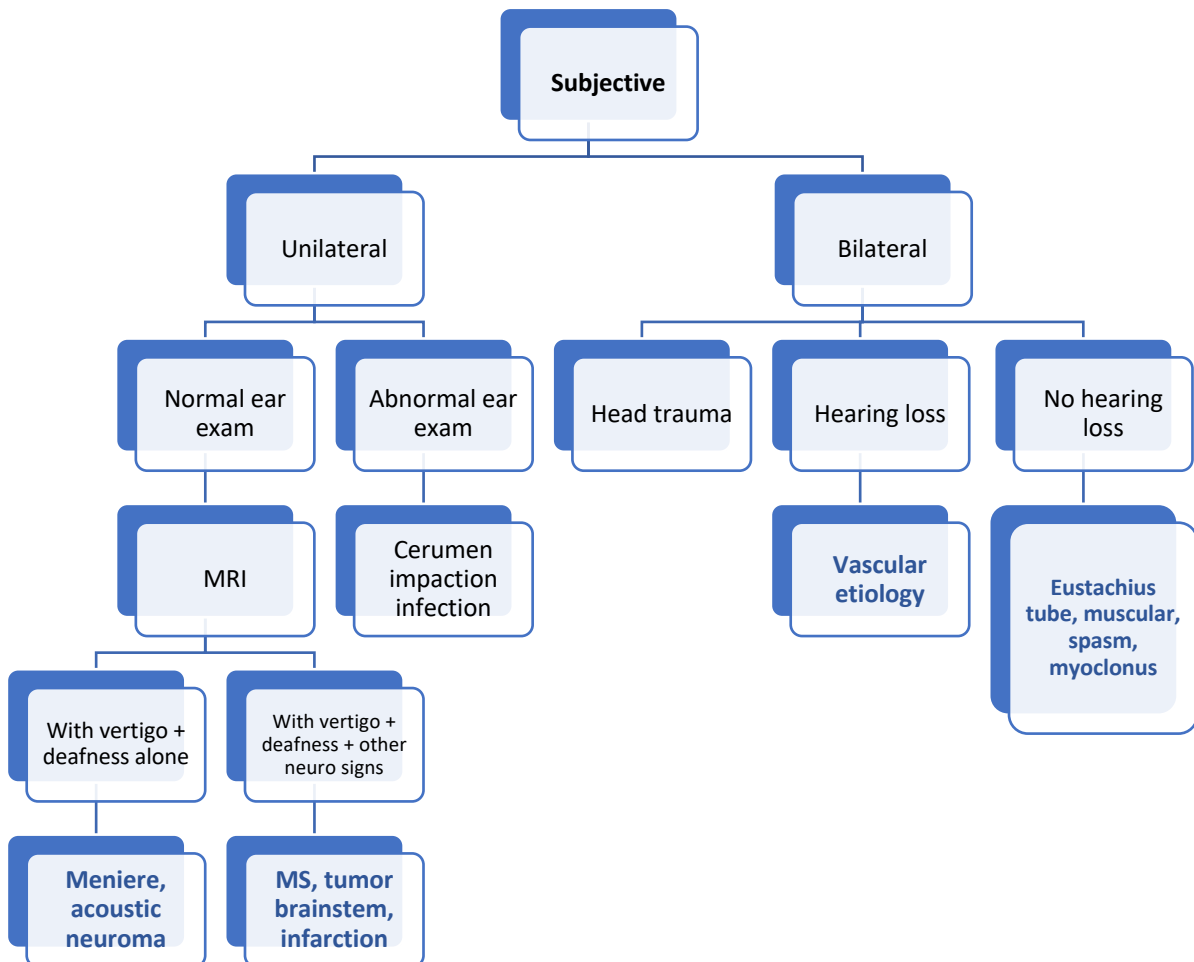
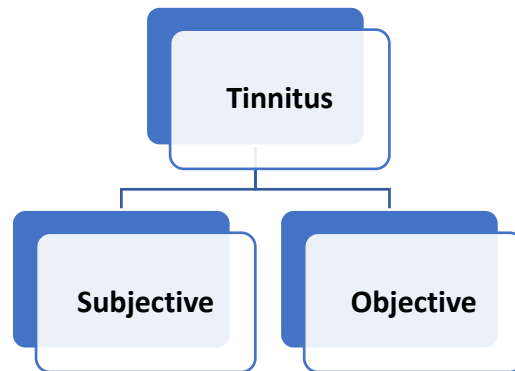
**Figure 40 - Abnormal facial sensations**

## Osteopathy

The most important here is that we exclude structural illnesses.

When all these tests are negative, the general osteopathic treatment can be followed with specific attention to the mobility of the upper cervical spine.

## Differential diagnosis with useful algorithm





## Example techniques



**Video 47 - Compression of the 4th ventricle**



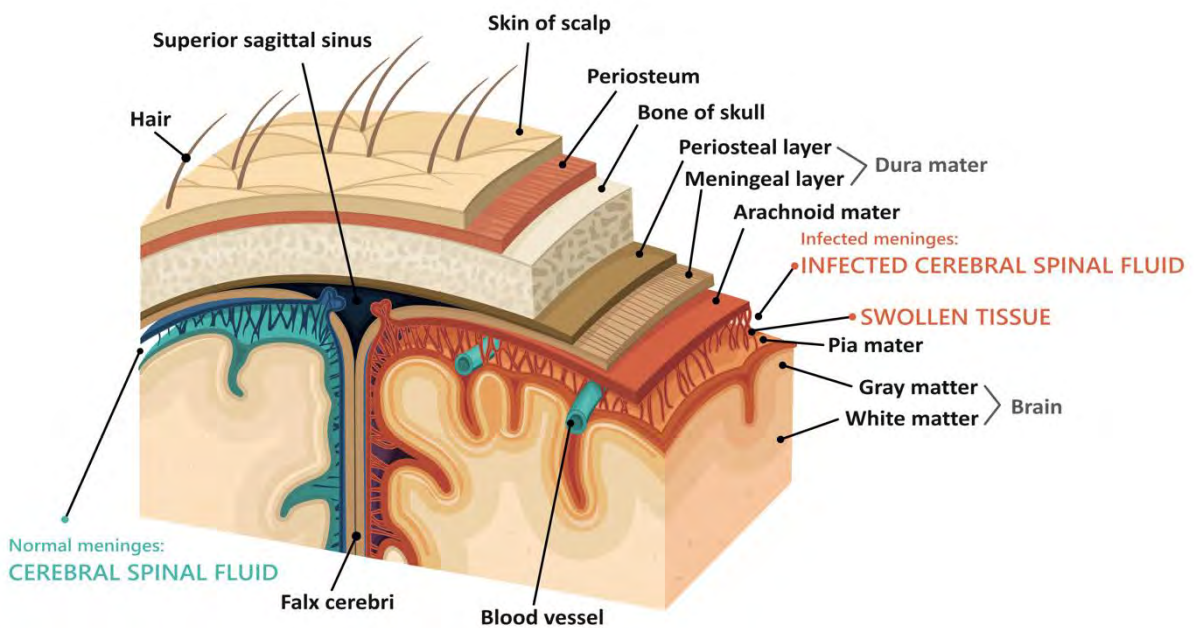
**Video 48 - Technique on the right atrium**

- Confusion.
- Irritability.
- Delirium.
- Coma.
- Infants:
  - Bulging fontanel.
  - Crying when held.
  - High-pitched cry.
  - Hypotonia.

**Forms:**

- Viral.
- Bacterial.
- Fungal.
- Tuberculous.
- Parasitic.
- Lyme.

Meningitis can be acute or chronic.



**Figure 64 - Bacterial meningitis**



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Luc Peeters is an osteopath since 1985. He was the Joint-Principal of the largest Academy of Osteopathy in Europe from 1987 till 2020. He provided curricula, syllabuses and academic recognition from several universities.

This book gives a practical overview of how osteopaths see the assessment and treatment of patients with headache.

The theory and procedures in this book are checked on their scientific background and esotericism is avoided.

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