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Introduction

Facial pain of neuropathic origin can be a complex etiology to diagnose and can frequently be refractory to multiple treatments including both medications as well as interventions. Originally described by Dr. Sluder, sphenopalatine ganglion neuralgia was labeled as a set of characteristic symptoms as well as physical exam findings following inflammation of the posterior ethmoid as well as the sphenoid sinuses.

The sphenopalatine ganglia (pterygopalatine ganglia) located within the pterygopalatine fossa in the skull and is the largest extracranial ganglia. Within the sphenopalatine fossa the ganglion is located near the lateral insertion of the posterior middle turbinate. In this location there are multiple foramina connecting this fossa, along with the sphenopalatine ganglia, to other parts of the extracranial network, most notably the greater petrosal and maxillary nerves (see below). These passages are clinically relevant as the existence of the sphenopalatine foramen in particular allows for a connection to the nasal cavity. The lateral nasal wall is separated from

the nasal cavity only by mucous membrane and a small amount of tissue. This permits the block of these particular ganglia with local anesthetics or neurolytic substances thru the nasal passage in a minimally invasive manner.

The sphenopalatine ganglion receives its parasympathetic input via the greater petrosal nerve. The mucous membranes of multiple structures of the head and face including the upper lip, gums, nose, soft palate, roof of the mouth and tonsils receive post ganglionic innervation via the maxillary nerve. The sympathetic component is carried in the efferent direction from the superior cervical ganglion. In addition to sympathetic and parasympathetic innervation the sphenopalatine ganglion carries a portion of sensory information to the ganglion via the maxillary nerve.

Clinical Findings

The clinical picture was originally presumed to be secondary to extension of inflammatory factors into the sinuses however other proposed mechanisms such as imbalances between the sympathetic and parasympathetic systems, vascular contributions such as blood flow variations, and anatomic abnormalities have been proposed in clinically similar pain patterns [1].

Patients typically present with unilateral facial pain originating around the medial portion of the nose or around the eye. The pain may spread ipsilaterally to the upper jaw and

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teeth. It may continue to spread and affect the lower jaw, throat, as well as the mastoid process and when severe may continue to extend to as far as the axilla and arm on the same side. In addition to the pain that may be constant with exacerbations or episodic, there can be anesthesia to the affected area or hyperesthesia. Motor signs such as palatine arch elevation on the ipsilateral side, and vasomotor signs such as ipsilateral swelling of the nasal membrane, nasal discharge, and lacrimation can be present as well [2].

Diagnostics

Given the variable symptomatology seen in the clinical setting as well as overlap between anatomical components and other facial pain syndromes, the diagnosis of pure sphenopalatine neuralgia is difficult. Imaging studies showing invasion of anatomical structures by infection or other tissue may be evaluated. Traumatic accidents with involvement of the posterior ethmoid and sphenoid sinuses may also be evaluated with imaging studies. Anatomical variations resulting

in contact points between the middle turbinates have been identified on computed tomography (CT) of the sinuses they may present with similar symptoms [3]. In addition evaluation of inflammatory markers or other diagnostic studies to determine possibility infection may help lead to treatment of sinusitis if clinically indicated.

Sphenopalatine ganglion block with local anesthetic may be considered as a diagnostic tool and has been described to completely alleviate the pain consistently in cases of sphenopalatine neuralgia, although the duration of relief is variable [4]. There have been multiple described approaches to the sphenopalatine ganglion. Percutaneous approaches using imaging via the trans-oral, infratemporal, as well as sub-zygomatic and trans-nasal have been successful.

The trans nasal technique (Fig. 130.1) is accomplished by placement of local anesthetic below the middle turbinate just past the pterygopalatine fossa into the intranasal space. A basic technique described uses a long column tipped applicator soaked in local anesthetic to be placed with the patient in the sniffing position thru the naris on the effected side along the superior

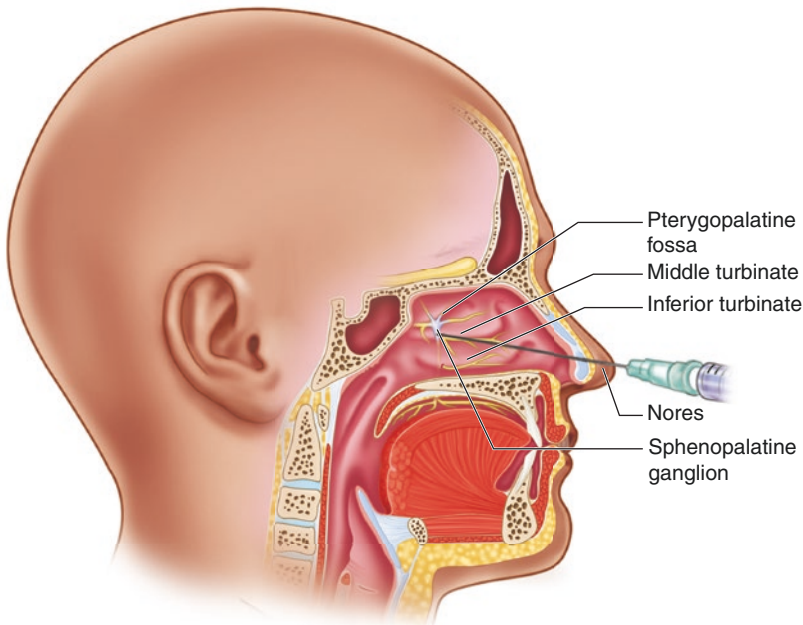


Fig. 130.1 Sphenopalatine ganglion block

border of the middle turbinate until contact with the posterior nasopharynx. The cotton tipped applicator may be left in for 5–10 min [5]. A temperature probe placed over the ipsilateral zygoma, representing the V2 distribution, will show an increase in temperature of approximately 2 degrees celsius (compared to baseline) representing a sympathectomy and a successful block. In addition a cotton applicator, devices have been produced such as the tx360(®) to help aid in directed therapy.

Treatment

The majority of patients who present with headache and facial pain will trial over the counter medications (OTCs) directed at headache and facial pain relief. Given the symptom overlap with various types of migraine headache, failure of this conservative approach may lead to consideration of treatment options reserved for chronic headache and migraine.

- Medication Management.
 - NSAIDs: Multiple studies show effectiveness. Oral NSAIDs may be helpful for short-term pain relief.
 - Triptans: Various forms of Triptan medications such as injectable and nasal spray have been shown to be effective in migraine headaches.
 - Ergot derivatives: Injectable form available for treatment.
 - Octreotide: Injectable synthetic version of somatostatin has been shown to be beneficial for headaches.
 - Antiepileptics: Multiple oral medications available.
 - Preventative treatments.
 - Calcium channel blockers.
 - Lithium.
 - Corticosteroids.
- Interventional treatments.
 - Sphenopalatine ganglion block: Reports of success with local anesthetic for acute pain.
 - Sphenopalatine chemical neurolysis: Application of Alcohol, Phenol or Glycerol

to the ganglion has been reported with varying success.

- Sphenopalatine Radiofrequency/Pulsed Radiofrequency Ablation: Multiple studies reporting varying degrees of relief.
- Sphenopalatine ganglion neurostimulation: Actively being investigated.

Differential Diagnosis

- Cluster Headache.
- Trigeminal Neuralgia.
- Migraine.
- Paroxysmal Hemicrania.
- Short-lasting, unilateral, neuralgiform headache attacks with conjunctival injection and tearing (SUNCT).
- Intracranial Mass.

High Yield Points

- Sphenopalatine neuralgia is most commonly unilateral with pain localized to the medial portion of the nose and eye with severe cases spreading laterally.
- The pain is frequently associated with vasomotor signs such as ipsilateral swelling of the nasal membrane, nasal discharge, and lacrimation.
- Multiple proposed mechanisms such as inflammation, imbalances between the sympathetic and parasympathetic systems, vascular contributions such as blood flow variations, and anatomic abnormalities have been proposed as etiologies.
- Treatment options may include medications and procedures used for other chronic headache and facial pain types.

Questions

1. The parasympathetic input to the sphenopalatine ganglion is derived from:
 - A. Lesser palatine nerve

- B. Nasopalatine nerve
- C. Greater petrosal nerve
- D. Mandibular branch of the trigeminal nerve

Answer: C

2. Patients presenting with sphenopalatine neuralgia may have history and physical exam findings consistent with:
- A. Sensory signs
 - B. Motor signs
 - C. Vasomotor signs
 - D. All of the above
- Answer: C
3. The proximity of the sphenopalatine ganglia to which anatomic location facilitates the transnasal approach to sympathetic blockade?
- A. The superior turbinate
 - B. The middle turbinate
 - C. The inferior turbinate
 - D. The nasal septum

Answer: B

References

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