Superficial Approach to the Sphenopalatine (Pterygopalatine) Ganglion, Emphasizing Relevance to Osteopathic Manipulation

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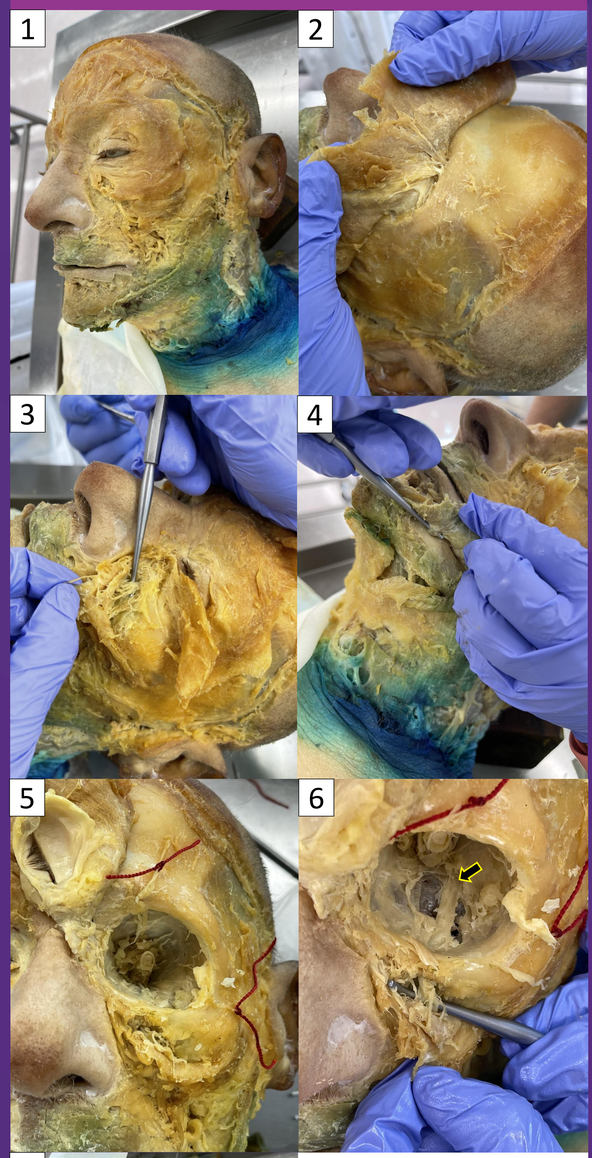
Introduction

The sphenopalatine (pterygopalatine) ganglion is the most superficial ganglia to manipulate from the oral cavity. It has parasympathetic and sensory fibers directly affecting the paranasal sinuses and can be manipulated by providers using manual osteopathic techniques (Figure 9) to relieve congestion associated with sinusitis, allergies, and upper respiratory infections. Despite its ability to be manipulated, it cannot be directly visualized due to its anatomic location. When medical students learn to identify this ganglion using current dissection techniques, a deep to superficial approach is used by bisecting the head. This current method of dissection challenges osteopathic relevance because the sphenopalatine ganglion is not palpated from a deep to superficial approach. Our hypothesis is that by using a superficial to deep anatomic dissection, medical students and providers can appreciate the orientation and depth of this ganglion to improve their manipulation skills.

Methods

Our superficial to deep dissection utilized one 72-year-old Caucasian male cadaver. Dissection began with skinning the face, followed by separating and identifying the muscles of facial expression. Next, we identified each of the three terminal branches of the trigeminal nerve (V_1, V_2, V_3) as they emerged from the supraorbital foramen, infraorbital foramen, and mental foramen, respectively. Next, we specifically targeted the maxillary branch (V_2) due to its anatomic proximity to the sphenopalatine ganglion. To properly follow V_2, we removed the eyeball. Then, we used a Dremel® to carefully remove portions of the inferior orbital wall and zygomatic arch while keeping V_2 intact. We followed V_2 deep into the face, inferior to the orbit, until it converged into a spherical structure and subsequently branched inferiorly via the palatine nerves. By following the path and branching of V_2, we could confirm that we had located the sphenopalatine ganglion from a superficial approach.

Dissection Timeline

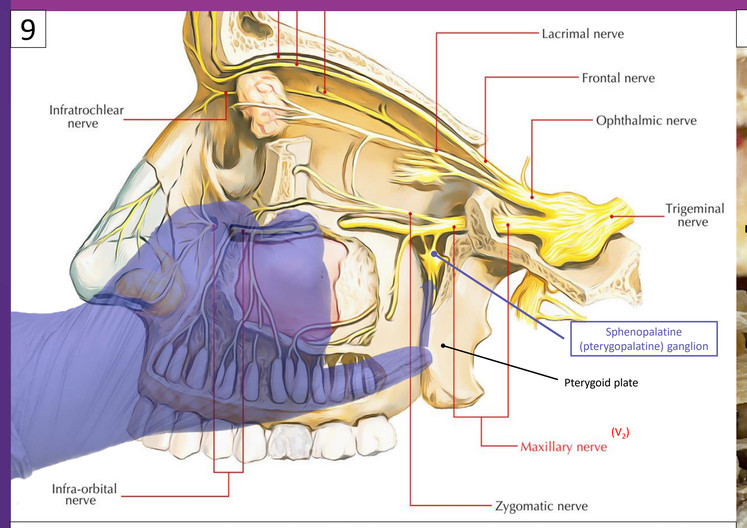


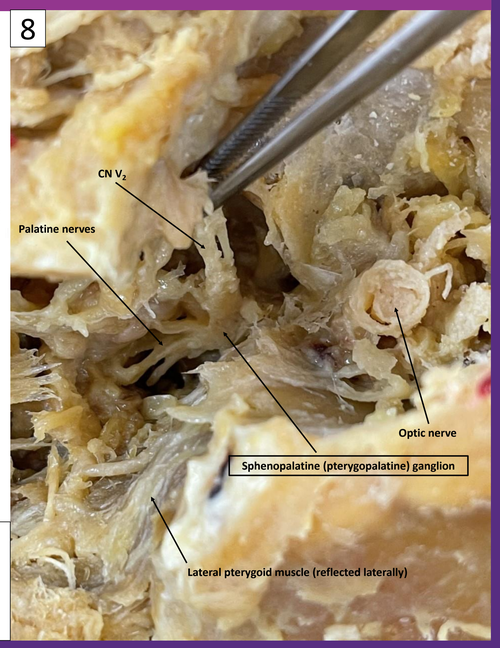
1. Muscles of facial expression
2. Supraorbital (CN V_1) through the supraorbital foramen
3. Infraorbital (CN V_2) through the infraorbital foramen
4. Mental (CN V_3) through the mental foramen
5. Vacant left orbit with supraorbital (superior) and zygomaticofacial (lateral) nerves, red strings
6. Vacant left orbit with CN V_2 emerging from foramen rotundum (arrow)
7. Vacant left orbit with supraorbital (superior), zygomaticofacial (lateral), infraorbital (inferior) nerves, red strings; inferior orbit removed
8. Sphenopalatine (pterygopalatine) ganglion

Conclusion

This dissection identifies the sphenopalatine ganglion from a perspective that matches the approach in which it is palpated in osteopathic manipulation. Since intra-oral manipulation is relatively uncomfortable for patients, we wanted to streamline the procedure. We felt that this could be met in the lab by better understanding the sphenopalatine ganglion's exact anatomic location. This can help osteopathic medical students and providers deliver accurate palpation to the sphenopalatine ganglion to provide more quick and effective drainage and congestion relief to patients. We suggest that osteopathic medical school anatomy labs designate at least one donor to be prosected in this manner to improve student understanding of this crucial structure. Future studies may also consider repeating this dissection on multiple donors to identify anatomic variation of the sphenopalatine ganglion.

The Sphenopalatine (Pterygopalatine) Ganglion





To palpate the sphenopalatine ganglion (SPG), insert a gloved finger into the oral cavity. Run your fifth finger along the superior teeth, past the posterior molars, until your finger contacts the pterygoid plate. Then, direct your pressure superiorly and in rotatory motion to stimulate the SPG and its parasympathetic fibers. This will initiate drainage of the eyes, nose, sinuses, and throat to treat congestion, sinusitis, allergies, and upper respiratory infections.

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