

BACKGROUND

We demonstrate the technique for surgical treatment of geniculate neuralgia. The patient is a 41 year old female who presented for evaluation of a 1-year history of shooting, electric shock-like pain in her right ear with occasional radiation of pain towards the temporal, posterior auricular, and mastoid regions. Pain was aggravated with wind entering her ear and also worsened with loud noises.

Over time, the patient's pain increased in frequency and severity, and was unresponsive to medical management. There were no abnormalities on neurological examination. In addition, the patient had undergone an extensive work-up including laryngoscopy, audiometry, vestibular testing, and endoscopic imaging of the tympanic membrane, all of which were unrevealing.

MRI did not demonstrate any mass lesions or vascular compressions along the trigeminal nerve or within the cerebellopontine angle. Given that the symptom location was not consistent with trigeminal neuralgia, glossopharyngeal neuralgia or occipital neuralgia, it was suspected that the clinical picture best fit with geniculate neuralgia.

MATERIAL AND METHODS

A standard right retrosigmoid craniotomy was performed. The dura was opened inferiorly and CSF was drained from the cisterna magna. Upon cerebellar relaxation, the remainder of the dural flap was opened and pedicled towards the sigmoid sinus. Sharp dissection with a curved arachnoid blade was used to remove arachnoid attachments overlying the lower cranial nerves, ultimately exposing the 7th and 8th cranial nerves and the brainstem. Sharp dissection was continued over the lower cranial nerves, ultimately exposing the 9th, 10th, and 11th cranial nerves.

With a small dissector at the brainstem, an independent fascicle could be identified and dissected within the 7/8 complex, consistent with nervus intermedius. The nerve did not stimulate at 0.1 milliamps as opposed to the facial nerve that could stimulate at 0.05 milliamps (**Figure 1**).

RESULTS

The nervus intermedius contains the sensory and parasympathetic fibers of the facial nerve. It travels alongside the facial nerve through the cerebellopontine angle, medial to the vestibulocochlear nerve and enters the internal acoustic canal in the anterior superior quadrant along with the facial nerve, joining with the motor fibers of the facial nerve at the geniculate ganglion. Following identification, the nervus intermedius was divided sharply using microscissors. Further exploration did not identify additional fascicles of nervus intermedius (**Figures 1 and 2**).

To ensure there were no other vascular compression syndromes contributing to the patient's symptomatology, we then turned our attention to the trigeminal nerve. Ultimately, the root entry zone of the trigeminal nerve and the 9th cranial nerve were examined, but did not reveal any vascular compression.

RESULTS (CONTINUED)

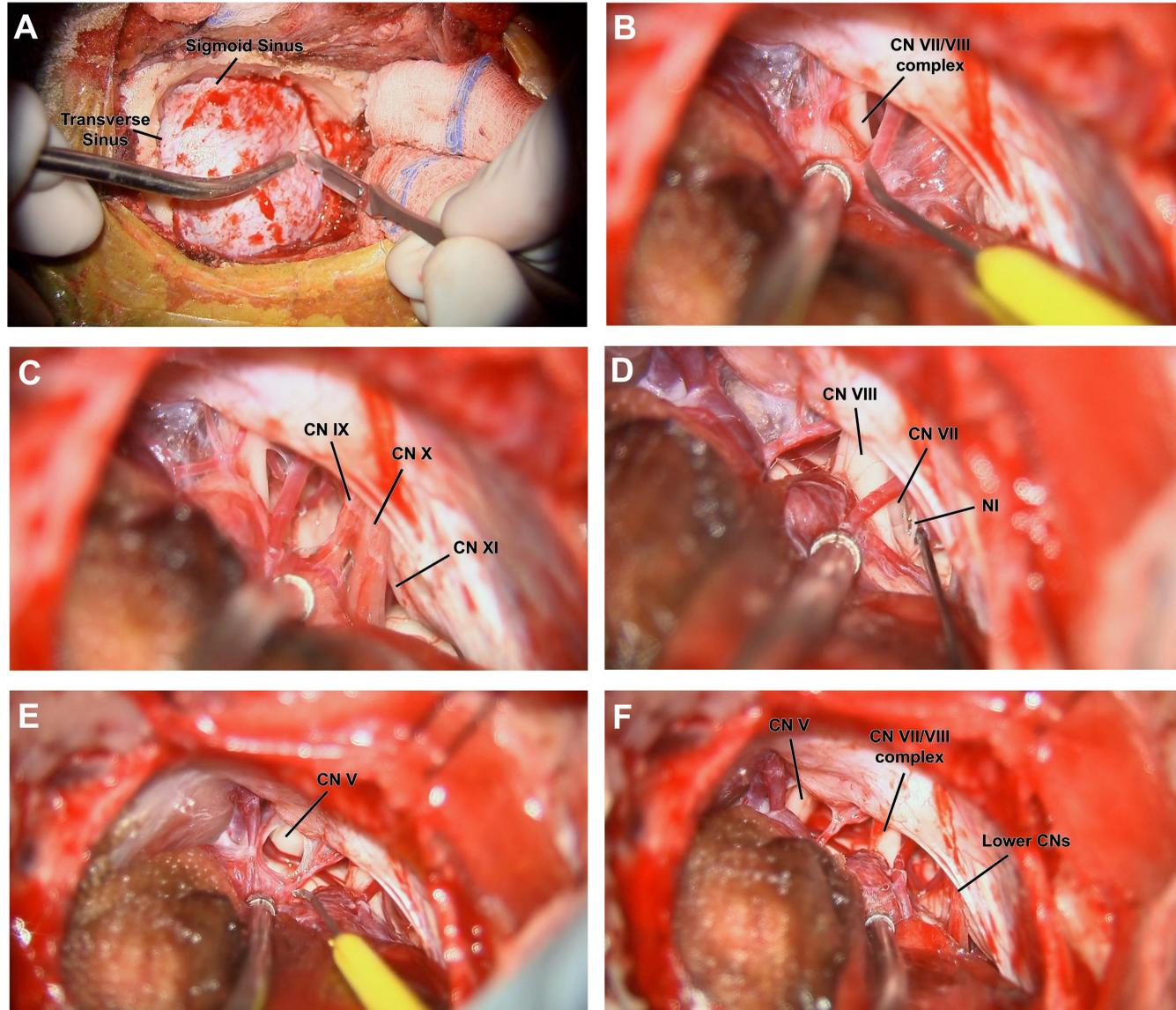


Figure 1 – Surgical steps for a standard retrosigmoid approach to treat geniculate neuralgia. **A.** A craniotomy has been performed slightly exposing the borders of both transverse and sigmoid sinuses, followed by a durotomy using a scalpel with a 15-blade. **B.** Using an arachnoid knife and suction the cerebellopontine angle (CPA) is explored revealing the CN VII/VIII complex also taking into account its intrinsic vasculature related to both nerves. Care must be taken when performing such step of the surgical technique in order to identify and protect the anterior inferior cerebellar artery (AICA) and its branches, for instance the labyrinthine artery which travels along with CN VII/VIII within the internal acoustic canal. **C – E.** The exposure of the CPA proceeds superiorly and inferiorly to reveal CN V and lower cranial nerves (CN IX, X and XI), respectively. **F.** Final view of the surgical corridor and CPA.

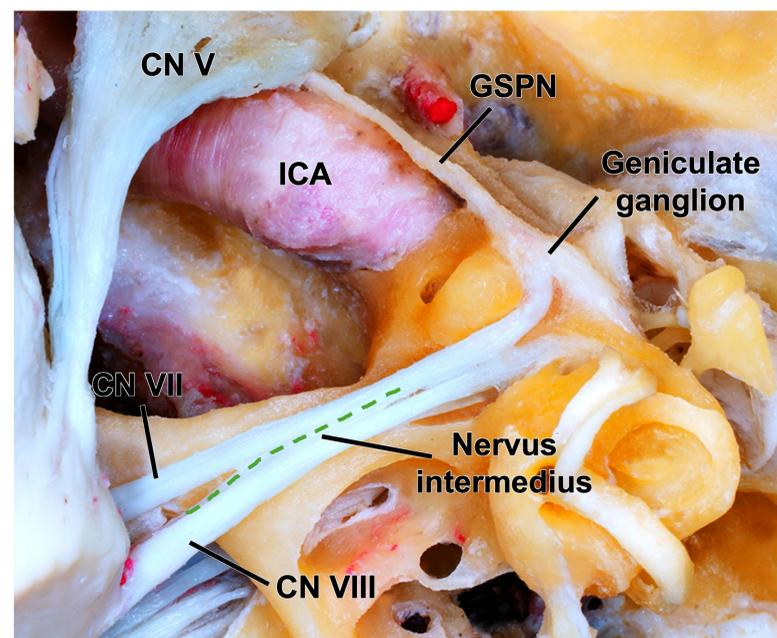


Figure 2 – Cadaveric dissection showing the geniculate ganglion and its relationship with surrounding anatomical structures in the middle cranial fossa.

Abbreviations: CN – cranial nerve; ICA – internal carotid artery; GSPN – greater superficial petrosal nerve.

CONCLUSIONS

The patient had an uncomplicated recovery and was discharge on postoperative day 2. At 3 month follow-up, the patient reported resolution of her symptoms with no postoperative complications.