Trigeminal neuralgia case reports

A case report of a patient whose Trigeminal neuralgia symptoms were attributed to an anatomical variant of the superior cerebellar artery (SCA), managed successfully through conservative treatment. Anatomical variants of the SCA have been related to TN. However, this is the first reported case in the PubMed literature of primary TN due to a unilateral early bifurcated SCA treated conservatively with first-line sodium channel blockers with a good outcome [1].

2019

A 72-year-old -female presented with trigeminal neuralgia (TN) and radiological evidence of neurovascular compression on the affected side. She had complete resolution of her pain for 7 years after treatment with GKRS. The patient experienced recurrence and underwent repeat GKRS, this time resulting in another 3 years of pain relief. After the second recurrence, repeat intracranial imaging demonstrated resolution of neurovascular compression.

GKRS is an important treatment option for TN, although the mechanisms behind pain relief from this procedure still remain unclear. While prior histological and radiological studies point to ablative mechanisms for pain relief, this case report suggests that GKRS may result in a decompressive effect in TN due to changes in neurovascular architecture. Despite this finding, TN is known to occur and recur in the absence of neurovascular compression; thus, further work is necessary to understand the etiology of TN and its treatments.

In this case, Moosa et al. demonstrated that vessel-nerve relationships may change over time in TN patients treated with GKRS, which raises the possibility that GKRS could release a neurovascular compression [2].

A 24-year-old male presented with progressive headaches and right sided trigeminal neuralgia with a large epidermoid. The tumor extended from the ambient cistern to the cerebellomedullary cistern and involved Meckel's cave (Fig. 1). Technical Note/Video Description A retrosigmoid craniectomy was performed. Cranial nerves 3, 4, 6, 7, and 10, and auditory brainstem responses were monitored. Once the craniectomy was completed the dura was opened and cerebrospinal fluid (CSF) was released from the cisterna magna to allow for the tumor resection to be done without the use of any retractors (Fig. 2). Care was taken to ensure that cranial nerves in the posterior fossa were detethered to prevent any traction injury. Using ring curettes the pearly white epidermoid tumor was able to be debulked. After all the possible tumor was resected with the microscope, the 30-degree endoscope was used to identify the porus trigeminus. Malleable ring curettes and a malleable suction were used to remove the soft tumor from this location. The patient transiently had loss of hearing but this returned within 2 weeks after surgery. Conclusions The retrosigmoid approach is familiar to all neurosurgeons and with the adjunct of an angled endoscope, the posterior Meckel's cave can be easily reached. This is particularly useful for tumors with soft consistency. The assistance of the endoscope allows Meckel's cave visualization without additional drilling while still allowing safe resection of tumor from around the trigeminal nerve. The link to the video can be found at: https://youtu.be/01aqOyUmSW0 [3].

Intracranial epidermoid cysts are considered benign tumors with a good general prognosis; however, their radical removal, including tumor capsule, is associated with significant morbidity, especially when the capsule is attached to neurovascular structures. We show an operative video describing main steps and surgical nuances in the resection of a large right cerebellopontine angle (CPA) epidermoid cyst in a 42-year-old male patient who presented with intractable trigeminal neuralgia. Craniectomy was performed to exposure the transverse-sigmoid sinus junction. A mold for a polymethylmethacrylate (PMMA) bone flap was built before opening the dura to avoid potentially neurotoxic effects on the cerebellum. The video illustrates the management of the rare anatomical variant of the anterior inferior cerebellar artery (AICA). Its loop was embedded in the dura, covering the subarcuate fossa where it gives off the subarcuate artery. Near total removal of the epidermoid cyst was achieved, leaving only a tiny capsule remnant adhering to the abducens nerve. Postoperatively the patient's trigeminal neuralgia was fully relieved and medications were discontinued. The patient's hearing was preserved per audiometry at the preoperative level (Gardner-Robertson II). Postoperative magnetic resonance imaging (MRI) revealed no signs of residual tumor. In this case, it was not possible to obtain optimal surgical exposure of the CPA without handling a rare anatomical anomaly of the AICA in the dura of the subarcuate fossa, which demanded coagulation and transection of the subarcuate artery and transposition of AICA with the dural cuff. This manipulation enabled optimal surgical removal of the epidermoid and didn't cause any neurological deficit. The link to the video can be found at: https://youtu.be/lLZqBHlu-uA [4].

The anterior petrosal approach is an extension of the middle fossa approach, characterized by drilling of the posteromedial triangle of the middle fossa. Drilling the Kawase's rhomboid creates a surgical corridor to the posterior fossa after splitting the tentorium. We present a case of a petrous apex meningioma invading the tentorium and causing trigeminal neuralgia. Results The patient was positioned in a Mayfield with the head rotated. A frontotemporal incision was done. A basal craniotomy was done to allow epidural dissection. The anatomical landmarks were identified. The surgical video is analyzed together with cadaveric dissections to highlight landmarks when doing an anterior petrosectomy. The tentorium was identified and the infiltrated region was coagulated and removed. The tentorium was sharply sectioned until the free edge of the tentorium was opened. The tumor in the petrous apex was identified and removed. The trigeminal nerve was decompressed and a gross total resection was achieved with resolution of the symptoms. Conclusion The anterior petrosal approach is a useful corridor to remove tumors in the petrous apex that infiltrate the tentorium. A thorough knowledge of the anatomical landmarks is crucial to identify and delineate the limits of the Kawase's rhomboid. After evaluating different surgical corridors, the anterior petrosal approach allows a gross total resection including the removal of the infiltrated tentorium and a resolution of the symptoms. The link to the video can be found at: https://youtu.be/p4KPUnM_bww [5].

1)
Silva J, Viguini Tolentino Correa A, Alves da Silva I, Silva Pinto de Carvalho C, Ramina R. Trigeminal Neuralgia Due to Unilateral Early Bifurcated Superior Cerebellar Artery: Case Report and Literature Review. Cureus. 2023 Sep 29;15(9):e46201. doi: 10.7759/cureus.46201. PMID: 37905292; PMCID: PMC10613432.
2)
Moosa S, Wang TR, Mastorakos P, Sheehan JP, Elias WJ. Gamma Knife Radiosurgery for Trigeminal Neuralgia Reduces Neurovascular Compression: A Case Report after 11 Years. Stereotact Funct Neurosurg. 2019 Sep 5:1-5. doi: 10.1159/000501624. [Epub ahead of print] PubMed PMID: 31487732.
3)

Das P, Borghei-Razavi H, Moore NZ, Recinos PF. Posterior Approach to Meckel's Cave: Retrosigmoid Craniectomy with Endoscopic Assistance. J Neurol Surg B Skull Base. 2019 Jun;80(Suppl 3):S331-S332. doi: 10.1055/s-0039-1677851. Epub 2019 Mar 4. PubMed PMID: 31143619; PubMed Central PMCID: PMC6534686.
4)

Candanedo C, Spektor S. CPA Epidermoid Cyst with Rare Anatomic Variant: Anterior Inferior Cerebellar Artery Embedded in the Subarcuate Fossa: Operative Video and Technical Nuances. J Neurol Surg B Skull Base. 2019 Jun;80(Suppl 3):S323-S324. doi: 10.1055/s-0038-1675165. Epub 2018 Oct 18. PubMed PMID: 31143614; PubMed Central PMCID: PMC6534694.
5)

Mendez-Rosito D. Anterior Petrosal Approach for the Resection of a Petrous Apex Meningioma with Tentorial Infiltration. J Neurol Surg B Skull Base. 2019 Jun;80(Suppl 3):S304. doi: 10.1055/s-0038-1677496. Epub 2019 Feb 4. PubMed PMID: 31143603; PubMed Central PMCID: PMC6534690.