

Extended retrosigmoid approach

Suprajugular extension of the retrosigmoid approach.

The extended [retrosigmoid craniotomy](#) is an [approach](#) designed to gain maximal access to the [cerebellopontine angle](#) and [petroclival region](#). The approach is characterized by the extension of the well-known retrosigmoid craniotomy by skeletonization of the sigmoid and [transverse sinus](#) and the option of a [mastoidectomy](#). It can be employed for extraaxial lesions in the cerebellopontine angle and intraaxial lesions arising along the petrosal surface of the cerebellum, cerebellar peduncles, or brainstem.

This approach requires a fundamental change in the management of the [sigmoid sinus](#). The neurosurgeon must be familiar with [petrous bone](#) anatomy, experience dissecting through the bone using a high-speed drill, and comfortable working directly over a major venous sinus. The technical modifications of the extended retrosigmoid approach can be incorporated into the neurosurgical repertoire and will enhance the exposure of the [cerebellopontine angle](#) and deep vascular structures, thereby minimizing the need for brain retraction and other transpetrous approaches ¹⁾

The extended [retrosigmoid craniotomy](#) provides additional access to space ventral to the [brainstem](#) through mobilization of the [sigmoid sinus](#).

Raza and Quinones-Hinojosa in 2011 reported further experience and modifications of this approach for neoplastic pathology. The standard [craniotomy](#) is utilized, and the [burr holes](#) are placed slightly beyond the [transverse sinus](#) as well as the transverse-sigmoid junction and down towards the [foramen magnum](#), as low as possible. Another burr hole is placed over the [cerebral hemisphere](#) to facilitate the dural dissection below the bone flap and over the transverse and sigmoid sinuses. They then perform a standard retrosigmoid craniotomy with a [craniotome](#) and the transverse and sigmoid sinuses are skeletonized. Consequently, the sigmoid sinus can then be mobilized anteriorly to provide an unobstructed view in line with the petrous bone, while exposure of the transverse sinus provides access to the tentorium. Fifteen patients (March 2006-July 2008) underwent this approach to manage neoplastic lesions, including five meningiomas, three schwannomas, one epidermoid, and four intra-axial metastatic lesions. The nine extra-axial lesions were predominantly in the cerebellar-pontine angle with extension medial to the seventh/eighth nerve complex to the [petroclival region](#). [Gross total resection](#) was obtained in all patients. The primary complication due to the exposure was a clinically asymptomatic sigmoid sinus thrombosis in one patient. Requiring a fundamental change in the management of the venous sinuses, the extended retrosigmoid craniotomy permits mobilization of the sigmoid and transverse sinuses. In this process, the entire [cerebellopontine angle](#) extending from the [tentorium](#) to the foramen magnum can be visualized with minimal cerebellar retraction. This technical modification over the standard [retrosigmoid approach](#) may provide a useful advantage to neurosurgeons dealing with these complex lesions ²⁾.

The [far lateral transcondylar craniotomy](#) is the standard approach for [posterior inferior cerebellar artery aneurysm](#) exposure through the microsurgical dissection in the [vagoaccessory triangle](#) (VAT). However, the [extended retrosigmoid craniotomy](#) and dissection through the [glossopharyngeal-cochlear triangle](#) (GCT) may be more appropriate when the patient has an aneurysm arising from a high-riding [vertebral artery](#) (VA)-PICA origin.

Videos

<html><iframe width="560" height="315" src="https://www.youtube.com/embed/FIKixWJT75w" title="YouTube video player" frameborder="0" allow="accelerometer; autoplay; clipboard-write; encrypted-media; gyroscope; picture-in-picture" allowfullscreen></iframe></html>

Basma J, Nguyen V, Sorenson J, Michael LM 2nd. Extended Retrosigmoid Approach for the Resection of a Pontomedullary Junction Cavernous Malformation. J Neurol Surg B Skull Base. 2018 Dec;79(Suppl 5):S418-S419. doi: 10.1055/s-0038-1669979. Epub 2018 Sep 25. PMID: 30456048; PMCID: PMC6240420 ³⁾.

<html><iframe width="560" height="315" src="https://www.youtube.com/embed/24FPIC9jyHc" title="YouTube video player" frameborder="0" allow="accelerometer; autoplay; clipboard-write; encrypted-media; gyroscope; picture-in-picture" allowfullscreen></iframe></html>

Extended Retrosigmoid Approach for Retro-Olivary Medullary Cavernous Malformation

Barrow Neurological Institute

Peitz et al. presented a case of a 41-yr-old woman with hypertension presenting with left occipital pain and left-side hearing loss and past facial spasm and pain. Computed tomography angiography and digital subtraction angiography demonstrated an unruptured 8.4 × 9.0 × 10.2 mm saccular aneurysm at the left VA-PICA junction. Surgical clipping was chosen over endovascular therapy given the relationship of the PICA origin to the aneurysm neck as well as the history of cranial [neuropathy](#). It was noted that the VA-PICA junction and aneurysm were high-riding at the level of the [internal auditory canal](#). An eRS craniotomy was performed with dissection through the [Glossopharyngeal-Cochlear Triangle](#), and the aneurysm was clipped as shown in the accompanying 2-dimensional operative video. Postoperative angiography demonstrated complete occlusion of the aneurysm and patency of the left VA and PICA without stenosis, and the patient had a favorable postoperative course although her left-sided hearing remained diminished. The eRS craniotomy allowed direct exposure via the GCT for clipping of the high-riding VA-PICA junction aneurysm and decompression of the cranial nerves. The traditional FL craniotomy and exposure through the VAT would likely have resulted in a less desirable inferior trajectory. ⁴⁾.

¹⁾

Quiñones-Hinojosa A, Chang EF, Lawton MT. The extended retrosigmoid approach: an alternative to radical cranial base approaches for posterior fossa lesions. Neurosurgery. 2006 Apr;58(4 Suppl 2):ONS-208-14; discussion ONS-214. doi: 10.1227/01.NEU.0000192714.15356.08. PMID: 16582642.

²⁾

Raza SM, Quinones-Hinojosa A. The extended retrosigmoid approach for neoplastic lesions in the posterior fossa: technique modification. Neurosurg Rev. 2011 Jan;34(1):123-9. doi: 10.1007/s10143-010-0284-3. Epub 2010 Sep 14. PMID: 20838839; PMCID: PMC4612613.

³⁾

Basma J, Nguyen V, Sorenson J, Michael LM 2nd. Extended Retrosigmoid Approach for the Resection of a Pontomedullary Junction Cavernous Malformation. J Neurol Surg B Skull Base. 2018 Dec;79(Suppl 5):S418-S419. doi: 10.1055/s-0038-1669979. Epub 2018 Sep 25. PMID: 30456048; PMCID:

PMC6240420.

⁴⁾

Peitz GW, McDermott RA, Baranoski JF, Lawton MT, Mascitelli JR. Extended Retrosigmoid Craniotomy and Approach Through the Glossopharyngeal Cochlear Triangle for Clipping of a High-Riding Vertebral-Posterior Inferior Cerebellar Artery Aneurysm: 2-Dimensional Operative Video. Oper Neurosurg (Hagerstown). 2021 May 14:opab140. doi: 10.1093/ons/opab140. Epub ahead of print. PMID: 33989426.

From:

<https://neurosurgerywiki.com/wiki/> - **Neurosurgery Wiki**

Permanent link:

https://neurosurgerywiki.com/wiki/doku.php?id=extended_retrosigmoid_approach

Last update: **2024/06/07 02:56**

