Presigmoid retrolabyrinthine approach

The presigmoid retrolabyrinthine space is characterized by a widely variable size. The main structure involved in this large variability is the sigmoid sinus. Few studies have attempted to establish a reliable classification of sigmoid sinus to predict the presigmoid retrolabyrinthine space.

de Melo JO Junior et al. used tomographic mapping of human cadaver temporal bones to classify the position of sigmoid sinus and performed a cadaveric study to assess the validity of a novel classification in predicting the presigmoid retrolabyrinthine space.

It may help the surgeon select the best approach to reach the petroclival region and lead to safer neurological and otological surgeries. ¹.

Despite the presigmoid transpetrosal approach has been used by different researchers in various ways, the surgical injury rate remains high.

A 68-year-old man presented with tongue numbness and weakness. The approach used was a transtemporal presigmoid retrolabyrinthine approach to enable an orthogonal trajectory to the lateral pons. Following the transtemporal opening, the root entry zone of the trigeminal nerve and the root exit zone of the facial nerve are identified. The lateral pons is incised to access the tumor, which upon histological analysis was found to be a metastasis. Excellent visualization of the lateral pons is achieved. The opening, relevant anatomy, and closure are illustrated. The video can be found here: http://youtu.be/vS5fCOY6vp8 ².

Presigmoid transpetrosal keyhole approach

Applying a minimally invasive keyhole idea, Wu et al., devised a presigmoid transpetrosal keyhole approach (PTKA), classified and quantitatively assessed their approach to the petroclival area on a cadaver model by using a neuronavigation system ³. The exposed field and the maximal angle of vision can be obviously increased by partial labyrinthectomy with petrous apicectomy ⁴.

Endoscopy-assisted presigmoid retrolabyrinthine approach (EAPRA)

The EAPRA can provide direct access to the CPA along with labyrinthine complex conservation, allowing hearing function preservation and minimal cerebellar retraction. Endoscopic assistance is a crucial adjunct in the presigmoid retrolabyrinthine approach in order to address the limits imposed by labyrinthine complex preservation. It ensures complete visualization of the intracanalicular portion of the schwannoma, thus improving the rate of a radical tumor resection. The EAPRA could represent a valid surgical option in vestibular schwannoma surgery ⁵, ⁶.

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**Case series**

retrospectively reviewed endoscope-assisted surgery using the RL approach at our institution between September 2013 and January 2017. The simultaneous supervision of endoscopic procedures by microscope was realized using the integrated hybrid system. Intra- or postoperative complications and surgical outcomes were analyzed. All patients were followed for at least 1 year.

RESULTS: In total, 32 patients were studied: 4 vestibular schwannomas, 5 cholesteatomas, 8 hemifacial spasms, 5 glossopharyngeal neuralgias, and 10 Ménière's disease. In patients with vestibular schwannoma or cholesteatoma, complete removal was performed in all patients. In patients with Ménière's disease, hemifacial spasm or glossopharyngeal neuralgia, satisfactory symptom relief was achieved in all patients. Two (6.3%) patients had hearing loss after surgery which did not recover. One (3.1%) patient with vestibular schwannoma had mild facial palsy (HB III) at 2 weeks after the operation and recovered to near normal facial nerve function (HB II) at 1 year after surgery. No permanent or transient dysfunction of the trigeminal nerve or the lower cranial nerves was observed during follow-up. No complications such as cerebrospinal fluid (CSF) leakage or meningitis were observed.

CONCLUSION: The endoscope provided a clearer and larger view, which solved the limitations of surgery using the RL approach. Endoscopic surgery under simultaneous supervision by microscope was safe and efficient in hearing preservation as well as in preservation of facial nerve function. An
integrated operation room provided better support and the ability to switch quickly between these various complex devices.  


