

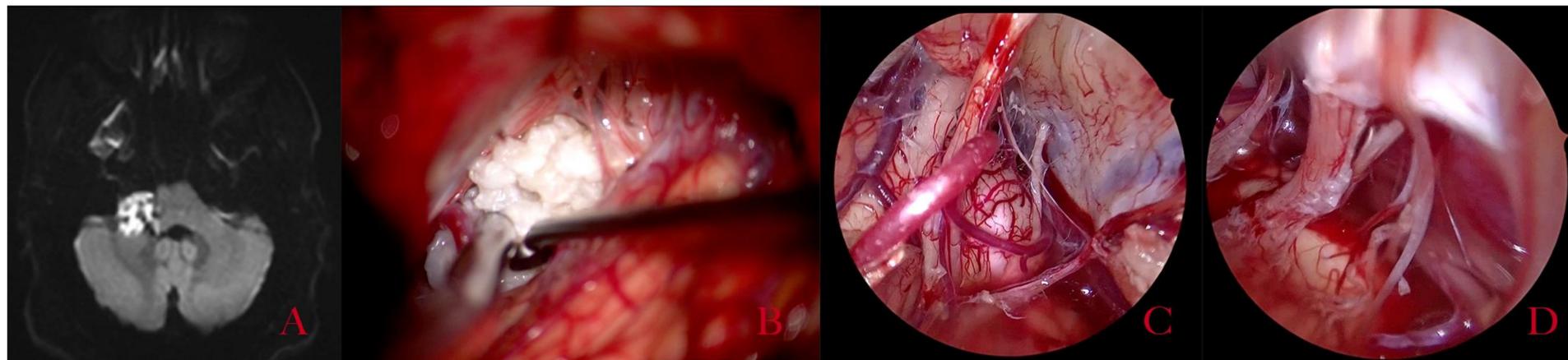


# Cranial nerve preservation in endoscopic assisted keyhole retrosigmoid craniotomy for cerebellopontine angle epidermoid

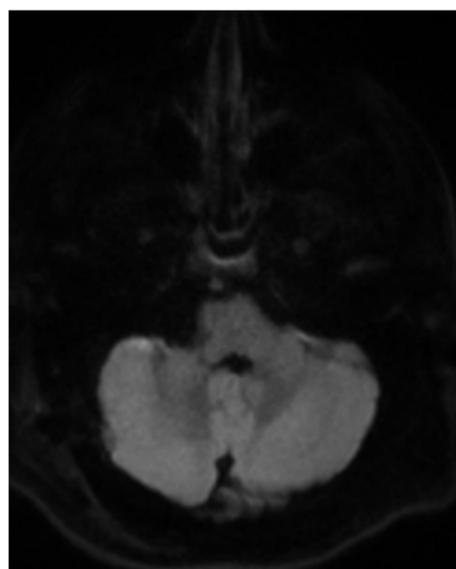
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**Figure 1.** A. Pre-operative image demonstrating right CPA mass, concerning for epidermoid. B. Intra-op microscope image of retrosigmoid approach, demonstrating epidermoid and its association with lower cranial nerves adjacent. C. Intra-op endoscope image following resection of mass, demonstrating CN V, VI, VII and VIII. D. Endoscope image demonstrating IX, X, and XI passing into jugular foramen.



**Figure 2.** Post-operative MRI.



**Figure 3.** Post-operative exam, demonstrating no facial nerve palsy, and no gait disturbance.



**Figure 4.** Incision on six-week follow-up exam.

## Introduction

Intracranial epidermoid cysts (IEC) are rare intracranial tumors. The surgery can be challenging, as the surgeon must balance the goal of maximum resection with preservation of involved neurovascular structures. The retrosigmoid approach to cerebellopontine angle masses has been increasingly adopted in recent years, as has the use of the endoscope for indications beyond endonasal procedures. Using the endoscope through this approach could improve visualization.

In this case, we discuss a 32-year-old man who received a keyhole retrosigmoid craniotomy, utilizing the endoscope, for resection of a cerebellopontine angle mass.

## Methods and Materials

The patient was a 32-year-old male who presented initially for imbalance of gait, and who was found to have a large mass concerning for epidermoid in his right cerebellopontine angle (Fig. 1A). Patient was placed in supine position. A keyhole retrosigmoid craniotomy was performed, and the tumor was found to be directly abutting lower cranial nerves (Fig. 1B). Operative endoscope was used for improved visualization, and cranial nerves V, VI, VII, and VIII were identified (Fig. 1C). Small fragments of residual tumor were also identified, and these were removed with the assistance of the endoscope (1C). CN IX, X, and XI were identified as they passed into the jugular foramen (1D).

## Results

On post-op MRI, the patient was determined to have a gross total resection (Fig 2). He was discharged on post-op day one without cranial nerve deficits (Fig 3). On six week follow up incision was well-healing (Fig 4).

## Discussion

Traditional approaches to the cerebellopontine angle prefer maximal exposure and visualization, with the goal of minimizing associated operative morbidity. However, the positioning and length of surgery required to achieve these approaches has an associated toll of morbidity, compared to the relatively efficient retrosigmoid approach. This view can be expanded with the assistance of the operative endoscope, especially with the angled scope, to achieve a wide field of view.

These benefits, in association with close intraoperative monitoring of cranial nerve function, offer safety in terms of cranial nerve preservation, as well as the ability to achieve gross total resection, without subjecting the patient to morbidity associated with prolonged anesthesia and cumbersome positioning in traditional approaches.

## Conclusions

We believe, as a result of the benefits described above, there will be increasing adoption of the keyhole retrosigmoid approach in conjunction with use of the operative endoscope to approach even complex cerebellopontine masses.

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