



## Skull Base reconstruction after Endoscopic Transnasal Resection of Anterior Skull Base Meningiomas: Can CSF leaks be prevented?

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### Introduction

Endoscopic endonasal approach to anterior skull base (ASB) meningiomas is increasingly being used at many centers. This endoscopic endonasal approach minimizes frontal lobe retraction, facilitates direct visualization of critical neurovascular structures and permits early decompression of the optic nerves. We present a retrospective series of 16 consecutive patients with ASB meningiomas treated with an endoscopic endonasal approach over a period of 6 years with particular attention to our techniques of closure.

### Methods

We retrospectively reviewed clinical, radiographic and operative data for 16 patients undergoing endonasal endoscopic resection of ASB meningioma between December 2007 and July 2013. All procedures were performed jointly by a neurosurgery and Otolaryngology sinus surgery team. The skull base defect was closed in multiple layers with an inlay fat or fascial graft, tissue adhesive, polyethylene glycol plate and nasal septal flap; post-operative lumbar drainage was also used.

### Results

There were 12 females and 4 males in the cohort with an age range from 32-72 years (mean of 54 years). We treated 11 tuberculum sellae, 1 dorsum sellae, and 4 planum sphenoidale/olfactory groove meningiomas. Lesions ranged from 1.9-5.2cm in largest dimension and 11/16 (68.75%) compressed the optic chiasm. The most common presenting symptom was visual loss (7/16; 43.75%) followed by incidental discovery (4/16; 25%) and headache (3/16; 18.75%). Gross total resection was achieved in 11/16 (68.75%) cases. A nasoseptal flap was used in 15/16 patients. 13/16 (81.25%) patients had a lumbar drain placed preoperatively for an average duration of 4 days (range 2-5 days). At follow-up all seven patients who presented with visual field loss reported improved vision after surgery. No patients experienced CSF leak.

### Conclusions

A multilayered buttressed gasket seal nasoseptal flap closure in combination with lumbar drainage is efficacious in preventing CSF leakage even after removal of large ASB meningiomas.

### Learning Objectives

By the conclusion of this session, participants should be able to: 1. Describe the issues surrounding Skull base reconstruction after endoscopic resection of anterior skull base meningiomas, 2. Identify an effective skull base closure technique using a multilayered closure with nasal septal flap and lumbar drainage, 3. Discuss how lumbar drainage can be useful during endoscopic resection of anterior skull base meningiomas

### References