



Endoscopic Excision of Pituitary Macroadenoma with Suprasellar Extension

Surgeons at the Skull Base Center, on the medical staff at Baylor University Medical Center at Dallas, are performing minimally invasive endoscopic endonasal surgery to treat lesions of the central cranial base. Chief among these lesions are pituitary macroadenomas. These tumors, found with an incidence of 1 to 7 in 100,000, are found throughout adulthood and have equal gender distribution.

Although these lesions may initially be asymptomatic, tumor growth manifests clinically as endocrine dysfunction, headache, or visual disturbance. Mass effect on the optic nerves and chiasm may result in visual field defects and deterioration of visual acuity with possible progression to visual loss if left untreated. Cranial nerve dysfunction and double vision can result from tumor compression or invasion into the cavernous sinus, seen in 5–15% of cases.

Because the pituitary gland is centered in the ventral skull base, a transnasal endoscopic approach is an ideal, minimally-invasive corridor to access these tumors regardless of extent. Endoscopy offers superior visualization without the need for neural manipulation or facial disassembly. The surgeons of the Skull Base Center have amassed expertise in the endoscopic resection of large pituitary macroadenomas and complex skull base tumors.

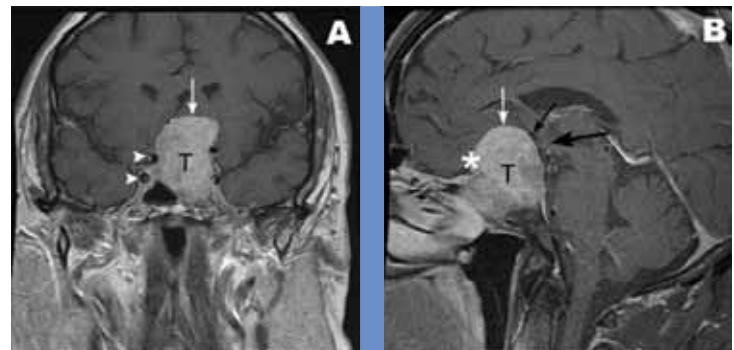
Case Study

PH is a 66 year-old man who presented with bilateral progressive visual impairment for more than 12 months. The patient had cataract surgery on his left eye one month prior to presentation which failed to significantly improve visual acuity or fields. A contrast-enhanced MRI of the brain was obtained (*Figure 1*) which revealed a large, heterogeneously-enhancing mass centered in the sella. There was suprasellar significant extension with resultant displacement of the optic nerves and chiasm. Also, the tumor impinged on the right cavernous sinus and extended into the sphenoid sinus. The patient had normal pituitary function.

The patient was an excellent candidate for the endoscopic endonasal approach. During surgery, both sphenoid sinuses were widely opened allowing for binarial access. The bone of the skull base was removed allowing access to the entire tumor. Using bimanual dissection, the entire tumor was systematically removed including the portions extending into the sphenoid, cavernous sinus, and suprasellar cistern.

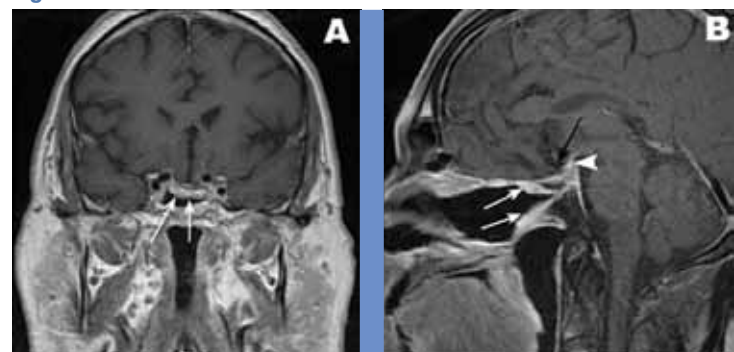
The normal pituitary gland was identified in the right superior quadrant of the sella and was left undisturbed. Passive descent of the optic nerves and chiasm occurred after complete tumor removal. A low-flow cerebrospinal fluid (CSF) leak was repaired by a vascular nasoseptal flap. No lumbar drain was placed.

Figure 1



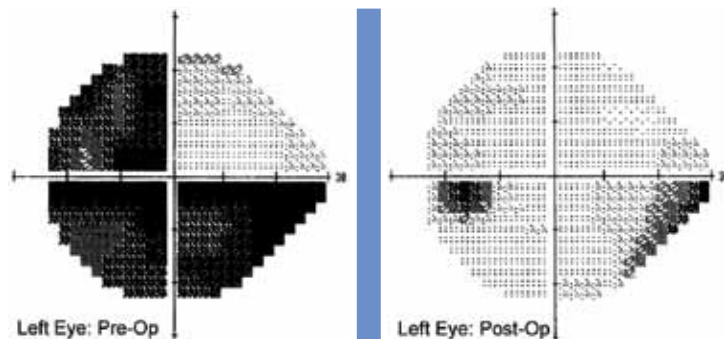
Contrast-enhanced MRI with coronal (A) and sagittal (B) views. Large tumor (T) with significant suprasellar (white arrow) extension. The right carotid artery (white arrowheads) show intervening tumor impinging the cavernous sinus. The anterior cerebral arteries (small black arrow) and pituitary stalk (large black arrow) are displaced posteriorly, superiorly.

Figure 2



Contrast-enhanced MRI with coronal (A) and sagittal (B) views shows complete excision of tumor with no recurrence. The vascular flap is well healed (white arrows). The pituitary stalk (white arrowhead) and anterior cerebral arteries (black arrow) have returned to their usual anatomic position.

Figure 3



(A) Pre-operative visual field exam reveals significant field cuts for the left eye. These are almost completely resolved in post-operative (B) exam 4 months later.

The patient's hospital course was uneventful and he did not develop diabetes insipidus; he was discharged on post-operative day three. Within several weeks, his nasal cavity healed and remucosalized. An MRI scan 11 months after resection shows no evidence of persistent or recurrent disease and an intact vascular flap reconstruction (*Figure 2*). The patient also had a significant improvement in visual acuity and visual fields (*Figure 3*), and had a normal endocrine function.

Skull Base Center Clinical Case Report



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