ENDOSCOPIC SURGERY OF SELLOAR AND SUPRASELLAR TUMORS

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ABSTRACT
Objective: Transnasal endoscopic surgery of the sella and suprasellar region has been increasingly utilized by skull base surgeons. A dual surgeon approach, with an otolaryngologist and neurosurgeon operating together, provides excellent visualization and operative maneuverability. We describe our experience with this method, including operative techniques, complications, and sinonasal sequelae.

Study Design: Retrospective case review

Methods: Medical records for patients who underwent transnasal endoscopic surgery for sellar and suprasellar lesions were examined. Pre- and post-operative imaging, videographic records, and pathology were reviewed.

Results: Tumor pathology in patients who underwent transnasal endoscopic surgery for sellar and suprasellar lesions included pituitary and hypothalamic lesions, esthesioneuroblastomas, and meningoepithelial tumors. Complete tumor removal was achieved in nearly all patients. The incidence of diabetes insipidus post-operatively was rare. The incidence of post-operative CSF leak was 6%. Most patients were discharged from the hospital in 3-4 days. Sinonasal complaints were frequent in the first few months, but gradually diminished over time.

Conclusions: Transnasal endoscopic surgery of the sella and suprasellar region of the anterior skull base provides superior visualization and exposure, allowing complete extirpation of tumor. A dual surgeon technique allows maximal maneuverability of instruments within the operative field. A multi-layered repair of the sellar defect decreases the risk of CSF leak. Post-operative care of the sinonasal cavity is a critical part of a patient’s successful recovery.

INTRODUCTION
Transnasal approaches to the skull base were first described in the early 20th century. In 1907 Herman Schloffer performed the first transnasal pituitary surgery, employing a transfacial, lateral rhinotomy approach. In 1910 Oscar Hirsch in Vienna performed the first fully endonasal pituitary operation, and shortly afterward Harvey Cushing utilized a trans-septal sublabial approach. Since that time the operation has evolved, with corresponding improvements in technology and visualization. For many years a transnasal approach, along with the use of the operating microscope and fluoroscopy, was the standard technique for removal of pituitary tumors. More recently the use of endoscopes and the concept of a two-team approach for skull base surgery have been proposed. Snyderman, Kassam, and others have expanded the indications to include surgery for many types of anterior skull base neoplasms. At UCL we have been utilizing a fully endoscopic expanded endonasal approach for lesions of the sella and suprasellar region. We describe our experience with over 60 such cases between January 2008 and January 2009.

METHODS AND MATERIALS
The medical records were examined of patients who had undergone transnasal endoscopic surgery for sellar and suprasellar lesions from January, 2008 through January, 2009. Radiographic images, pathology reports, intraoperative video clips, and post-operative records were reviewed.

RESULTS
68 endoscopic sellar/suprasellar operations were performed during this time period. All operations were performed as a dual surgeon team by a neurosurgeon and an otolaryngologist (Figure 1). Most patients underwent reconstruction of the sellar floor using a nasal septal mucosal flap. Tumor types included pituitary adenomas, Rathke’s cleft cysts, pituitary cysts, hypothalamic lesions, chordomas, and meningiomas. Presenting symptoms included visual changes, endocrine symptoms, and headache. Occasionally the sellar enlargement was identified incidentally on a CT scan or MRI obtained for other reasons. Figure 2 shows an example of a large pituitary adenoma causing compression of the optic chiasm. Figure 3 is a post-operative image demonstrating complete tumor removal. Figure 4 shows a large suprasellar meningioma. Figure 5 shows the post-operative MRI demonstrating complete tumor removal. Figure 6 shows the appearance of the posterior sinus cavities 3 months post-operatively. The nasal septal flap is intact and the cavity is completely remucosalized.

Post-operative complications were rare. Three patients (6%) had CSF leaks requiring reoperation. Significant post-operative nasal bleeding occurred in one patient, and this was successfully managed in the emergency room with cautery and packing. All patients performed daily nasal saline irrigations at home and returned at regular intervals for debridement of their sinus cavities. They filled out the SNOT 20 at regular intervals after surgery, describing their post-operative nasal symptoms. The vast majority did not have significant sinus disease pre-operatively. Sinonasal complaints were universal during the first month and included crusting, congestion, rhinorrhea, and sinus pressure, but they gradually diminished over the ensuing months. All patients had a temporary loss of smell, but this returned to near normal levels within 3-6 months.

CONCLUSIONS
Transnasal endoscopic surgery of the sella and suprasellar region of the anterior skull base provides superior visualization and exposure, allowing complete extirpation of tumor. A dual surgeon technique allows maximal maneuverability of instruments within the operative field. A multi-layered repair of the sellar defect decreases the risk of CSF leak. Post-operative care of the sinonasal cavity, including saline irrigation and debridement, is a critical part of a patient’s successful recovery.

REFERENCES