

Incidence of radiologic evidence of sinusitis following endoscopic endonasal skull base surgery; a multi-center study

Dan Yaniv¹, Stephanie Flukes², Nir Livneh³ Igor Vainer¹, Ethan Soudry¹, Nimrod Amitai¹, Daniel Spielman², Marc Cohen², Aviram Mizrachi¹

¹ENT, and Head and Neck Surgery Department, Rabin Medical Center, Israel
²Head and Neck Service, Department of Surgery, Memorial Sloan-Kettering Cancer Center, New York, NY, USA
³ENT, and Head and Neck Surgery Department, Sheba Medical Center, Israel



Memorial Sloan Kettering
Cancer Center™

Background: Endoscopic endonasal skull base surgery may cause crusting and posterior rhinorrhea, especially when a nasoseptal flap is necessary for skull base reconstruction. Post-operative radiological sinonasal findings have been reported previously with no clear correlation to intraoperative decision-making. Endoscopic surgery is not standardized and there is variability in intervention to assist exposure and skull base repair. These modifications, including middle turbinate resection, nasoseptal flap, fat graft and maxillary antrostomy have the potential for nasal morbidity.

Methods: A retrospective analysis of patients who underwent endoscopic endonasal pituitary surgery at two major referral centers. Data on demographic, clinical and pathological features were collected, and pre- and post-operative imaging studies (CT and MRI) were reviewed and scored according to the Lund-Mackay (LM) scoring system. The study included 183 patients.

Table 1. Average change in LM in pituitary tumors (n=183) – divided by surgical procedure

Treatments	LM Change
Antrostomy (n=12)	0
Septoplasty (n=7)	0.57
Fat Graft (n=11)	0.82
Septectomy (n=145)	1.14
Ethmoidectomy (n=127)	1.28
Post-operative packing (n=61)	1.41
Nasoseptal Flap (n=79)	1.67
Middle Turbinectomy (n=47)	2.21

Table 2. LM change – divided by pathology of pituitary tumors (n=183)

Pathology	LM Change
Nonfunctional (n=117)	1.29
Prolactinoma (n=15)	0.47
ACTH-producing (n=29)	0.62
Growth hormone producing (n=20)	1.45
Other (n=2)	1

Results: Radiological evidence of sinusitis was observed in 30 patients (LM score >4) on post-operative imaging studies. Patients who underwent middle turbinectomy or nasoseptal flap were found to have statistically significant higher LM on follow up imaging. Nasoseptal flap was found to be associated with an average increase in LM score of 1.67 points and middle turbinectomy with an average increase of 2.21 points. There was no correlation between tumor size and findings compatible with sinusitis on post-operative imaging.

Conclusion: Our findings suggest that endoscopic endonasal skull base surgery is associated with radiological evidence of sinusitis. Nasoseptal flap reconstruction and middle turbinectomy were strongly associated with radiographic sinusitis and should be judiciously performed during surgery. Clinical correlation is needed for further recommendations.

