Endoscopic Medial Maxillectomy Breaking New Frontiers

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Abstract Endoscopy has changed the perspective of rhinologist towards the nose. It has revolutionised the surgical management of sinonasal disorders. Sinus surgeries were the first to get the benefit of endoscope. Gradually the domain of endoscopic surgery extended to the management of sino nasal tumours. Traditionally medial maxillectomy was performed through lateral rhinotomy or mid facial degloving approach. Endoscopic medial maxillectomy has been advocated by a number of authors in the management of benign sino-nasal tumours. We present our experience of endoscopic medial maxillectomy in the management of sinonasal pathologies.

Keywords Endoscopic medial maxillectomy · Inverted papilloma · Fungal sinusitis

Introduction

Lateral rhinotomy and medial maxillectomy has served as the workhorse for management of sinonasal tumours. Many studies have demonstrated the effectiveness of endoscopic medial maxillectomy the management of sinonasal tumours. The use of endoscopes has several distinct advantages. It provides excellent visualisation, no scars, less morbidity, preserves function of nasal mucosa and also post operative follow up. We present our series of nine cases where we performed endoscopic medial maxillectomy for a variety of sinonasal pathologies.

Materials and Methods

Nine patients underwent endoscopic medial maxillectomy over a period of 2 years. There were five males and four female patients. The average age of the patients was 53.5 years. The most common presenting feature was nasal obstruction followed by swelling in the nasal cavity (Fig. 1). Four patients were using tobacco. The other co morbid conditions include diabetes and hypertension in two patients. The most common clinical finding was mass in the middle meatus (Fig. 2).

All patients underwent clinical examination followed by diagnostic nasal endoscopy. CT scan of the paranasal sinuses was performed in all the cases (Fig. 3). All the patients had involvement of maxillary sinus (Fig. 4) and three patients had involvement of anterior ethmoid sinus. One patient had bony erosion on CT with tumour involving the pterygopalatine fossa (Fig. 5).

All the patients were managed by endoscopic medial maxillectomy. In one patient tumour was extending into the pterygopalatine fossa which was excised completely by removing the posterior wall of maxilla. Brisk bleeding from the internal maxillary artery was encountered while removing the tumour from the pterygopalatine fossa which was cauterised.

Histopathology examination revealed five patients had inverted papilloma, two patients had invasive fungal sinusitis, one patient had fibrous dysplasia and one patient had Rosai–Dorfman disease. All the patients were followed for 2 years. One patient had recurrence of invasive fungal sinusitis and underwent total maxillectomy after 1 year. All other patients showed no recurrence.

Discussion

Inverted papilloma is a benign tumour but has a propensity for recurrence and also harbours a risk of malignant change

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Fig. 1 Graph showing the presenting complaints of patients

Fig. 2 Graph showing the clinical findings of the patients

Fig. 3 CT-PNS coronal section showing radio opaque lesion involving the maxillary and ethmoid sinus

Fig. 4 CT scan of PNS coronal section showing soft tissue lesion in the maxilla extending into the nasal cavity

Fig. 5 Axial CT scan of paranasal sinus showing heterogenous soft tissue lesion with erosion of medial and posterior wall of maxilla

[1, 2]. It must be treated aggressively. All the patients belonged to Krouse stage II [3]. All the patients underwent medial maxillectomy and are on regular follow-up and are disease free after 2 years. The patient with Rosai–Dorfman disease presented with epistaxis. Diagnostic nasal endoscopy revealed a friable irregular bleeding mass. CT scan revealed a radio opaque lesion involving the maxillary sinus, nasal cavity, anterior ethmoid with extension into pterygopalatine fossa and bony erosion. We planned to do a frozen section and proceed. Frozen section came out as a benign lesion. We did an endoscopic medial maxillectomy and completely resected the tumour. Two patients had invasive fungal sinusitis and underwent medial maxillectomy (Figs. 6, 7). Fungal smear showed mucormycosis and they were given antifungal treatment with amphotericin B. One patient developed osteomyelitis of the maxilla after 1 year for which he underwent total maxillectomy.

Fig. 6 Post op endoscopic picture of medial maxillectomy

Fig. 7 CT scan PNS axial section showing post Medial Maxillectomy status

A complete treatment with surgical excision is the treatment modality of these tumours. The traditional lateral rhinotomy and medial maxillectomy is time tested in the management of these tumours. They give good disease clearance with low recurrence rates. But they also have higher morbidity like epiphora, dacryocystitis, mucocele, epistaxis and external scarring. Endoscopic surgery provides superior magnification, good visualisation of difficult areas like anterior or lateral wall of maxillary sinus with the angled endoscopes [4, 5] and excellent illumination. There is no facial scarring giving a better cosmesis. The post operative hospital stay is reduced. Tumor and adjacent mucosa and bone can be removed with powered micro-debriders and diamond burr [5]. In contrast to many external approaches, preservation of normal sinonasal physiologic function and mucociliary clearance patterns is achieved with the endoscopic approach. However, the outcome also depends on the surgeon's experience with advanced endoscopic technique, availability of good

instruments and proper case selection. Some authors have indicated that tumours extending to orbital wall, pterygopalatinefossa, pterygoid plates, nasopharynx, and anterior skull base can be managed endoscopically when indicated [6]. We have excised tumour extending into the pterygopalatine fossa and successfully managed bleeding from internal maxillary artery in our case.

Radiography plays an important role in the evaluation of these patients. CT and MRI complement each other in the evaluation of these tumours. They help in identifying the extent of the disease, presence of bone erosion and invasion of adjacent structures like orbit or skull base [7].

All patients require periodic post operative follow up. One patient had persistent epiphora and two patients had extensive crusting and required regular endoscopic toiletting. No other complications were recorded in our series.

Conclusion

Benign sino nasal tumours are frequently encountered in the practice of Otolaryngology. They present a surgical challenge in their management. Good pre operative evaluation with clinical examination, diagnostic nasal endoscopy and radiological assessment are essential in the surgical planning of these lesions. Complete surgical excision is the ideal modality of management. Endoscopic medial maxillectomy is a good surgical option in the management of benign sino nasal lesions. In our small series of patients Endoscopic medial maxillectomy was a good surgical option with complete excision and very few complications. The prospect of management of extensive sinonasal tumours with this approach is very promising.

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