Endoscopic Resection of Maxillary Ameloblastoma

Kunal Jain MD, Jack M. Hsu MD, & Parul Goyal MD
SUNY Upstate Medical University and the Syracuse VA Medical Center, Syracuse, NY

ABSTRACT

Educational Objective: At the conclusion of this presentation, the participants should be able to describe the advantages and limitations of an endoscopic approach to resection of maxillary ameloblastomas.

Objectives: Ameloblastoma is the most common epithelial odontogenic tumor. The traditional treatment for maxillary ameloblastoma is maxillectomy with wide margins. This report describes the role of endoscopic resection of maxillary ameloblastoma. Endoscopic resection can minimize the morbidity associated with surgical treatment of maxillary ameloblastoma.

Study Design: Case report.

Methods: A 43 year old female with a maxillary ameloblastoma underwent combined transnasal endoscopic and transoral resection. The tumor filled the left maxillary sinus and extended into the left nasal cavity and nasopharynx. The sinonasal region and the oral area have healed very well without any oronasal fistulas. Followup has shown an excellent functional outcome without any tumor recurrence.

INTRODUCTION

Ameloblastomas are rare odontogenic lesions, accounting for 1% of all odontogenic tumors and cysts. Maxillary ameloblastomas are less common than mandibular ones and make up 20% of all ameloblastomas. Although ameloblastomas are benign and slow growing, they can be locally invasive and have a high incidence of recurrence (50-72%).

Many different surgical techniques have been used for the treatment of ameloblastoma. Successful treatment focuses on wide surgical resection. Most commonly, this has been performed using transoral and transmaxillary techniques.

CASE

A 43 year old female presented with a year-long history of worsening nasal obstruction and recurrent epistaxis over a year. Rigid nasal endoscopy showed a large left sided excoriated mass emanating from the middle meatus extending in the left nasal cavity and nasopharynx.

A biopsy of the lesion was consistent with an ameloblastoma. The patient underwent excision of the maxillary ameloblastoma using a combined transnasal endoscopic and transoral approach and the technique is described below. The tumor was able to be resected with clear surgical margins.

Post-operatively, the patient resumed oral intake without difficulty on postoperative day 1. The sinonasal region and the oral area have healed very well without any oronasal fistulas. Followup has shown an excellent functional outcome without any tumor recurrence.

SURGICAL TECHNIQUE

- A microdebrider with straight and angled blades was used to rapidly debulk the sinonasal portion of the lesion while focusing on locating any areas of tumor attachment (Figure 2 and 3).

- A wide maxillary antrostomy was performed with removal of the uncinate process.

- Using a microdebrider, curettes and non-cutting instruments the unattached portion of the tumor was delivered from the uninvolved portion of the maxillary sinus wall along the inferior meatus. The tumor was found to be adherent to the bone along the inferior and posterior aspects of the maxillary sinus. The uninvolved bone surrounding the tumor was identified (Figure 5).

- A 70 degree diamond drill was used to outline the bone around the tumor attachment sites (Figure 6).

- Transorally, the gingiva was elevated medially to the level of the hard palate and laterally off of the alveolar bone to the gingivobuccal sulcus. The outlines of the tumor margins could be easily visualized because the drill had been used endoscopically to delineate these areas.

- A combination of rongeurs and Kerrison punch was used to connect the area of planned resection (Figure 7). Tooth #13 was extracted. Osteotomies were then made around the alveolus of tooth #14 and #15 as the tumor appeared to be originating from above this region.

- The limited maxillectomy was performed and the tumor attachment site was removed in an en bloc fashion (Figure 8).

- The mucosal edges were reaproximated primarily in a horizontal mattress fashion for a watertight closure. The patient has healed very well with no evidence of oroantral fistulas. Figure 9 shows a view of the palate and maxillary alveolus six months postoperatively.

DISCUSSION

Maxillary ameloblastomas are rare tumors that can be more aggressive than their mandibular counterparts. Because maxillary ameloblastomas are found uncommonly, the literature regarding effective surgical treatments is limited to case reports and small case series.

The treatment goal is complete resection at the time of the initial surgery. The extent of surgery depends on the extent of involvement of orbital floor, periorbital and orbital contents, and anterior skull base. Recommended techniques focus on complete or partial maxillectomy by way of transoral, Le Fort I osteotomy, and temporal approaches. While these techniques allow for adequate tumor resection, an important disadvantage is the potential for a large maxillary defect. A result of this is that the use of alloplastic reconstruction may necessitate extensive reconstruction or the use of an obturator. For this reason, it would be helpful to minimize the size of the maxillary defect without compromising surgical margins.

The technique in this paper allows for complete tumor removal while minimizing the size of the maxillary defect and associated morbidity. The procedure starts with a transnasal endoscopic technique that allows for rapid debulking of unattached portions of the tumor. The tumor attachment site is then defined and outlined endoscopically. The surgeon can then remove the attachment site and associated dentition en-bloc through a transoral approach. As seen in the case presented, this minimizes the size of the maxillary defect. In cases where normal gingival and palatal soft tissue, the defect can be closed primarily.

Endoscopic techniques have been used for a variety of sinonasal and skull base tumors with good outcomes. The use of these techniques in this case is an extension of the principles of endoscopic tumor surgery. The goal is complete tumor removal, even if small amounts of tissue are removed overall.

A significant advantage of the endoscopic portion of the procedure is the ability to precisely determine the areas of tumor attachment. The tumor attachment is outlined endoscopically, allowing the surgeon to remove a targeted portion of the inferior portion of the maxilla as a part of the tumor resection. By minimizing the resection extent, this allows for primary closure of the surgical defect.

CONCLUSIONS

The combination of endoscopic transnasal surgery and the transoral approach for a partial maxillectomy allows for a less invasive approach for the resection of maxillary ameloblastoma. The technique allows for removal of the tumor in an en bloc fashion along its attachment sites while minimizing the defect needing reconstruction. Endoscopic resection can minimize the morbidity associated with surgical treatment of maxillary ameloblastoma.

REFERENCES