

**RECURRENT MAXILLARY AMELOBLASTOMA, RESECTION AND RECONSTRUCTION WITH FOREHEAD FLAP – A CASE REPORT**

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ABSTRACT Maxillary ameloblastomas are rare, locally aggressive odontogenic tumors with a higher risk of recurrence due to the maxilla's cancellous bone structure and proximity to vital anatomical spaces. This case report describes a 55-year-old male with a recurrent maxillary ameloblastoma, presenting as a swelling in the left malar region. Imaging revealed extensive local invasion, including the orbit and infratemporal fossa. Complete surgical excision was performed via an extraoral approach, followed by reconstruction using a pedicled forehead flap, chosen for its reliable vascularity and tissue characteristics. Histopathology confirmed plexiform ameloblastoma. The patient experienced uneventful healing, and functional and aesthetic outcomes were satisfactory. This case highlights the forehead flap as an effective reconstructive option for midfacial defects, particularly when microvascular techniques are not feasible. Long-term follow-up is essential due to the tumor's recurrent potential.

KEYWORDS : Maxillary Ameloblastoma, Tumor Resection, Forehead Flap Reconstruction

INTRODUCTION

Ameloblastoma are benign but locally aggressive odontogenic tumors, comprising about 1% of all benign jaw lesions. With an incidence of 0.5 cases per million person-years, they originate from dental lamina remnants and occur predominantly in the mandible—five times more often than in the maxilla. These tumors are typically diagnosed between the ages of 30 and 60 and show no significant gender predilection.^[1]

Maxillary ameloblastomas, though rare (15% of cases), are often more aggressive due to the maxilla's cancellous bone, which allows faster tumor spread. Their asymptomatic nature often leads to delayed diagnosis after invasion into adjacent structures like the orbit or skull base. Complete excision with at least a 1 cm margin is ideal but often difficult due to proximity to vital structures. Conservative treatments such as curettage are associated with higher recurrence rates (up to 33.3%) compared to radical resection (around 7.1%).^[2]

CASE PRESENTATION

A 55-year-old male reported to our department with a swelling over the left cheek region (Figure 1), which had gradually increased in size over the past few months. The patient had a history of resection for ameloblastoma of left side of mandible approximately 20 years earlier along with reconstruction with Titanium plate. The patient had got the titanium plate removed 6 years later due to infection along with curettage of left zygomatico-maxillary region, but no records of the previous surgery, histopathology or imaging were available.

On extraoral examination, a well-defined, firm, non-tender swelling measuring approximately 6*4*6 cm was noted in the left malar region. The overlying skin was involved with crustations. Intraorally, the left buccal vestibule was not obliterated, and no ulceration or discharge was observed. There was no evidence of trismus or paresthesia.



Figure 1 – Pre-operative clinical picture

Computed Tomography (CT) scans (Figure 2) showed a well-defined expansile lesion with heterogenous mass density of size approximately 7.1*5.9*4.6 cm arising from left zygomatic bone involving the left maxillary sinus with erosion and thinning of the left lateral wall of orbit, lesser wing of sphenoid with possible involvement of foramen ovale, foramen rotundum, pushing the left eyeball medially and extending the left infratemporal fossa. There is absence of left half of maxilla, left body of mandible and temporomandibular joint.

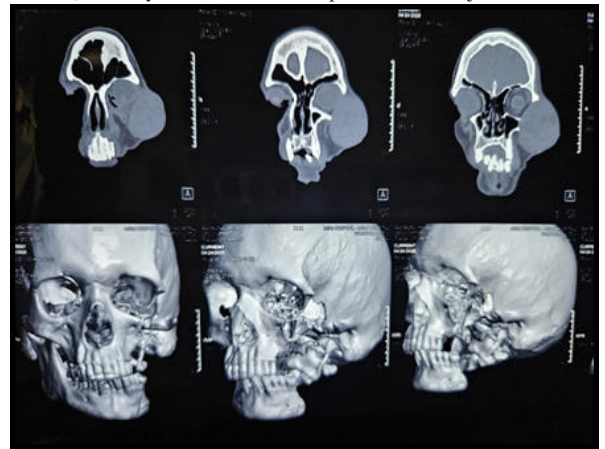


Figure 2 – CT scans

SURGICAL INTERVENTION

An extraoral approach was employed to enucleate the tumor, ensuring complete removal with adequate margins (Figure 3a). Reconstruction of the resulting maxillary defect was achieved using forehead flap, chosen for its reliable vascularity and adequate soft tissue bulk, making it ideal for midfacial reconstruction.

The forehead flap was elevated based on the frontal branch of the superficial temporal artery. The design accounted for the flap length to be more than the defect size to ensure tension-free reach (Figure 3b).

The pedicled flap was carefully rotated to reconstruct the left zygomatic region. The raw forehead donor site was covered with a split-thickness skin graft (STSG) harvested from the anterior surface of the left thigh, and the donor thigh area was dressed with chlorhexidine mesh.

The tumor mass was sent for histopathology which was reported as

Plexiform Ameloblastoma.

Postoperatively, the patient was followed up at regular intervals. Healing was uneventful with no complications at either the donor or recipient sites (Figure 3c). The pedicled portion was removed 2-3 weeks post-operatively after the flap maintained its own blood supply.

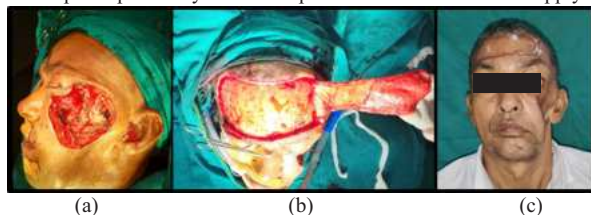


Figure 3 showing (a) Resection of tumor (b) Raising of Forehead flap after resection (c) Post-operative view

DISCUSSION

Maxillary ameloblastoma, though less common than their mandibular counterparts, tend to exhibit more aggressive behavior due to the maxilla's cancellous bone architecture and proximity to anatomical spaces such as the orbit, nasal cavity, and skull base. These factors contribute to early soft tissue invasion and delayed diagnosis, increasing the likelihood of recurrence, particularly in cases treated conservatively.

Recurrent ameloblastoma require a radical surgical approach with wide excision to minimize the risk of further relapse. Conservative treatments such as enucleation or curettage are associated with high recurrence rates-up to 60%-while radical resection offers more favorable outcomes.^[3] Once a defect is created following resection, the reconstructive goal is to restore both function and aesthetics, especially in midfacial regions where multiple structures are affected.

Despite intensive treatment, the intrinsic biological behavior of tumors remains a key factor in their recurrence. Maxillary ameloblastomas are most commonly associated with SMO mutations, whereas BRAF mutations are more frequently seen in mandibular cases. A 40-year retrospective study analyzing 44 cases of jaw ameloblastoma from a single institution revealed that histological subtype, with the exception of cystic variants, did not significantly influence recurrence risk. The study also found a notable correlation between CD10 expression, the Ki-67 labeling index, and tumor recurrence. Additionally, all tumors in the cohort tested positive for epidermal growth factor receptor (EGFR), leading the authors to propose that EGFR-targeted therapies might be beneficial for managing unresectable tumors near the skull base. Current evidence indicates that recurrence is influenced by a range of clinical factors, including tumor location, root resorption, and invasion of the maxillary sinus—features often associated with more aggressive lesions, regardless of the surgical approach employed.^[1]

A study conducted by Yet Chin Goh suggests that recurrence rate according to histopathologic variant was 27.33% for follicular histopathologic variant, 11.53% for plexiform histopathologic variant, 12.12% for desmoplastic histopathologic variant and 5.88% for unicystic ameloblastoma. Further analysis showed 5.71% of granular cell changes and 18.09% of acanthomatous changes in the recurrent cases.^[4]

In this case, a **pedicled forehead flap** was selected due to its dependable vascular supply, adequate tissue volume, and favorable color and texture match for facial reconstruction. The flap, based on the supratrochlear and superficial temporal arteries, allowed for safe transfer with minimal tension. Unlike free flaps—which require microsurgical expertise, extended operative time, and longer hospitalization—locoregional flaps like the forehead flap provide a simpler, cost-effective alternative with lower donor site morbidity.^[5]

The forehead flap is particularly advantageous in elderly or medically compromised patients and is ideal for reconstructing full-thickness cheek defects. Historically, various pedicle and free flaps—including the radial forearm flap, pectoralis major flap, and trapezius flap—have been used for similar defects.^[6] In our case, pectoralis major flap would be distant from the surgical defect and free flaps require complex harvesting procedure. In contrast, the forehead flap is versatile, easier to harvest, adaptable to midface defects because of its close proximity.

Furthermore, its rich vascular network supports healing even in

previously operated or irradiated tissues, making it particularly useful for recurrent cases. Though intraoral hair growth may occur postoperatively, this can be managed by depilation techniques.

This case reinforces the forehead flap's value in reconstructing post-excisional defects of recurrent maxillary ameloblastoma. It provides a reliable, safe, and functionally effective solution, especially when advanced microsurgical options are not available or feasible. Long-term follow-up remains essential in such patients due to the risk of late recurrence, particularly when soft tissue involvement is present at the time of diagnosis.

CONCLUSION

Reconstruction of recurrent maxillary ameloblastoma poses both functional and aesthetic challenges. In this case, the pedicled forehead flap offered a practical, effective solution with good surgical outcomes. Its reliability, ease of harvest, and favorable tissue characteristics make it a valuable option when microvascular reconstruction is not feasible. Continued long-term surveillance is essential due to the tumor's recurrent nature.

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