

Large Ameloblastoma of Mandible: Our Experience with Intermaxillary Fixation

Anoop Attakkil, Vandana Thorawade, Rajesh Kar, Shobhna Chandran,
Devkumar Rengaraja, Karthik Rao, Dnyaneshwar Rohe

Department of ENT, Grant Medical College & Sir J.J. Hospital, Mumbai, India
Email: fasttrack2317@gmail.com

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Abstract

Ameloblastomas are benign dental tumors, constituting 15% of oral neoplasms, most frequent odontogenic tumor of the jaw. Patient presenting at a late stage usually presents with large swelling with facial deformity. We present a case of 50 years old male who presented with recurrent ameloblastoma on the left side of the mandible causing facial disfigurement and functional impairment. Adequate removal of the tumor required hemimandibulectomy and intermaxillary fixation was done without any bony reconstruction. We would like to focus on the excellent postoperative result with regard to facial symmetry and functional improvement obtained in this case, though the available management protocols differ and are more advanced in current scenario. This case report gives hope and guidance to the surgeons who face difficulty in managing the deforming benign bony tumors due to the unavailability of facility and funds to reconstruct.

Keywords

Ameloblastoma, Resection, Intermaxillary Fixation, Mandible

1. Introduction

WHO defines the solid/multicystic ameloblastoma as a slowly growing, locally invasive, epithelial odontogenic tumour of the jaws with a high rate of recurrence if not removed adequately, but with virtually no tendency to metastasize [1]. Ameloblastoma is the second most common odontogenic tumour which is generally slow growing but locally invasive. Its peak incidence is noted between 30 and 60 years of age, while the tumour is rare below the age of 20 years. It exhibits no gender predilection and occurs over a wide age range. The tumour occurs exclusively in the jaws, rarely in the sinonasal cavities [1]. Clinical presentation is usually swellings of the jaws which may be variably sized and associated with rare incidences of pain or paraesthesia. It may show

unilocular or multilocular radiolucencies resembling cysts and they may reveal scalloped borders.

It spreads slowly by infiltration through the medullary spaces and may erode cortical bone leading to resorption of the cortical plate and may extend into adjacent tissues. Patients commonly present at a late stage when the tumor causes significant facial deformity or malocclusion and functional impairment. The treatment of choice is en bloc resection of the tumor owing to the high recurrence rate of the tumor following a simple curettage (75%) [2]. In case of large sized tumors, extensive surgical resection usually results in large tissue defects which lead to severe aesthetic and functional impairment. In huge ameloblastoma, the key to the treatment lies in attaining wide local resection of the tumor and reconstruction of the patient's appearance with minimal functional limitations. It demands the availability of well equipped plastic surgery reconstruction teams which often poses limitations for the surgeons to proceed with excision.

We presented a case of huge ameloblastoma which was involving the left half of the mandible causing facial deformity and malocclusion. Enbloc resection of the tumor was done and managed with primary closure and intermaxillary fixation postoperatively for two weeks. Our case report highlights the aesthetic quality and improvement of functions which is attained by this management accepting the fact that the advanced surgical reconstruction should be done where the faculty and facility are available. We have also tried to present a concise review of the relevant literature.

2. Case Report

A 45 years old male presented to our department, with a bulging mass on the left half of the face arising mandible, gradually enlarged over past 7 years to the present size without pain or inflammation. There was a large firm swelling over the left mandibular region which was non tender extending from the left angle of mouth anteriorly to the angle of mandible (**Figure 1**). Intraorally, the mucosal bulge was present on the left side of the floor of mouth with intact and smooth buccal mucosa. Malocclusion was present. He reported having undergone excision of tumor over the same site 25 years back. The treatment details were not available except for the histopathology report which suggested ameloblastoma. Computerised Tomography with three dimensional reconstruction showed a huge radiolucent region in the mandibular area on the left side including the body and ramus (**Figure 2**). Biopsy done from the mucosal side confirmed the diagnosis of ameloblastoma. A segmental mandibulectomy with wide local excision and reconstruction with bone graft and titanium plating to stabilise the mandible was planned.

Under general anaesthesia, an extra-oral surgical approach through a lip splitting incision was done and skin flap was raised exposing the mandible. The solid tumour was noted to involve the whole of left mandible measuring about 7×6 cm which was involving the body, ramus and head of condyle (**Figure 3**). Hemimandibulectomy was done with en bloc resection of the tumour. No bony reconstruction was done. Intermaxillary fixation



Figure 1. Large ameloblastoma on the left side of the face producing facial asymmetry.

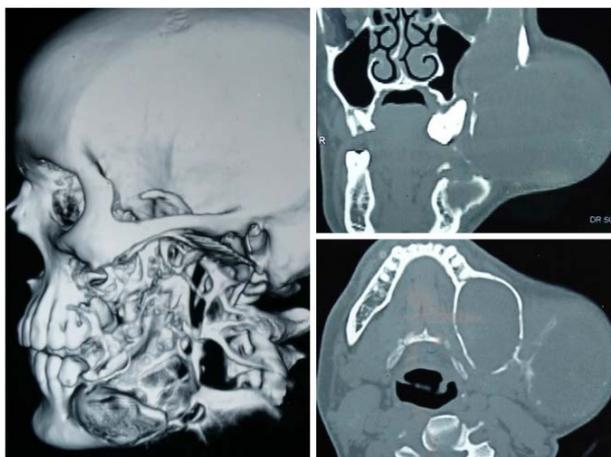


Figure 2. Three dimensional computerised tomography showing the enormous size and extent of ameloblastoma.



Figure 3. Intraoperative photograph after the exposure of tumor.

was done to prevent the deviation of the mandible. Patient was on Ryle's tube feeding. Postoperative period was uneventful. Histopathology was confirmatory for follicular ameloblastoma that showed islands of epithelial cells with a central mass of polyhedral cells surrounded by well organized single layer of cuboidal or tall columnar cells with nuclei placed at the opposite pole of basement membrane resembling pre-ameloblasts (**Figure 4**). Intermaxillary fixation was removed after 6 weeks. Negligible deviation of the jaw was noted with little compromise on chewing and swallowing. The jaw movements were satisfactory (**Figure 5**). Patient was evaluated after three months where he had no significant complaints except for the depression over his left cheek. Patient refused for the reconstruction of cheek defect. On follow-up evaluation one year later, he had no difficulty in swallowing, chewing and maintained good voice.

3. Discussion

The ameloblastoma is the second most common odontogenic tumor, first being odontoma. It arises from any number of residual epithelial elements of tooth development: reduced enamel epithelium, rests of Serres, rests of Malassez or the basal layer of the oral mucosa [3]. It can also develop from within a dental follicle or a dentigerous cyst.

Ameloblastoma is a benign, locally infiltrating tumor characterized by a slow growth pattern and can grow to enormous size. Typically an ameloblastoma present as painless slow growing mass that may cause facial asymmetry, displacement or loosening of teeth, malocclusion, and pathologic fractures due to expansion of bone and

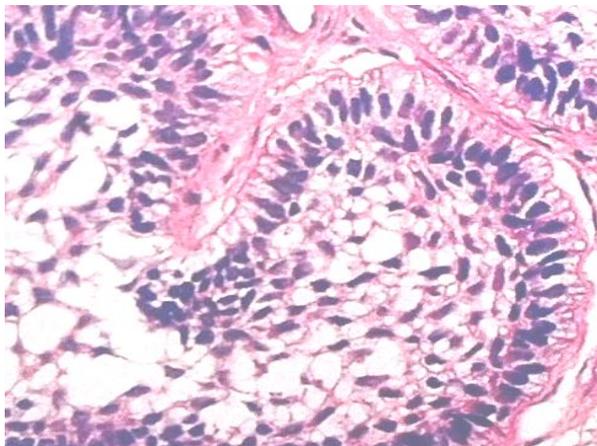


Figure 4. Histopathological features of follicular ameloblastoma demonstrated.



Figure 5. Showing the post operative picture after 3 months where the acceptable cosmetic & functional results can be appreciated.

invasion into soft tissue. Buccal and lingual cortical expansion is common even progressing to cortical perforation [3]. In our case, patient presented after 7 years when it caused facial deformity and malocclusion.

The lesion has a very wide age range with a peak occurrence in the third and fourth decades and it has no sex predilection. The posterior mandible appears to be a preferred site [3]. Radiographically the lesion can appear as a unilocular or multilocular radiolucency with ill-defined borders making it difficult to determine the exact size of the lesion.

When the ameloblastomas grows into, or completely through the connective tissue layer of the lesion or recurs, en bloc resection is the advocated treatment with a 1.0 to 1.5 cm bony margin and one uninvolved overlying anatomic barrier margin is advocated. In a review of 60 mandibular ameloblastoma cases, there was no recurrence of those cases treated via en bloc resection as compared to enucleation and curettage in which the recurrence rate was as high as 25% to 50% [4].

Reconstruction of large defects of mandible had always been a challenge to the head and neck surgeons. The reconstruction aims in attaining accepted cosmetic results and structural integrity that restores the functions like chewing, speech and swallowing to a better extent. Literature review shows various surgical techniques described for reconstruction of mandible but the micro vascular flap reconstruction is the most preferred in current scenario. Vascularised bone flaps can be used to rebuild any defect extension, while bone grafts should have their use restricted to smaller defects, less than 5 cm in length [5].

The autogenous grafts can be taken from fibula, iliac crest, scapula and radial forearm. Fibula has been pro-

posed as the choice for reconstruction owing to the acceptable bone length and thickness and minimal donor site morbidity [6]. In a comparative study done between vascularised iliac crest flap and vascularised free fibular flap, free fibular flap proved to be more superior with less complication rates and better cosmetic and functional results [7]. In a case series of 10 cases it was shown that vascularised fibula flap with simultaneous placement of integrated dental implants could attain better results than conventional methods [8].

Multiphasic approach was recently advocated where the reconstruction of the surgical defect with autogenous or revascularized autogenous bone graft followed by prosthetic restoration by endosseous implants [9]. Internal distraction osteogenesis of the mandible has been proposed which reduces the postoperative morbidity and causes distraction of soft tissue along with the bone but the increased duration of the treatment is the limitation [10].

In our case, the unavailability of better microvascular reconstruction facility limited our reconstruction plans. Besides, financial status of the patient was not good enough to afford the treatment. Hence wide local excision was done which eventually resulted in hemimandibulectomy followed by intermaxillary fixation. Though it cannot be considered as the acceptable method in the era of recent advances, the cosmetic and functional results obtained in our patient were worth reporting. The limitation of the availability of resources and facilities always poses a challenge to the head and neck surgeons to proceed with resection of such tumors. Aramany *et al.* reported a case series of 14 patients who were treated by use of immediate intermaxillary fixation after segmental resection of the mandible to eradicate cancerous lesions which has shown that use of intermaxillary fixation during the first 6 postoperative weeks will reduce the degree of deviation [11]. This will keep the muscles in neutral position and prevent deviation. Inter maxillary fixation in our patient done for six weeks gave proper occlusion and prevented the deviation of the jaw preserving the aesthetics and functional integrity. The swallowing, chewing and voice quality was remarkably better in the post operative period and patient was satisfied with the treatment.

4. Conclusion

En bloc tumour resection has been accepted as the treatment of choice in ameloblastoma. Huge ameloblastoma presenting with facial asymmetry had been always a challenge in reconstruction which requires the expertise in micro vascular reconstruction. Excellent results had been attained with microvascular reconstruction with free fibula. Our experience with en-bloc resection and internal maxillary fixation has provided good results in regard to the structural integrity and aesthetics. We reported this case to provide an insight to the head and neck surgeons to dare to proceed with the treatment of the benign tumors of mandible overcoming the limitations of the resources.

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