

**Ameloblastoma: A Case Report and Treatment design for Ameloblastoma**

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**Conflicts of Interest:** Nil

**Abstract**

Ameloblastoma is an epithelial odontogenic tumor, which does not differentiate to form the enamel. It is benign and of ectodermic origin. The management is controversial because of its high risk of recurrence. We present a case of ameloblastoma in a 10-year-old female patient who presented with a swelling on the left side of the mandible, which was diagnosed histopathologically as Plexiform ameloblastoma. We present a detail description of case, along with surgical treatment plan of ameloblastoma.

**Keywords:** Ameloblastoma, Management protocol, Recurrence

**Introduction**

Ameloblastoma is a true neoplasm of odontogenic epithelium (1). It is an aggressive neoplasm that is locally destructive. It may arise from remnants of the dental lamina or dental organ (odontogenic epithelium) (2).

Robinson described it as unicentric, nonfunctional, intermittent in growth, anatomically benign, and clinically persistent. It is the second most common odontogenic neoplasm [3].

Histologically it has six subtypes: follicular, plexiform, acanthomatous, granular, desmoplastic, and basilar. Radiographically it can be unicystic, multicystic, or solid and peripheral type. It commonly affects mandible especially molar- ramus area. It is painless, slow growing tumour which causes expansion and thinning of cortical plates. In advanced cases of ameloblastoma, it causes root resorption, tooth mobility and paresthesia [4].

Robinson and Martinez in 1977, first described a variant of ameloblastoma, solid or multicystic ameloblastoma. It is reported to have a more aggressive biological behavior with higher recurrence and morbidity rate than the classic unicystic ameloblastoma. If the tumor invades the soft tissue or perforates the cortical bone, there are higher chances for local recurrence. (5)

## Case Report

A 10 years old girl patient came to the department with a chief complaint of swelling in the lower left back tooth region since 3 months which was painless and persistent. Past history revealed that swelling appeared 3 months back, which was gradual in onset and slowly increased in size. Dental history revealed that she had visited to some dentist for the same. Family and medical histories were not significant.

Extra-oral examination revealed facial asymmetry with marked enlargement of the left mandibular body region, which was firm and nontender on palpation.(Fig.1) Intraoral examination revealed diffuse swelling in the mandibular posterior region, extending from the distal of 2<sup>nd</sup> premolar upto retromolar area. The buccolingual expansion was present, causing the vestibular obliteration. The overlying mucosa was irregular. On palpation, swelling was nontender and fluctuant. Perforation of the buccal cortical plate was present in the region of 1st and 2<sup>nd</sup> molar (Fig.2). Based on patient history and clinical finding, a provisional diagnosis of dentigerous cyst was made.

Radiographic examination revealed erupting 1st and 2<sup>nd</sup> premolar. 2<sup>nd</sup> molar is pushed towards the lower border of mandible. Unilocular radiolucency seen extending from distal of 1st molar upto the ramus area. (fig.3) An incisional biopsy was performed from the left mandibular molar region, and the specimen was sent for histopathological examination histopathological report suggestive of Plexiform Ameloblastoma. Patient was planned for surgery under general anesthesia where the enucleation of lesion was done followed by peripheral ostectomy and chemical cauterization with carnoy's solution. The enucleated tumour mass was sent for histopathological examination which was suggestive of Plexiform Ameloblastoma (fig.4). Patient was kept on

follow up visits for 1 month. After 3 months radiograph was taken that showed complete resolved lesion (figure 5)



Fig. 1: Extraoral swelling of the lower half of face (left side)



Fig. 2: Intraoral view of patient

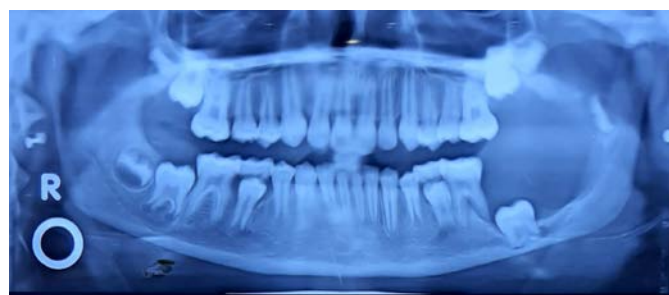


Figure 3: Radiographic presentation of lesion

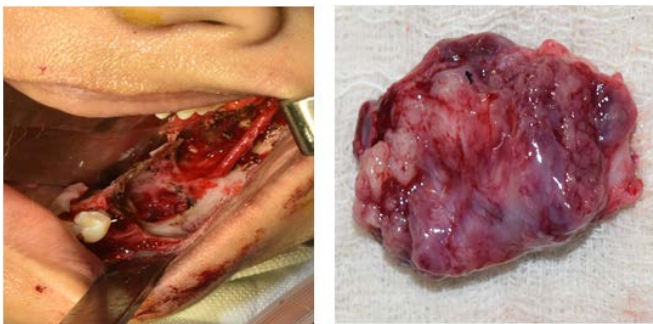


Figure 4: shows intra operative and specimen picture

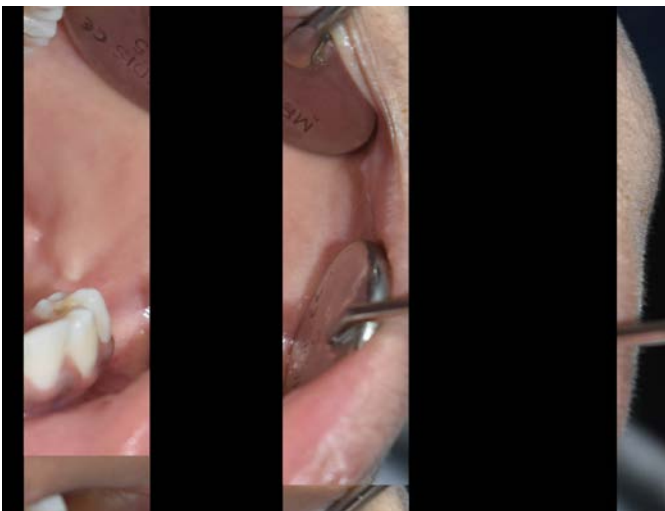


Figure 5: Postoperative Picture of Patient.



Figure 6: Postoperative Picture of Patient And Radiograph after 3 months .

### Discussion

According to macroscopic appearance ameloblastomas are categorized into 4 types.

These include solid/multicystic, extraosseous/peripheral, desmoplastic and unicystic types. The solid/ multicystic type is slowly growing and locally invasive. Histologically, it can show a plexiform or follicular pattern. Recommendation is to treat these radically due

to high risk of recurrence of 50% during the first 5 years post-operatively (6,7)

The peripheral/ extraosseous type is uncommon and shows less aggressive behaviour, hence conservative excision is the treatment of choice. The desmoplastic type shows mixed type of radiolucent and radiopaque findings with diffuse margins. Radical treatment is mostly recommended for this type of variant. Unicystic type is mostly associated with an unerupted 3<sup>rd</sup> molar, hence radiologically it is misdiagnosed as a dentigerous cyst. Histologically, unicystic type has two appearances- luminal and mural. The luminal variant does not tend to infiltrate the surrounding structures, hence enucleation is treatment of choice. However, the mural variant infiltrates the bone, hence radical treatment may be necessary(7)

Conservative approaches include enucleation or marsupialization with or without Carnoy's solution. Haq, et al. Reported a series of 31 patients treated for mandibular ameloblastomas. Four patients were treated by resection of the mandible and the remainder 27 Patients underwent enucleation and application of Carnoy's Solution. Of the 3 patients who had a recurrence, One was unicystic and 2 were solid/multicystic. None of the unilocular lesions as seen on radiograph recurred irrespective of histological subtype. They also stated that sometimes it can be difficult to obtain a representative biopsy specimen as was in 4 cases out of 31 cases. Because of this, diagnosis was altered and even treatment plan was also altered which would result in serious consequences. Hence they concluded that radiological appearance is a guide for management more than histological result.(8)

Hong, et al studied the long term outcome of 305 ameloblastoma cases and found the differences in disease free survival between those treated

conservatively versus those who underwent resection with bone margin or segmental resection. They concluded that resection with a safety margin is the best method of management of ameloblastomas. However, patient with unicystic or plexiform ameloblastomas, conservative treatment is a reasonable approach. (9)

Nakamura, et al. compared the long-term results between different approaches in 78 cases of ameloblastoma patients. They concluded that conservative treatment approaches including marsupialization and enucleation followed by sufficient bone curettage were useful and reduced the need for jaw resection.(10)

Muller, et al. conducted a systematic review and compared this with their series of 84 patients followed-up for at least 5 years. They showed a recurrence rate of 75% in cases of multilocular ameloblastomas treated conservatively but only 15% in those treated by radical surgery. The recurrence rate was lower (20%) in unilocular ameloblastomas (11).

Ueno, et al. studied 91 patients with ameloblastomas and found a 8.7% recurrence rate in those treated with radical surgery compared with 45.6% recurrence in those treated conservatively. They concluded that recurrence rate was higher in the follicular than in plexiform types and also found that recurrence rate is higher in multilocular than in unilocular type (12).

Historically, ameloblastomas were enucleated, however with the emergence of reliable microvascular reconstruction. It is not uncommon for surgeons to manage ameloblastomas with wide local resections and free flap reconstructions. However, radical treatment can leave major aesthetic and functional consequences in a relatively young group of patients (average age 36 years), hence the choice of conservative versus radial treatment needs careful discussion with the patient (6).

Radical surgery consists of segmental bone resection or wide local excision of 10 to 20 mm margins with reconstruction, usually in the form of a free flap. The belief behind the radical or segmental resection of ameloblastoma is due to its high recurrence rate.

Treatment modalities of ameloblastoma are based on proper diagnosis of its size, anatomical location, histologic variant and anatomical involvement. Treatment ranges from conservative approaches like curettage and enucleation to radical approaches by removal of some amount of normal bone beyond the tumor margins. In most of the cases surgery is the treatment of choice for ameloblastomas. Radiotherapy can also be used in inoperable cases.

### **Conclusion**

Treatment plan of an ameloblastoma should be based on clinical details, radiographic evaluation, accurate histological report, proper surgical removal and follow up of the lesion by an oral and maxillofacial surgeon. This case report provides the proper treatment plan based on radiographic appearance, histologic type, size and location. In every case of ameloblastoma, its relationship with surrounding structures should be kept in mind before planning a surgical treatment and minimum of 10 years of follow up is required.

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