Reconstruction of Mandible using Iliac Crest Graft: A Case Report and Literature Review

**ABSTRACT**

Ameloblastoma is a true neoplasm of odontogenic epithelial origin. It is the second most common odontogenic neoplasm, and only odontoma that out numbered in reported frequency of occurrence. Its incidence, combined with its clinical behavior, makes ameloblastoma the most significant odontogenic neoplasm. Unicystic ameloblastoma (UA) refers to those cystic lesions that show clinical, radiographic, or gross features of a mandibular cyst, but histological examination show a typical ameloblasticomatous epithelium lining part of the cyst cavity, with or without luminal and/or mural tumor growth. It accounts for 5 to 15% of all intraosseous ameloblastomas.

We report a case of unicystic ameloblastoma in a 16 years old female patient where hemimandibulectomy was done and reconstructed with iliac crest graft.

**Keywords:** Ameloblastoma, Odontogenic lesions, Central cell granuloma, Reconstruction, Iliac crest, Graft.


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**Conflict of interest:** None

**INTRODUCTION**

Many benign lesions cause mandibular swelling and these can be divided into odontogenic and nonodontogenic origin. Lesion include ameloblastoma, radicular cyst, dentigerous cyst, kerato cyst, odontogenic tumor, central giant cell granuloma, fibro-osseous lesions and osteomas. The most common tumor of odontogenic origin is ameloblastoma which develops from epithelial cellular elements and dental tissues in their various phases of development. It is a slow growing, persistent, and locally aggressive neoplasm of epithelial origin. Its peak incidence is in the 3rd to 4th decade of life and has an equal sex distribution. It is often associated with an unerupted 3rd molar. It may be detected during the course of routine radiography. The vast majority of ameloblastomas arise in the mandible and the majority of these are found in the angle and ramus region. There are three forms of ameloblastomas namely multicystic, peripheral and unicystic tumors. Multicystic ameloblastomas is the most common variety and represents 86% of cases. Peripheral tumors are odontogenic tumors with the histological characteristics of intraosseous ameloblastoma that occurs solely in the soft tissue entering the tooth bearing parts of the jaws. Unicystic tumors include those that have been variously referred to as mural ameloblastomas, luminal ameloblastomas and ameloblastoma arising in dentigerous cysts. The goal of treatment of ameloblastoma is to achieve complete excision and appropriate reconstruction.

**CASE REPORT**

A 16-year-old female patient presented with a slow growing swelling on left side of face since 6 months (Fig. 1). There was no associated pain, difficulty in opening mouth, chewing or articulating. On examination, a hard swelling measuring 1.5 × 2 cm arising on left side of the mandible, involving the ramus, angle and body upto the left lower central incisor tooth. The oral mucosa was normal. No neck nodes were palpable. Systemic examination was normal. Orthopantomogram (OPG) (Fig. 2) showed large cystic lesions in the left side of mandible. CT scan showed that the cystic lesion was confined to the mandible, with a thinned outer cortex. A segmental mandibulectomy was done via submandibular incision. Left iliac crest was harvested and the defect was reconstructed with recon plate and screws (Fig. 3). The resected specimen (Fig. 4) had histopathological features consistent with unicystic ameloblastoma. The postoperative OPG shows complete eradication (Fig. 5) and postoperative photograph (Fig. 6) shows absence of swelling on left side.

**DISCUSSION**

Unilocular ameloblastoma (UA) accounting about 6% of ameloblastomas. It usually occurs in a younger age group, mostly located in the mandible. Fifty and 80% of cases are associated with impacted tooth, the mandibular 3rd molar being most often involved. The dentigerous type occurs 8 years of age or earlier on average than the nondentigerous variant. Patient most commonly presents with swelling and facial asymmetry, pain being an occasional presenting...
Fig. 1: Preoperative picture shows swelling on left side of face

Fig. 2: Preoperative OPG shows multilocular radiolucency

Fig. 3: Intraoperative photograph shows iliac crest graft with recon plate

Fig. 4: Postoperative OPG shows iliac crest graft with recon plate

Fig. 5: Resected specimen

Fig. 6: Postoperative photograph showing absence of swelling on left side

Symptom. Mucosal ulceration is rare, but may be caused by continued growth of the tumor. Small lesions are sometimes discovered more on routine radiographic screening as a result of local effects (like tooth mobility, occlusal alterations and failure of eruption of teeth) produced by the tumor. Histologically, the minimum criterion for diagnosing a lesion as unicystic ameloblastoma is the demonstration of a single cystic sac lined by odontogenic (ameloblastomatous) epithelium often seen only in focal areas. Unicystic ameloblastoma should be differentiated from odonogenic cysts because the former has a higher rate of recurrence than the latter. In a clinicopathologic study of 57 cases of unicystic ameloblastoma, Ackermann classified this entity into the following three histologic groups.
Group 1: Luminal UA (tumor confined to the luminal surface of the cyst).

Group 2: Intraluminal/plexiform UA (nodular proliferation into the lumen without infiltration of tumor cells into the connective tissue wall).

Group 3: Mural UA (invasive islands of ameloblastomatous epithelium in the connective tissue wall not involving the entire epithelium).

Another histologic subgrouping by Philipsen and Reichart has also been described:

Subgroup 1: Luminal UA

Subgroup 1.2: Luminal and intraluminal

Subgroup 1.3: Luminal and intramural

The UAs diagnosed as subgroups 1 and 1.2 and can be treated conservatively (careful enucleation), whereas subgroup 1.2.3 and 1.3 showing intramural growths require treated radical resection, as for a solid or multicystic ameloblastoma. Following enucleation, vigorous curettage of the bone should be avoided as it may implant foci of ameloblastoma more deeply into bone.

Chemical cauterization with Carnoy’s solution is also advocated for subgroups 1 and 1.2. subgroups 1.2.3 and 1.3 have a high-risk for recurrence, requiring more aggressive surgical procedures. This is because the cystic wall in these cases has islands of ameloblastoma tumor cells and there may be penetration into the surrounding cancellous bone. Late recurrence following treatment is commonly seen, the average interval for recurrence being 7 years. Recurrence is also related to histologic subtypes of UA, with those invading the fibrous wall having a rate of 35.7%, but others only 6.7%. Recurrence rates are also related to the type of initial treatment. Lau et al reported recurrence rates of 3.6% for resection, 30.5% for enucleation alone, 16% for enucleation followed by Carnoy’s solution application, and 18% by marsupialization followed by enucleation (where the lesion reduced in size).

CONCLUSION

Reconstruction of mandibular defects represents a challenge to the head and neck reconstructive surgeon. Autogenous bone grafting produce the most successful and predictable results when selected from the available reconstruction options for mandibular bone defects. At the present time, autogenous bone grafting is the gold standard by which all techniques of osseous reconstruction of the mandible must be judged and amongst the other available options is the most reliable and predictable modality to restore form and function of the missing mandibular segments. The free vascularized fibular flap has the least resorption and failure rate as proven in our study hence it should be the first choice for most cases, particularly those with anterior or large bony defects requiring multiple osteotomies.

REFERENCES