Abstract
Unicystic ameloblastoma refer to those cystic lesions that show clinical, radiographic, or gross features of a mandibular cyst, but on histologic examination they show a typical ameloblastomatous epithelium lining part of the cyst cavity, with or without luminal and/or mural tumor growth. Due to its strong likelihood of recurrence, curettage or mass excision without a safety margin is not recommended for the treatment. The goal of treatment ameloblastoma is to achieve complete excision and appropriate reconstruction. Mandibular reconstruction after resection is essential for the restoration of function and cosmesis, particularly in children. Costochondral grafts have been used for many years in reconstruction of TMJ and mandible. This is a report on unicystic ameloblastoma in a 12 year old patient treated by resection and reconstructed with costochondral graft and followed up for 3 years 9 months.

INTRODUCTION
Ameloblastoma is a true neoplasm of the odontogenic epithelium, representing about 1% of all oral ectodermal tumors and 9% of odontogenic tumors[1]. The unicystic ameloblastoma is considered a variant of the solid or multicystic ameloblastoma, accounting for 6% to 15% of all intraosseous ameloblastomas. Unicystic ameloblastoma usually occur in the younger age group and commonly involves the mandible. Unicystic ameloblastoma is a tumour with a strong propensity for recurrence, warranting complete excision[2]. The most challenging aspect in maxillofacial surgery in treating such a lesion in a growing patient is not just radical tumour resection but the reconstruction of resected portion.

Hemimandibulectomy in young patients alters and restricts the mandibular movements leading to severe cosmetic and functional deformity including speech, mastication and deglutition [3]. Immediate reconstruction in such situations permits stress-stable positioning of condylar stumps thereby retaining the soft tissue position and contour of lower part of face [4]. Among the numerous autogenous and alloplastic techniques available for reconstruction, autogenous costochondral graft have been widely accepted for use in growing children. The histologic and physiologic similarities between the condyle and rib cartilage have been well documented and the bone-cartilage junction provides a center with growth potential in children [5].

The aim of presenting this case is to report our experience with costochondral graft in reconstruction after hemimandibulectomy in an 11 year old patient with unicystic ameloblastoma.

Figure 1
Figure 1: Pre-operative lateral view

Figure 2
Figure 2: Pre-operative OPG

Figure 3
Figure 3: Pre-operative CT Scans

Figure 4
Figure 4: Intra oral exposure of tumour

Figure 5
Figure 5: Condyle exposed through pre-auricular incision
Figure 6
Figure 6: Specimen of resected tumour

Figure 7
Figure 7: Harvested costochondral graft

Figure 8
Figure 8: Graft secured to native mandible

Figure 9
Figure 9: Immediate Post-operative OPG

Figure 10
Figure 10: 3 years 9 month post-op photo

Figure 11
Figure 11: 3 years 9 month post-op photo of mouth opening

Figure 12
Figure 12: 3 years 9 month post-op OPG

CASE REPORT
An 11 year old girl reported to the Department of Oral and
maxillofacial surgery, Goa Dental College and Hospital, in
the month of September 2007 with complaint of swelling on
left side of face since one year. Clinical examination
revealed diffuse, smooth surfaced, hard swelling on left side
of face. Swelling extended from the preauricular region to
the inferior border of mandible superoinferiorly, and from
the corner of mouth to the angle of mandible
anteroposteriorly. This swelling was large, expansive, and
painless. Intra-ora\-rally, there was obliteration of buccal
vestibule in the left posterior region along with expansion of
lingual cortical plate. Clinically mandibular left second
molar was absent.

Panoramic radiograph showed a large unilocular radiolucent
area in the left side of mandible, extending from the first
molar tooth to the neck of condyle and involving the
coronoid process. There was thinning of lower border and
the lesion included the second molar. These finding were
confirmed with CT scans. Diagnosis of unicystic
ameloblastoma, Sub group1.3 was confirmed after incisional
biopsy.

Under general anesthesia the tumour was exposed buccally
and lingually through intra oral approach. Lower first
premolar was extracted and the osteotomy was performed
through the socket. Pre-auricular incision was placed to
expose the condyle and relieve its attachments. Thus tumour
was completely resected.

Considering that the patient is female, using a modified
incision, about 7.5 cm of costochondral graft was harvested
from the sixth rib and reshaped according to the defect. The
cartilage end of the graft was placed the glenoid fossa and
the distal end of the graft was secured to the native
mandible using titanium plates. Intermaxillary fixation was
maintained for four weeks. Post-operative course was
uneventful.

DISCUSSION

The unicystic ameloblastoma was first defined as such by
Robinson and Martinez in 1977. The frequency of these
tumours is reported to be between 5% and 22% of all types
of ameloblastomas. Unicystic tumors include those that have
been variously referred to as mural ameloblastomas, luminal
ameloblastomas, and ameloblastomas arising in dentigerous
cysts [when associated with unerupted tooth][6]. Lower left
second molar of our patient was unerupted.

This lesion occurs in a younger age group, with slightly
more than 50% of cases occurring in patients in the second
decade of life. The ‘dentigerous’ type occurs 8 years earlier
on average than the ‘non-dentigerous’ variant. In more than
90% of the cases [7-9], the unicystic ameloblastoma is
located in the mandible, with 77% located in the molar
ramus region [10].

Philipsen and Reichart further subgrouped unicystic
ameloblastoma based on histologic findings as [11]
Subgroup 1: Luminal UA

Subgroup 1.2: Luminal and intraluminal

Subgroup 1.2.3: Luminal, intraluminal and intramural

Subgroup 1.3: Luminal and intramural

The management protocol for unicystic ameloblastoma
based on above classification: subgroups 1 and 1.2 can be
treated by enucleation, whereas subgroups 1.2.3 and 1.3
require radical resection, as for a solid or multicystic
ameloblastoma. Subgroups 1.2.3 and 1.3 have a high risk for
recurrence, requiring more aggressive surgical procedures,
because the cystic wall in these cases has islands of
ameloblastoma tumor cells and there may be penetration into
the surrounding cancellous bone. In this case the incisional
biopsy confirmed it to be subgroup 1.3, we resected the
affected portion of mandible. Patient has been followed up
for a period of 3 years and 9 months and there is no evidence
of recurrence.

Loss of mandibular continuity deviates the mandible to the
resected side due to unopposed pull of remaining
masticatory muscles, soft tissue contracture and scar
formation [4]. This has obvious implications on function and
symmetry.

The most widely accepted autogenous technique for
mandibular reconstruction is a costochondral graft. As stated
by MacIntosh the advantages of this graft are its biological
compatibility, workability, functional adaptability, and
minimal additional detriment to the patient. The growth
potential of the costochondral graft makes it the ideal choice
in children. This advantage makes it a better graft than free
flaps when used in growing patients. Potential complications
include fracture, donor site morbidity, and the variable
growth behaviour of the graft. The growth of the
costochondral graft has been at times unpredictable [12].
Longterm follow up have shown some patients have
excessive growth of graft, while others have suboptimal or
no growth [13].

At 3 years 9 months follow up, the costochondral graft provided the articulation that permitted rotational opening without pain and without deviation, a reproducible opening of about 34mm, a stable condylar position without resorption and without migration and satisfied our patient with her facial appearance. Functionally, patient’s speech and deglutition are also satisfactory.

**CONCLUSION**

We conclude that costochondral graft re-establishes the vertical height of lower face and premorbid occlusion and allows for dynamic growth of a new condylar head.

**References**


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