

## Reconstruction in a Patient with Giant Cell Granuloma

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### Abstract

Giant Cell Granuloma is a rare benign disease. We present a case of Giant Cell Granuloma involving mandible in a 7 year old boy. Rarity of the disease, difficulty in diagnosis along with surgical treatment including reconstruction employed in this case is discussed.

*Keywords:* - Mandible, giant cell granuloma, reconstruction.

### Introduction

Giant Cell Granuloma constitutes 10% of all the benign tumors of jaw. It usually affects children and young adults in children with male preponderance. It is more commonly located in the mandible than in maxillary bone. It is often difficult to differentiate it from aneurysmal bone cyst. Reconstruction after excision of these tumors is challenging. Autograft using rib has excellent success rate both functionally as well as cosmetically.

### Case Report

A seven year old male child reported in ENT OPD of VMMC & Safdarjung hospital with a gradual increasing swelling over the right side of jaw after trauma for the past three month. He also had difficulty in opening the month and chewing the food.

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On examination the swelling extended superiorly to the right ear lobule, inferiorly at the level of hyoid bone, posteriorly to the anterior border of SCM and anteriorly to the angle of mouth. Swelling was firm in consistency, tender, temperature was not raised and was fixed to the underlying hemimandible. Skin over the swelling was normal (fig.-1). Oral cavity proper was within normal limit. The patient was admitted and Orthopantomogram was done (fig.-2), which revealed an expansile radiolucent osteolytic lesion involving body and ascending ramus of right hemi mandible. CT scan reveals unilocular cyst without any fluid filled level (fig.-3). FNAC revealed possibility of aneurysmal bone cyst. In view of the above finding a differential diagnosis of aneurysmal bone cyst and GCG was made. One stage right hemimandibulectomy and mandibular reconstruction was planned. Patient underwent right hemimandibulectomy (bony swelling with coronoid process, condyle and ramous of mandible up to mental foramen) (fig.-4).



Fig-1:- Pre-operative Photograph showing the swelling in right hemimandible



Fig-3:-CT scan showing unilocular cyst without any fluid level.

Reconstruction of the defect was done using 6th rib costal cartilage from right thoracic region of the patient by a Plastic surgeon (fig.-5). One end of the rib was fixed to the remaining stump of hemimandible by stainless steel wiring and the other end placed inside the glenoid fossa. Inter dental wiring was done for one month and during this period patient was put on Ryle's tube feeding. Histopathology examination revealed fibroblastic and giant cells in low power and high power magnification, suggestive of Giant Cell Granuloma (fig.-7 & 8). Postoperative edema and swelling subsided gradually. After removal of inter dental wiring patient was put on semi solid diet. Postoperative OPG was done after 6 months which revealed a good take up of rib graft.

Follow up of two years does not show any recurrence with an excellent functional & cosmetic result (fig.-6).

#### Discussion

GCG was first described by Jaffe (1) as a locally reparative reaction of bone possibly due to an inflammatory response, hemorrhage or local trauma. Etiology is probably due to reactive process in response to intraosseous hemorrhage following trauma. GCG is considered to be more common in the mandible than in the maxilla. The majority of cases occurs in the molar-premolar area and could extend to the ramus



Fig-2:- OPG showing expansile radiolucent osteolytic lesion involving right body and ascending ramus

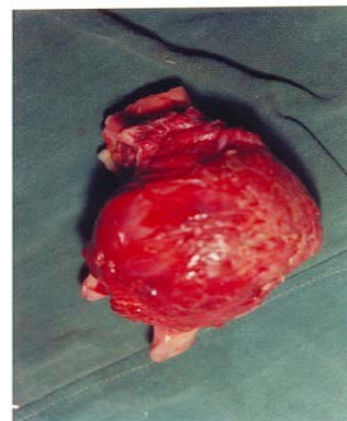


Fig 4:- Photograph of specimen

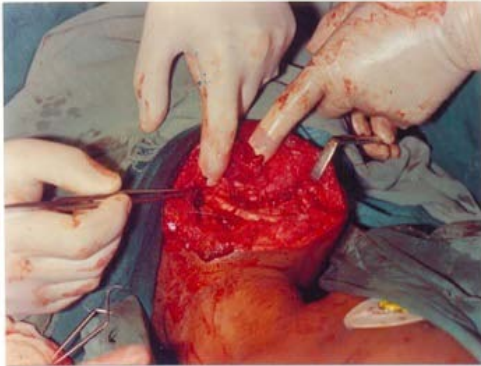


Fig-5: Per operative photograph showing rib graft

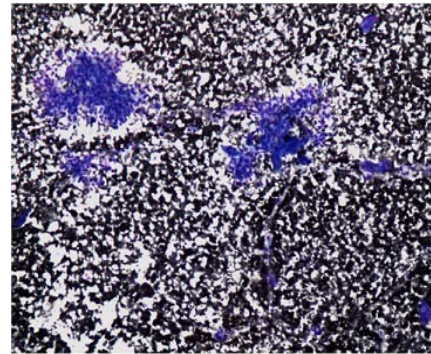


Fig-7:-HPE showing fibroblastic and giant cells in low power field

(7, 8). Involvement of the condyle is rare (3-5, 9). Some cases are asymptomatic (8); however, the most common presentation of GCRG is a painless expansible mass in the face or the oral cavity (10). Additionally,  $\geq 20\%$  patients experience pain or paresthesia (1, 6, and 11).

Other symptoms may include facial asymmetry, loosening or displacement of teeth, and pathological fractures (12). It can be of two types nonaggressive and aggressive. Aggressive type may result in extensive tissue destruction at later stage. It is difficult to differentiate it from aneurysmal bone cyst on the basis of FNAC and radiology. FNAC is

easy simple and quick method for pre-operative evolution for diagnosis. However it has its limitation in definitive diagnosis due to paucity of cells and lack of architectural context of FNA material. Though in our case FNAC shows Aneurysmal bone cyst but on CT scan, it had unerupted tooth, was unilocular and had an absence of fluid level which favors GCG.

The treatment modalities most frequently used are enucleation, curettage alone. Various modalities of surgical treatment including mandibular reconstruction technique have been employed in a child with GCG of mandible. The goals of reconstruction of a mandibular defect involving the body & ascending ramus of mandible are to achieve a stable articulation and regain continuity, as well as restoring facial form and dental occlusion. There is ongoing controversy regarding the best way to reconstruct the condyle, whether to use autogenous tissues or alloplastic materials. However, in our experience, costochondral rib graft remains the preferred method of reconstruction. It has an excellent take up along with cosmetic and functional result. This is mainly because we are able to achieve consistently good results that are shared by others also (15-17). Retrospective analysis of 38 cases of advance disease during 1970 to 2015 revealed



Fig-6: Post operative photograph showing good healing

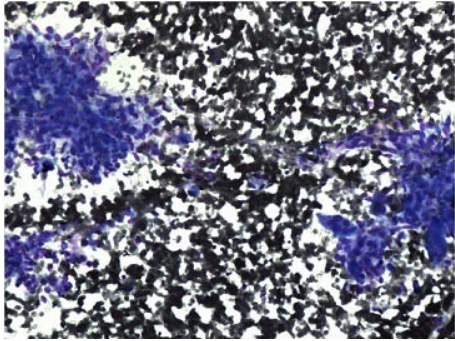


Fig-8:-HPE showing fibroblastic and giant cells in high power field

treatment by local excision and partial mandibulectomy using iliac bone graft for mandibular defect reconstruction in 9 cases with good results by Tallan EM, Olsen KD, Maccaffrey TV, Unni KK and Lund BA (3). Icon omen TG, Zuuker RM and Philips JH (1) reported mandibular reconstruction in children using the vascularised fibula in 10 consecutive patients with good results.

Wise AJ and Bridbord JW (2) performed mandibular reconstruction with split rib graft. This technique stimulated new bone formation which provided excellent contour to the angle of mandible in adult patients and also resulted in normal mandibular growth in children. Mandibular reconstruction with split rib graft which was done in our case is more promising as new bone formation provided contour to the angle of mandible and normal mandibular growth in children.

Non-surgical approach in the form of Intralesional Corticosteroids, Calcitonin, & Interferon Alfa - 2A. In order to cure or reduce the size of the lesion and thus minimize the need for extensive surgical resection that could result in functional and cosmetic defects are under trial. Radiotherapy should be avoided because of theoretical risk of long-term malignant transformation (13, 14).

Alloplastic replacement of the mandibular body & ramus has advantages of rigid stabilization and no morbidity of donor-site morbidity. However, its applications have other concerns and potential disadvantages. There is an overall 10% complication rate with metallic alloplastic condylar heads including pain, loose plate, limited jaw opening and plate exposures in irradiated patients (18). Moreover, the alloplastic metallic condylar head is very expensive and some have shown that alloplastic prosthesis is not a suitable option for temporomandibular joint reconstruction(s) (19). In our experience, costochondral rib grafts have been used for reconstruction with good success and have remained our preferred method of reconstruction following tumors resection.

### Conflict of Interests

The authors declare that there are no conflicts of Interests

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