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Reconstruction of Mandible by Free fibula Vascular Graft after Total Mandibulectomy- A Case Report

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Abstract- Reconstruction of mandible is important to provide good functionul ,and cosmetic result afterresection of the bony lesions involving large area of the mandible. The purpose of primary reconstruction is to avoid the collapse of maxillo-mandibular alignment due to scarring and fibrosis. Primary reconstruction by micro vascular bone grafting has been considered as the gold standard treatment optionl.[1,2] The patients are rehabilitated functionally to minimize the functional disturbances thus the patient's psychological aspects as well as the quality of the life also improve. However local facilities for surgery, surgical morbidities,medically compromised condition of the patient, infection, cost and various other parameters may not often permit this. In this instance, reconstruction plate plays a major role as a preliminary option which avoids all the esthetic and functional deformities and further maintains a reasonable facial contour. [3,4.]

Keywords: *mandibulectomy, odontogenickeratocyst, fibula vascular graft.*

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Dr. Chetan B I [α], Dr. Karthik B [σ], Dr. Shruthi D K [ρ] & Dr. Mithun [ω]

Abstract- Reconstruction of mandible is important to provide good functionul ,and cosmetic result afterresection of the bony lesions involving large area of the mandible. The purpose of primary reconstruction is to avoid the collapse of maxillo-mandibular alignment due to scarring and fibrosis. Primary reconstruction by micro vascular bone grafting has been considered as the gold standard treatment optionl.[1,2] The patients are rehabilitated functionally to minimize the functional disturbances thus the patient's psychological aspects as well as the quality of the life also improve. However local facilities for surgery, surgical morbidities,medically compromised condition of the patient, infection, cost and various other parameters may not often permit this. In this instance, reconstruction plate plays a major role as a preliminary option which avoids all the esthetic and functional deformities and further maintains a reasonable facial contour. [3,4.]

Spontaneous bone regeneration in young individuals after segmental resection of mandible has been sporadically reported. This case reports spontaneous regeneration of the mandible in a 25

year old Indian patient who underwent total mandibulectomy preserving the bilateral condyle and stabilized with indigenous, titanium plate for an extensive resection of Odontogenickeratocyst.

Keywords: mandibulectomy, odontogenickeratocyst, fibula vascular graft.

I. Introduction

Resection of the mandible and immediate reconstruction with autogenous bone graft are widely used in the treatment of odontogenic-keratocyst involving a large section of the mandible. The purpose of reconstruction is mainly to rehabilitate the patient esthetically by improving the contour of the mandible, thereby minimizing facial deformity from the defect. The patient is rehabilitated functionally and the occlusal disturbance is minimized.

Primary reconstruction by bone grafting is usually advocated at the time of surgery for various reasons. The access to the surgical site is optimal because there is no fibrosis of the graft bed. However, local facilities for surgery, infection, and patients' general condition may not often permit this. Extensive bone regeneration that reconstitutes 50%[5,6] or greater than 50% of the mandible[7-10] after injury involving a segment of mandible have been reported previously. There is, however, no reported case in which a whole mandible regenerates with condyles. This study presents a rare case of spontaneous regeneration of a whole mandible in a 25 year-old Indian patient who had total mandibulectomy for an extensive case of odontogenickeratocyst.

II. Report of a Case

A 25 year-old boy reported to Oral and Maxillofacial Surgery Clinic complaining of slow growing Swelling over a left Jaw on both sides. Since, 1 and half years.On general examination patient was moderately built and moderately nourished.Local Examination: There was diffused boney hard swelling extending from right side ramus of mandible to the left side ramus of mandible. Intra oraly there was expansion of cortical plate from ramus to ramus.

The swelling gave an eggshell cracking sensation non palpation.

Radiographic examination of the mandible showed multiple radiolucencies involving lower border of mandible from right ramus to left ramus .OPG reveals huge multiple radiolucencies involving lower border of mandible from right ramus to left ramus.

An incissional biopsy was done with thorough curratage of the lesion under general anaesthesia biopsy report came as odontogenickeratocyst.Patient was planned for resection and reconstruction of the complete lower Jaw which was affected.

Lesion Asymptomatic, circumscribed, radiolucent area associated with the unerupted mandibular right third molar.

a) Our differential diagnosis includes

dentigerous cyst, keratocyst, ameloblastoma, ameloblastic fibroma, odontogenic fibroma, adenomatoidodontogenic tumor, calcifying epithelial odontogenictumor,ameloblastic fibro-odontoma, and calcifying odontogenic cyst.

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This lesion turned out to be an odontogenic-keratocyst arising from the cell rests of the dental lamina. These are commonly found in the 3rd molar region of the mandible.] They can be large and destructive and may present with pain or other symptoms.

Histologically, we see a lining of parakeratinized stratified squamous epithelium. The basal cell layer of the epithelium exhibits columnar nuclei that are pallisaded or lined up like a picket fence.

Under general anesthesia with nasoend-otracheal intubation GA was induced. Incision was made from right angle of mandible to the left angle of mandible. Bone was exposed and affected part was resected and titanium reconstruction plate was inserted and fixed to the right condyle to left condyle. Wound was closed in layers. Patient recovered uneventfully. Then the tissue was sent for the biopsy and report was odontogenicKerotocyst. Patient was followed for three months for every fifteen days and regular OPG Xrays were taken to observe any recurrence of the lesion then after confirming there is no recurrence patient was taken up for another surgery and free fibula vascular graft was put. And patient recovered uneventfully. Further dental implants and complete oral rehabilitation is planned after one year.

III. Discussion

New bone formation can take place thtough the process of osteogenesisosteoinduction andOsteo-conduction[11]. Periosteum plays a very important role in new bone formation and it is important to preserve it during surgery. There are reports that suggest even irtadiatedperiosreum still has some osteogenic potential. Ruggerio and Donoff reported a case of spontaneous regeneration of the mandible after irtadiation. The case described in this study supports the important role of periosteum in spontaneous regeneration. Spontaneous regeneration of a large portion of the mandible had been reported after subtotal mandibulectomy of hemimandibulectomy. The factors favouring the new bone regeneration are age of the patients, preservation of the periosteum, absence of infection and decreased tension in the bone. Cases of spontaneous regeneration of the mandible reported in the literature are in young individuals with age range from 5 to 11[12].

It is the authors assumption that the muscle forces act along the central long axis of the condyle, so that placing the reconstrucrion plate behind the condyle gives more stability for the condyle anatomically than placing latetally. Immediate postoperarive CT Radiographs also showed that the condvles were in normal anatomical position . Furtherstudies are recommended to prove the authors assumption. It is well known that periosteum is a good source for boneformation. During resection the periosteum should be preserved if it is not involved with the lesion.

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Legends

1. Extra oral swelling on both side of mandible.
2. Orthopantomogram showing the resection of the mandible and fixing the titanium reconstruction plate
3. post operative regeneration after placement of graft

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