

Healing of jaw defects after cyst enucleation using autogenous bone graft - A case report

¹Dr. Deepak S, MDS, Reader (ICOI diplomat), Department of Oral and maxillofacial Surgery, D.A.P.M R.V Dental College and Hospital, Bangalore

²Dr. Sunil Vasudev, Professor and Head, Department of Oral and maxillofacial Surgery, D.A.P.M R.V Dental College and Hospital, Bangalore

³Dr. Maneesha Sree Rajendran, MDS, Department of Oral and maxillofacial Surgery, D.A.P.M R.V Dental College and Hospital, Bangalore.

⁴Dr. Partha Pratim Debnath, MDS, Department of Oral and maxillofacial Surgery, D.A.P.M R.V Dental College and Hospital, Bangalore

Corresponding Author: Dr. Deepak S, MDS, Reader (ICOI diplomat), Department of Oral and maxillofacial Surgery, D.A.P.M R.V Dental College and Hospital, Bangalore

Citation of this Article: Dr. Deepak S, Dr. Sunil Vasudev, Dr. Maneesha Sree Rajendran, Dr. Partha Pratim Debnath, "Healing of jaw defects after cyst enucleation using auto genes bone graft - A case report ", IJDSIR- July - 2021, Vol. – 4, Issue - 4, P. No. 412 – 416.

Copyright: © 2021, Dr. Deepak S, et al. This is an open access journal and article distributed under the terms of the creative commons attribution noncommercial License. Which allows others to remix, tweak, and build upon the work non commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

Type of Publication: Case Report

Conflicts of Interest: Nil

Abstract

Dentigerous cyst or follicular cyst is the second most common odontogenic cyst affecting the jaw bone it constitutes around 24% of all the odontogenic cysts. Dentigerous cyst can grow considerable size, and large cyst may be associated with a painless expansion of the bone in the involved area. Autogenous bone grafts are most frequently and routinely used for filling up bony defects in dentistry. As normal follicular space is 3-4 mm, a dentigerous cyst can be suspected when the space is more than 5 mm. This case report , we present a case of impacted mandibular third molar, which was associated with a large dentigerous cyst and surgical removal of tooth and inducing of new bone formation using graft

Introduction

Dentigerous cyst or follicular cyst is the second most common odontogenic cyst affecting the jaw bone it constitutes around 24% of all the odontogenic cysts.¹ Pathogenesis of this cyst seemingly develops by accumulation of fluid between the reduced enamel epithelium and the tooth crown. It is thought to be a developmental abnormality .A dentigerous cyst is most frequently found in individuals in the age group between 20 and 40 years.² Most typical dentigerous cysts are those associated with the third molar teeth of the mandible, followed by maxillary third molars, maxillary canines and premolars of both the maxillary and mandibular bones ³. Dentigerous cyst can grow considerable size, and large

cyst may be associated with a painless expansion of the bone in the involved area. Clinically, it is often asymptomatic; it is discovered as an incidental radiographic finding or when acute inflammation, infection or swelling develops. The cyst expansion may increase in osmolarity that could lead passage of desquamated epithelial cells and passage of inflammatory cells into the cystic lumen⁴. Radiographically it appears as a unilocular radiolucent area associated with the crown of an unerupted tooth with well defined border. Radiologic evaluation of these cysts is mandatory to decide the duration of compression, the enucleation time, and also for the evaluation of the adequate new bone formation. Autogenous bone grafts are most frequently and routinely used for filling up bony defects in dentistry. As normal follicular space is 3-4 mm, a dentigerous cyst can be suspected when the space is more than 5 mm. These cysts may also convert into ameloblastomas, mucoepidermoid carcinoma and squamous cell carcinoma⁵. This case report, we present a case of impacted mandibular third molar, which was associated with a large dentigerous cyst and surgical removal of tooth and inducing of new bone formation using graft

Case Report

A 35 years old male patient reported to department of oral and maxillofacial surgery with complain of pain on left side of face for 3 month. Pain is sudden in onset, continuous in character, aggravates on eating food, relieved on medication. Swelling followed by discharge (yellow fluid) noted on the left side of the face. On general examination, the patient was apparently healthy with no significant past medical history. No history of drug allergy. On extra oral examination swelling present on left side of face, facial asymmetry noted. Swelling is firm and tender on palpation. Intra oral examination revealed restricted mouth opening which was two finger

breadths. Vestibular tenderness noted with respect to 38 region and local raise in temperature present. Yellow pus discharge noted on smooth surface. Orthopantomograph (OPG) revealed presence of a large osteolytic lesion involving the left side of mandible, extending from the periapical region of 37 and 38 region involving the body, ramus was around 4cm × 4 cm in dimensions. (figure 1) The lesion was primarily unilocular, with fine wispy trabeculae present within the lesion in the body of the mandible. 38 was impacted and radiolucency involved surrounding the CEJ of 37 and 38 tooth. (figure 2)



Figure 1: Pre-operative OPG reveals unilocular radiolucency

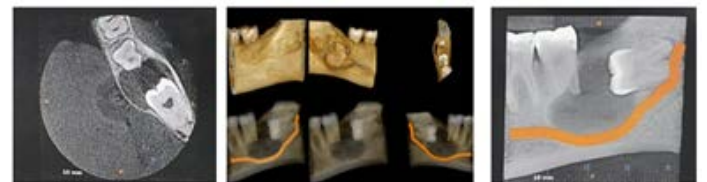


Figure 2: CBCT shows the cyst lining

General anesthesia achieved with right nasal intubation. Painting and draping done using aseptic condition. Lidocaine with 2% adrenaline administered locally on the operating site. Extended ward incision placed from medial to 36 extended posteriorly into ascending ramus. (figure 3)



Figure 3: Impacted tooth exposed

Impacted 38 encapsulated with cystic epithelium exposed. Punch made using round bur and cystic lining detached from bony wall. Guttering done surrounding the teeth under copious saline irrigation. Cyst was enucleated along with extraction of the impacted tooth. (figure 4)



Figure 4: Cyst removed in toto

The specimen was sent for a Histopathologic examination. (Figure 5)



Figure 5: Histopathologic specimen

Defect packed with calcium phosphate graft to induce new bone formation. Histological examination which showed a thin, fibrous wall lined by two to three layers of flat epithelial cells resembling reduced enamel epithelium.

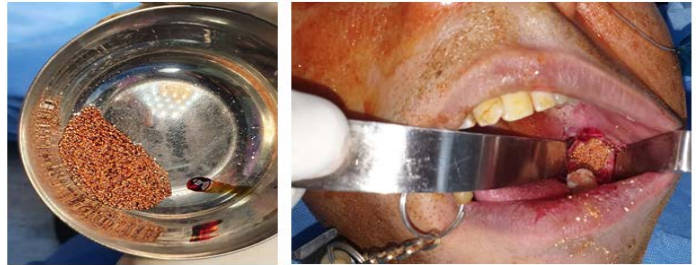


Figure 6: Defect filled with sybograft

The connective tissue showed slight inflammatory infiltrate. After correlating the clinical, radiographic and histopathologic features, a final diagnosis of dentigerous cyst was made. Follow up done after 1 week, 4 week, 8 week to recurrence of the lesion and to know the status of new bone formation using graft



Figure 7: Post operative healing



Figure 8: Post operative opg reveals new bone formation

Discussion

A dentigerous cyst common developmental odontogenic cysts seen, it has benign, noninvasive, and nonaggressive characteristics are noted. It develops as fluid accumulated between the crown of unerupted teeth and the epithelium of the follicle (ie, in the follicular space). Although the dentigerous cyst is asymptomatic, it can be expanded asymptotically, which displaces or absorbs the surrounding anatomic structures such as the adjacent teeth or bone. Cystic lesion associated with impacted third molar due to pressure exertion by the lesion can result in "hollowing-out" of the entire ramus. The same reaction is associated with displacement of the impacted third molars to such an extent that they sometime come to lie compressed against the inferior border of mandible. Dentigerous cyst can be defined as the cyst that encloses the crown of an unerupted tooth, expands the follicle and is attached to the cemento-enamel junction of the unerupted tooth. Although the dentigerous cysts account for more than 24% of the jaw cysts, the incidence rate of dentigerous cyst involving the permanent ramus is just 1.5%. Odontogenic keratocyst, adenomatoid odontogenic tumor, and ameloblastic fibroma can mimic a dentigerous cyst. A suspicion of other lesions can arise when the follicular space is larger than 5 mm in diameter. However, a positive aspirate ruled out the possibility of a tumour in the present case. Furthermore, displacement of the teeth is relatively common. Many dentigerous cysts reach great dimensions before being diagnosed. Also, displacement of the teeth is relatively common. Provisional diagnosis in this case was possible based on the history, and clinical and radiographic examination. Various studies have shown predictable spontaneous bone regeneration in young patients after enucleation of such large cysts. Many authors believe that bone grafting in young patients should be considered carefully. Marsupialization is recommended

for a large cyst when single draining might not be effective⁶. Scolozzi et al suggested enucleation followed by an immediate bone grafting procedure for large cyst area⁷. In the present cases, surgical removal of the impacted tooth and enucleation with using bone grafting were performed. Autogenous bone grafts are most frequently and routinely used for filling up bony defects in dentistry. However, autogenous bone grafts are always associated with various adverse factors including donor site morbidity and limited availability etc. The Xenografts, although are available in abundance, there exists a risk of viral transmission, varied fusion and healing rates and other social factors. Advantage of synthetic bone grafts are consistency, particular size, porosity and strength, readily available in sterile form, it remove the use of donor site morbidity and transmission of microorganism, accepted socially therefore preferred by surgeons

The present case also demonstrates the success of a multidisciplinary approach to treating a large cyst, as well as augmenting new bone formation with an autogenous bone graft for the placement of an implant to achieve oral rehabilitation. We strongly agree with the tenet and further believe that watertight primary closures followed by unstressed jaw movements are crucial for uneventful bone regeneration after enucleation therapy. In our case, there was an intact lower basal bone, which favored the enucleation therapy. Postoperative maintenance using liquid diet adequate most opening and closing exercise, subsequently contributed equally for the success of this therapy. However, this type of cases demands a long-term follow-up to monitor for any recurrence and see the new bone formation are essential

Conclusion

In our case, we have revealed the gradual improvement of jaw bone cyst enclosing an impacted third molar. We

present a success treatment autogenous graft In covering the defect .To conclude it must always be kept in mind that radiographic findings are not diagnostic for a dentigerous cyst, however because odontogenic keratocyst, unilocular ameloblastomas and many other odontogenic and non odontogenic tumours may have radiographic features that are similar. Histopathological examination is an important tool in diagnosis and treatment planning. The choice of treatment depends on many factors such as age of the patient size, site, and disfigurement and not to rule out social commitments and psychological aspects.

Reference

1. Shah A, Gill DS, Tredwin C, et al. Diagnosis and management of supernumerary teeth. Dent Update. 2008;35:519–520.
2. Ochsenius G, Escobar E, Godoy L, et al. Odontogenic cysts: analysis of 2,944 cases in Chile. Med Oral Patol Oral Cir Bucal. 2007;12:85–91.
3. Lustmann J, Bodner L. Dentigerous cysts associated with supernumerary teeth. Int J Oral Maxillofac Surg. 1988;17:100–102
4. Meara JG, Brown MT, Caradonna D, Varvares MA. Massive, destructive, dentigerous cyst: A case report. Otolaryngol Head Neck Surg 1996;115:141-4.
5. Gulbranson SH, Wolfrey JD, Raines JM, McNally BP. Squamous cell carcinoma arising in a dentigerous cyst in a 16-month-old girl. Otolaryngol Head Neck Surg 2002;127:463-4.
6. Giancotti A, Grazzini F, De Dominicis F, et al. Multidisciplinary evaluation and clinical management of mesiodens. J Clin Pediatr Dent. 2002;26:233–237.
7. Ziccardi VB, Eggleston TI, Schneider RE. Using fenestration technique to treat a large dentigerous cyst. J Am Dent Assoc 1997;128:201-5.
8. Marwah N, Bishen KA, Prabha V, Goenka P. A conservative approach in the management of inflammatory dentigerous cyst in transitional dentition: a case report. J Mass Dent Soc 2012;61:18-21.
9. Bozdogan E, Cankaya B, Gencay K, Aktoren O. Conservative management of a large dentigerous cyst in a 6-year-old girl: a case report. J Dent Child (Chic) 2011;78:163-7.
10. Gulbranson SH, Wolfrey JD, Raines JM, McNally BP. Squamous cell carcinoma arising in a dentigerous cyst in a 16-month-old girl. Otolaryngol Head Neck Surg 2002;127:463-4.
11. Scolozzi P, Lombardi T, Richter M. Upper lip swelling caused by a large dentigerous cyst. Eur Arch Otorhinolaryngol. 2005; 262: 246-249. [PubMed] [Google Scholar]
12. Ustuner E, Fitoz S, Atasoy C, Erden I, Akyar S. Bilateral maxillary dentigerous cysts: a case report. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2003;95:632-5