

A rare incidence and management of complex odontoma and surgical dehiscence in maxillary anterior region: A case report

ABSTRACT

Odontoma is a benign odontogenic tumour, which is rather considered hamartoma. Hamartoma is not a true neoplasm, rather a growth of abnormal mixture of cells found in the body area they normally grows. Fully developed odontomas generally consist of enamel, dentin and pulpal tissues, in an unorganised manner. Some of them may contain cementum too. These are further grouped into compound and complex, depending on their clinical, radiographic and histologic features. Odontomas are generally asymptomatic and slow growing, but may cause bone expansion and hinderance in tooth eruption. These lesions are generally diagnosed by coincidence in radiograph. We are presenting a case and surgical management of complex odontoma and post-operative dehiscence in the anterior right maxillary region of a 38-year-old male.

Keywords: Dehiscence, odontogenic tumour, synthetic grafts

INTRODUCTION

Odontomas are the most common odontogenic tumour constituting 22% of all odontogenic tumours.^[1] It is a benign common hamartomatous lesion characterised by their slow growth pattern. The term odontoma was coined by Broca in 1866.^[2] Later, WHO defined it as a malformation where all the dental tissues (enamel, dentin, pulp and sometimes cementum) are seen, but in a disorganised fashion.^[3]

Odontomas are formed by overgrowth of both epithelial and mesenchymal components, resulting in complete differentiation of ameloblasts and odontoblasts. These cells lay down enamel, dentin and pulpal tissues in an abnormal pattern, because the cells fail to reach the normal state of morpho-differentiation.^[4] Odontomas are commonly seen in second and third decades of life.

Compound odontoma generally consists of multiple, small tooth-like structures, while complex type consists of irregularly arranged mass of enamel and dentin. This conglomerated mass shows no resemblance to the tooth

structure. Compound odontoma is twice as common as complex odontoma. Complex odontoma is commonly seen in posterior mandible region. Conversely in our case, it is present in anterior maxilla.^[5] The lesion shows predilection of affecting right side of the jaws,^[6] as seen in the case. The incidence of complex odontoma is 5-30%, but it is extremely rare in anterior maxilla.^[7] Complex odontoma is slow growing and asymptomatic, diagnosed by chance in routine radiography, and is managed by surgical excision.^[8]

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CASE REPORT

A 38-year-old male reported to the out-patient Department of Conservative Dentistry and Endodontics, with a chief complaint of pus discharge from gums in relation to upper right front teeth since 2 months. Dental history revealed that patient had root canal treatment of tooth #11 and #12 10 years back. Patient underwent retreatment for the same reason 3 years ago. Now, he again presented with same problem. Patient gave no history of pain in relation to #11, #12 but experienced intermittent sour taste in mouth.

On clinical examination, sinus opening was seen in gingival sulcus wrt #11 and #12 and during probing, hard base was felt wrt sinus opening [Figure 1(a)]. Oral hygiene was poor.

On radiographic examination, irregular radiolucency with areas of radiopacity was observed in right anterior maxillary region. Root canal treatment of #11, #12 and #13 was observed, with over-obturation in #12 and root resorption in #11 [Figure 1(b)]. Patient was advised for CBCT which revealed multiple irregular calcified structures which coalesced to form hyperdense lesion with radiolucent rim. Lesion measured $15.6 \times 8.5 \times 12.7$ mm (TRXAPXCC) in greatest diameters with cortical bone erosion, giving PAI score of 5D [Figure 1(c)]. Differential diagnosis of Calcifying Epithelial Odontogenic Tumour (CEOT), Adenomatoid Odontogenic Tumour (AOT) and odontoma was made.

Treatment plan of surgical excision of odontoma under local anaesthesia with root end resection of #12 and root perforation repair of #11 using biodentine was planned. Entire procedure was explained to the patient, and informed consent was obtained.

On next appointment, oral and surrounding tissues were prepared using betadine and local anaesthesia (2% lignocaine with 1:80,000 adrenaline) was administered. A full thickness trapezoidal mucoperiosteal flap extending between #13 and #21 was elevated using periosteal elevator [Figure 2(a)]. Entire lesion along with the capsule was curetted. The capsule and calcified nodules were preserved in 1.5% formalin for further histopathological examination. The cavity was thoroughly irrigated using normal saline [Figure 2(b)]. Apicoectomy was performed in #12, and end cavity was restored using biodentine [Figure 2(c, d)]. The resorbed root of #11 was restored using biodentine [Figure 2(e)]. Hydroxyapatite granules (GGG1, Surgiwear) were mixed with iPRF forming a fibrin bone graft (sticky Bone) [Figure 2(f)]. The flap was repositioned and sutured using 3-0 silk suture [Figure 2(g)]. Post-operative IOPA was taken to evaluate treatment performed [Figure 2(h)]. The capsule and

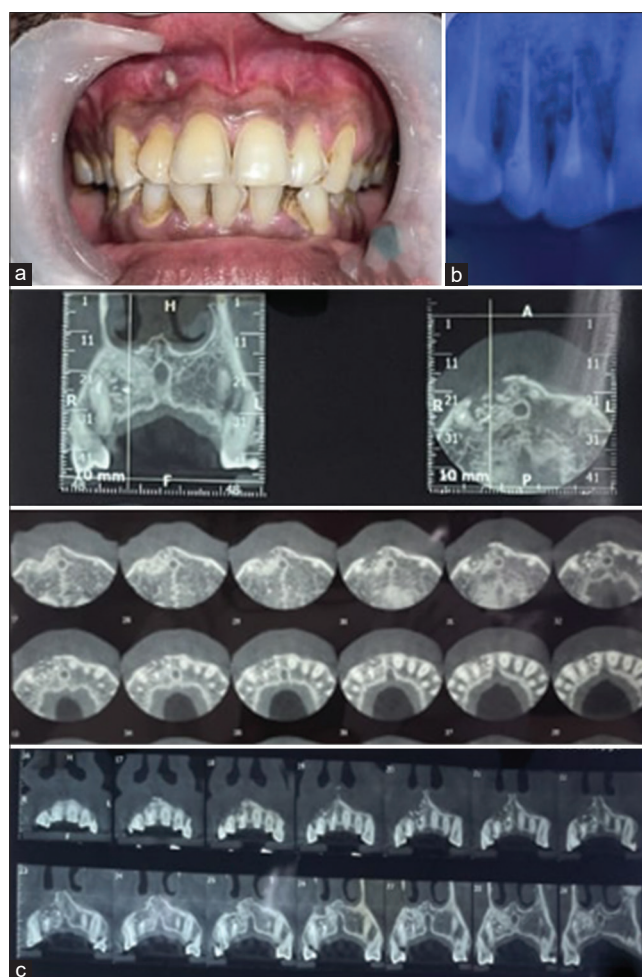


Figure 1: (a) Preoperative Clinical image showing sinus opening, (b) Pre-operative IOPA with mixed radiolucency and radiodensities, (c) CBCT showing full extent of the lesion

calcified structures removed from the lesion were preserved in 10% formalin and sent for histopathology [Figure 2(i)]. Histologic examination revealed the presence of conglomerate of mature tubular dentine [Figure 2(j)]. The dentin enclosed hollow circular structures that resembled enamel. Thin layer of cementum was also seen at the periphery of the mass [Figure 2(k)]. The presenting features confirmed the diagnosis of complex odontoma.

After 1 week, patient reported with dehiscence of the surgical site [Figure 3(a)]. Second surgery with removal of graft material and suture revision was done. Again, after 1 week, patient developed dehiscence at the surgical site [Figure 3(b)]. Treatment plan for surgical site curettage and healing using secondary intention was planned. Patient's prognostic score was calculated based on early wound healing score (EHS).^[9] Accordingly, a score of 0, 3 or 6 points was possible for the assessment of CSR (clinical signs of re-epithelialisation), whereas scores of 0, 1 or 2 points were possible for CSH (clinical signs of haemostasias) and CSI (clinical signs of inflammation). Higher values indicated

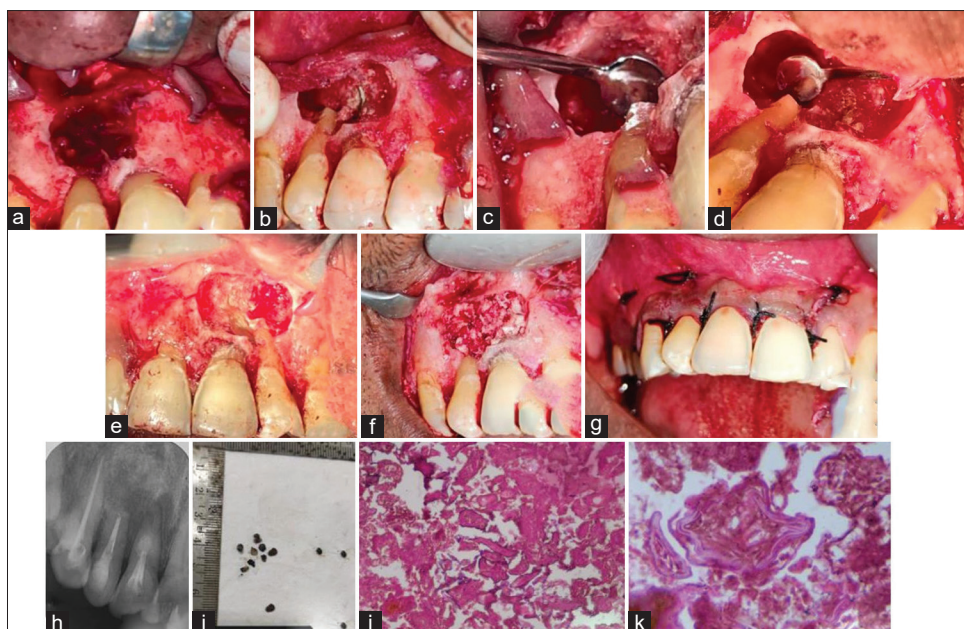


Figure 2: (a) Trapezoidal flap elevated, (b) granulation tissue removal done, (c) Apicoectomy done and root end preparation completed using diamond ultrasonic tips (Woodpecker,) wrt #12, (d) end cavity restored using Biodentine wrt#12, (e) Root perforation repaired using Biodentine#11, (f) Bony cavity filled with sticky bone, (g) Flap repositioned and sutured using 4-0 silk suture, (h) post-Operative IOPA, (i) calcified structures removed from the lesion, (j, k) Histopathology of calcified structures



Figure 3: (a) Dehiscence after surgery, (b) Dehiscence after second surgery, (c) Iodoform dressing for healing by 2^o Intension, (d) 3 months post-operative healing, (e) 6 months post-operative, (f) 9 months post-operative clinical, (g) 9 months post-operative IOPA, (h) 12 months post-operative clinical, (i) 12 month post-operative IOPA

better healing. Accordingly, the score for ideal early wound healing was 10.^[9]

Patient was given iodoform dressing for 4 weeks in every 2-day interval [Figure 3(c)]. Patient showed signs of healing after 3 and 6 months [Figure 3(d), (e)]. After 9 months, complete healing was observed [Figure 3(f),(g)]. Patient was

recalled at 12 months, which showed excellent healing with no signs of recurrence [Figure 3(h), (i)].

DISCUSSION

Complex odontoma is hamartomatous lesion with disorganised maturation of dental tissues. The aetiology is

still controversial, but presumed to be caused by trauma, infection, genetic predisposition or hereditary such as Gardner syndrome and Hermann syndrome.^[4] Ten-year long-standing infection at the site may be the trigger for formation of the lesion in our case.

Radiographically, complex odontoma is characterised by irregular radiopaque mass with varying degree of calcification. In the first stage, lesion appears as radiolucent due to lack of calcification; intermediate stage presents with partial calcification and complete calcification occurs at final stage. Entire lesion is surrounded by a radiolucent halo.^[7] In our case, lesion was identified at intermediate stage with partial areas of calcifications.

Odontomas are generally well capsulated lesions with low chances of recurrence, thus can be managed using conservative surgical excision. Histologically, odontoma contains varying amount of dental tissues all arranged in an unorganised fashion. The capsule generally has histology similar to connective tissue.^[4] In our case too, layers of dentin, enamel and cementum were observed encapsulated in connective tissue capsule.

In our case, due to complete erosion of the buccal cortical plate, grafting was employed to replace the lost bone structures and accelerate hard and soft tissue healing. Bone grafts present with osteo-conductive and osteo-inductive properties that help in bone regeneration. As the bone grows, entire graft material is replaced completely.^[10]

Among available graft options, autologous bone graft is the gold standard with rapid and excellent bone growth. But it is difficult to obtain due to involvement of secondary donor sight, cost and expensive materials required. We used synthetic graft (Hydroxyapatite), which has been widely tested for bone regeneration. These grafts possess low immunogenicity, osteo-conductivity, bone bonding and similarity with mineralised tissues. Hydroxyapatite granules when combined with fibrin growth factors tend to increase osteoblastic activity.^[9,10] However, in many cases, synthetic bone graft had shown failure after the procedure or during the healing process. Many reasons are cited in the literature, involving infection of bone by using contaminated instruments, inappropriate material for graft, patient health conditions and oral hygiene.^[11] As seen in our case, dehiscence was seen due to graft rejection, which may be due to poor oral hygiene of patient or accidental use of unsterilised instruments. The lesion was well treated using

healing by secondary intention. 6-, 9- and 12-month recall showed excellent healing without any sign of recurrence.

CONCLUSION

Complex odontoma is the most common odontogenic tumour, which can be easily managed by conservative surgical excision. Synthetic bone grafts aid in complete soft and hard tissue healing, but care must be taken in case selection and using sterilised instruments. An extra oral-hygiene precaution must be employed post-operatively when using such grafts.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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