CASE REPORT

A case of impacted central incisor due to dentigerous cyst associated with impacted compound odontome

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SUMMARY

Odontomes are hamartomatous growths of odontogenic origin. Odontomes usually do not erupt into oral cavity and can cause several difficulties like swelling, displacement of teeth and adjacent structures, cystic changes and carcinomatous transformation. Odontomes are treated by surgical removal. Dentigerous cysts arise due to accumulation of fluid between reduced enamel epithelium and crown of unerupted tooth. Dentigerous cysts cause several difficulties such as swelling, non-eruption of involved teeth and displacement of adjacent teeth, thus requiring early detection and prompt treatment. Treatment for dentigerous cyst ranges from marsupialisation to enucleation. In children, marsupialisation is more commonly used when compared with enucleation treatment. This study discusses successful treatment of impacted central incisor due to obstruction from dentigerous cyst originating from impacted compound odontome. The paper also throws light into importance to radiography while diagnosing odontome.

BACKGROUND

Odontoma is a hamartoma of odontogenic origin. Odontomes are usually linked with an unerupted tooth.¹ In 2011 66% of odontogenic tumours are odontomas (University of Louisville School of Dentistry).² Two kinds of odontomes are recognisable, namely—compound and complex.³ Compound odontoma is distinguished by the presence of three separate dental tissues (enamel, dentin and cementum), while complex type has unrecognisable dental hard tissues. Radiographically, they are seen as radio-opaque masses of varying densities. The presence of odontomes is sometimes associated with several difficulties such as swelling, displacement of erupting teeth and cystic and carcinomatous transformation. Treatment for compound and complex odontoma is surgical removal. Dentigerous cysts arise due to accumulation of fluid between reduced enamel epithelium and crown of unerupted tooth.⁴ Dentigerous cysts cause a variety of problems such as swelling due to bone expansion, impaction of involved teeth, displacement of adjacent teeth and structure, and are sometimes associated with carcinomatous transformation.^{4 5} This study discusses successful treatment of dentigerous cyst associated with odontoma.

CASE PRESENTATION

An 11-year-old girl reported with a symptom of swelling in right upper jaw. Swelling was noticed 1 month previously which gradually grew in size prompting the parents to seek treatment. Intraoral findings revealed dental age corresponding to 11 years of age. On examination of the area of interest, a large swelling was evident in the anterior maxilla and palatal region extending from midline to right maxillary lateral incisor measuring approximately 1.5×1.5 cm (figure 1). Bimanual palpation revealed swelling that was hard in consistency with egg crackling in the labial region. Swelling had caused expansion of both buccal and palatal cortices. Borders were indistinct. Tooth 11 was missing and tooth 12 (Federation Dentaire Internationale notation) was displaced distally. A provisional diagnosis of impacted tooth 11 was ascertained. Intra oral peri apical (IOPA) and orthopantomographic (OPG) views were advised (figures 2 and 3).

INVESTIGATIONS

IOPA findings included the presence of large unilocular radiolucency extending from midline to tooth 12 surrounding impacted tooth 11, and importantly the presence of unusual well-defined radio-opacity in the mid-portion of tooth 11 was seen. OPG confirmed IOPA findings but failed to add further information. To identify more regarding pathology, an anterior occlusal view was prescribed (figure 4); which showed the presence of impacted tooth 11 with associated expansion of follicular space and also there was the presence of radio-opaque mass resembling talon's cusp/odontoma in its palatal aspect. A radiographic diagnosis of dentigerous cyst associated with impacted

Figure 1 Preoperative view.

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Figure 2 Intraoral peri apical view.

central incisor possessing talon's cusp given. To ascertain type of cyst, cystic fluid aspiration was performed which revealed straw coloured fluid. Laboratory analysis of fluid demonstrated protein content similar to dentigerous cyst and high amount of inflammatory cells. Hence, a confirmatory diagnosis of dentigerous cyst was considered.

PROVISIONAL DIAGNOSIS

Dentigerous cyst of impacted tooth 11.

DIFFERENTIAL DIAGNOSIS

Dentigerous cyst of impacted tooth 11 with talon's cusp.

TREATMENT RENDERED

Marsupialisation treatment was planned. A mucoperiosteal flap was raised. Careful dissection was performed while elevating the flap to keep the cystic wall intact (figure 5). The underlying bone and cystic wall were exposed. More bone removal was performed by the postage-stamp method to expose the cyst entirely and prevent damage to tooth 11. Cystic wall was removed and

Figure 3 Orthopantomographic view.

Figure 4 Anterior maxillary occlusal view.

stored for histological examination. After removal of cystic wall and further surgical exploration, unexpectedly odontome was clinically visible on the lingual aspect of tooth 11. Surprisingly the cyst wall was attached to cervical region of odontome and not associated with impacted tooth 11 as believed earlier. The cyst associated with odontome had enlarged to an extent that it surrounded tooth 11 and appeared as cystic involvement of central incisor. Consequently, clinical presentation and differential diagnosis differed from our radiographic diagnosis of central incisor with talon's cusp. Odontoma was extracted along with its remnant cystic lining (figures 6 and 7). Further bone removal was performed in areas to allow proper path of eruption of impacted tooth 11. The flap was sutured to its proper position (figure 8). Radiographs were taken postoperatively to check for eruption of tooth 11 (figure 9). Follow-up radiographs revealed continued eruption of impacted tooth. The patient is under follow-up and will be treated for proper positioning of tooth 11 and other malocclusion.

OUTCOME AND FOLLOW-UP

The patient was followed up regularly for the next 3 months and showed an uneventful healing. Cystic content was sent for histopathological examination to confirm the diagnosis and rule out any malignant changes.⁶ Histopathology report confirmed dentigerous cyst (figure 10). Histopathology of odontome is shown in (figure 11).

Figure 5 Mucoperiosteal flap.

Figure 6 Removal of bony wall and cystic cavity.

Histopathology

The cystic lining showed the presence of 3–4 cell layers thick, stratified squamous non-keratinised epithelium, few islands of parakeratin that is characteristic of dentigerous cyst. Cyst wall

Figure 7 Odontome, bone and tissue specimens.

Figure 8 Suture placed.

Figure 9 Postoperative view.

contained few polymorphonuclear cells and few cholesterol clefts.

The histological examination of odontomas showed the presence of enamel matrix, dentin, pulp tissue and cementum.

DISCUSSION

Odontomas and cysts are commonly diagnosed during first and second decade of life (mixed dentition period). In general odontomas are asymptomatic, and are diagnosed on routine radiographs because of their non-aggressive behaviour.⁷ However, sometimes the presence of odontomas and cysts are associated with several difficulties such as swelling, displacement of erupting teeth and cystic and carcinomatous transformation.⁸ Because of the ensuing problems, odontomes and cysts require early detection and prompt treatment. Treatment for odontomes includes surgical removal if it causes any pathology.⁹ Treatment for dentigerous cyst ranges from marsupialisation to enucleation. In children, marsupialisation is more commonly used when compared with enucleation treatment because they are surgically less invasive and preserve the successor teeth.¹⁰ Other important factors that favour for marsupialisation are as

Figure 10 Histopathology of lesion; The cystic lining showed presence of 3–4 cell layer thick, stratified squamous non-keratinised epithelium, few islands of parakeratin which is characteristic of dentigerous cyst.

Figure 11 Histological examination of odontomas showed the presence of enamel matrix, dentin, pulp tissue and cementum.

follows: (1) young age, (2) psychology to undergo surgery, (3) stage and position of tooth development, (4) position of tooth, (5) eruption potential and (6) space availability.^{10 11} Importantly, treatment in children should be performed with the aim of saving developing successor teeth without sacrificing the successor teeth.

In the present case, there was the presence of dentigerous cyst associated with unerupted odontomes causing impaction of tooth 11. The odontome causing obstruction to permanent tooth was surgically excised along with associated cyst and bone guttering was performed to allow unimpeded eruption pathway. Search of literature did not reveal a similar case of impacted odontome bearing a dentigerous cyst and causing impaction of permanent teeth. This case was also unique because of difference in radiographic and clinical presentation. In diagnostic radiographs—(1) the odontome's radio-opacity and position was overseen as talon's cusp of central incisor and (2) dentigerous cyst of odontome was diagnosed as dentigerous cyst involving central incisor radiologically; confirmation of which was only possible after surgical exploration. This study throws light on the importance of radiography while diagnosing odontome. There is more need for ardent radiographic examination while treating such cases. The differential diagnosis of impacted central incisor due to dentigerous cyst associated with impacted compound odontome would not have been possible unless a surgical exploration would have been performed. This shows the disadvantage of using radiography as sole investigation to diagnose the lesion initially.

Learning points

- ▶ Odontomes overlying central incisors can mimic talon's cusp radiologically.
- ▶ For dentigerous cysts in children, treatment should not be empirical but based on various factors like—age of patient, size of lesion, ability of teeth to erupt into oral cavity, displacement and resorption of adjacent tissues and malignant potential.
- ▶ Prevention: Timely radiographs should be practised in children during developmental stages to detect any abnormalities such as odontomes and dentigerous cysts.

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