

Case Report Article

Impacted tooth associated with dentigerous cyst and compound odontoma – case report

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Abstract

Introduction: The dentigerous cyst is a benign cyst associated with the development of odontogenic epithelium that covers the crown of impacted teeth. These are prevalent in the first three decades of life, reaching more often Caucasian males. Odontomas are hamartomas affecting the dental tissues, which can be divided into compound and complex odontoma. Odontoma affects children and young adults of both sexes, with a predilection for jaw bone. **Case report:** A 12-year-old boy attended the Pediatric Dentistry Clinic of Positivo University, complaining of pain in right parasymphysis region. The panoramic radiograph showed an impacted tooth (#43) located in base of the jaw below the apex of the teeth #31 to #42, with increased follicle. A radiopaque mass with small fragments of approximately 1 cm, located at the apex of the teeth #83 and #84 was seen. The patient underwent surgery under general anesthesia to remove the impacted tooth and radiopaque injury. Histopathological analysis of the dental follicle was compatible with dentigerous cyst and dental fragments were diagnosed as compound odontoma. The postoperative was uneventful, four months after the surgery the patient began orthodontic treatment for traction of tooth #44. **Conclusion:** Both lesions, dentigerous cyst and compound odontoma have favorable prognosis and low recurrence rate, but must be removed to maintain the integrity of the stomatognathic system. In this case was important the inter-relationship between dental specialties for the treatment of the patient.

Introduction

Odontomas and dentigerous cysts are common lesions with known growth pattern [18]. Cysts are pathological cavities, enclosed by the epithelium, which may contain liquid, solid or semi-solid material. Cysts are chronic, asymptomatic, slow-growing lesions. In most cases, they are detected in routine radiographic examination [7]. The dentigerous cyst is a benign odontogenic developmental cyst and originates from the accumulation of fluid between the enamel organ and the underlying dental crown, usually located in impacted, unerupted teeth or teeth with late eruption [11]. The dentigerous cyst is the most common odontogenic developmental cyst and represents about 20% of all cysts surrounded by epithelium that affects the maxillary bones [12]. The presence of dentigerous appears with a frequency of 1.44 in 100 unerupted teeth [14]. The most affected teeth are the mandibular third molars, maxillary canines, and mandibular premolars [24]. Impacted canines, when associated with dentigerous cyst during its eruption path suffer displacement and may cause root resorption of adjacent teeth [22]. The incisors are in 12% of cases affected by root resorption caused by the included canine associated with dentigerous cyst [25].

Odontomas are common odontogenic tumors, considered developmental abnormalities, hamartomas composed of epithelial and mesenchymal tissue when fully formed, they are presented primarily as enamel and dentin, with a minor amount of pulp and cementum [5]. The World Health Organization (WHO) classified into two main types: complex and compound. The compound odontomas arise from an excessive proliferation of the dental lamina forming structures similar to denticles [10]. The most accepted etiology relates to trauma, infection, or pressure on the site of formation, causing changes of tooth development [8]. They are discovered in routine radiographs because they are asymptomatic. The treatment is the total surgical excision with a favorable prognosis, having a good bone repair, and rare cases of recurrence [21].

This study aimed to report a case of occurrence of dentigerous cyst and composed odontoma, emphasizing the treatment performed and the importance of the interrelationship among dental specialties.

Case report

A 12-year-old boy was referred by a practice private dentist to the Pediatric Dentistry Clinics of the Positivo University, with a panoramic radiograph and chief complaint of pain in the right mandibular parasymphysis area. At the physical examination, we observed a discreet volume augmentation in the labial area of teeth #42, #83, and #84. The gingiva was sound, plain, and shiny with color similar to that of the adjacent oral mucosa (figure 1). The teeth had good general health. The panoramic radiographic revealed an impacted tooth (#43) located at the mandible's base below the apexes of the teeth #31 to #42, with increasing of the dental follicle. A radiopaque mass with small fragments of approximately 1 cm, located at the apex of the teeth #83 and #84 was seen. The tooth #44 was impacted and displaced towards the apex of #45 (figure 2).



Figure 1 - Intraoral aspect of the mucosa covering the alveolar edge. Note the discreet volume augmentation of the labial area of teeth #42, #83, and #84



Figure 2 - Initial panoramic radiograph shows the impacted tooth #43 at the mandible's base, impacted tooth #44 displaced towards the apex of tooth #45. The compound odontoma at the area of teeth #83 and #84

All pre-surgical tests were within the normality. The boy was submitted to the surgery under general anesthesia to remove the impacted tooth and the radiopaque lesion. For this purpose, intrasulcular and oblique incisions from tooth #33 to #46, followed by mucoperiosteal displacement (figures 3 and 4) and osteotomy on the area to locate the crown of the tooth #43 (figure 5). The impacted tooth #43 was extracted followed by curettage and enucleation (figures 6 and 7). At the area of compound odontoma, the surgical access was through the labial bone cortical, from teeth #42 to #45 (figure 8), followed by the removal of the tooth fragments (figure 9).



Figure 5 - Surgical access to the impacted tooth and cystic lesion



Figure 3 - Intrasulcular incision and mucoperiosteal flap displacement to access the labial bone cortical



Figure 6 - Extraction of the impacted tooth #43



Figure 4 - Exposure of the crown of tooth #43 and the bone bulging of the labial area of the compound odontoma area



Figure 7 - Curettage and cystic enucleation of the impacted tooth #43



Figure 8 - Surgical access of the labial bone cortical from teeth #42 and #45, the area of the compound odontoma



Figure 9 - Removal of the tooth fragments

Then, the site was curetted (figure 10), and the flap was repositioned and sutured (figure 11). The material removed by curettage was sent to histopathological analysis (figure 12). The result was compatible with dentigerous cyst and the tooth fragments with compound odontoma. The four-month post-operative period was uneventful (figures 13 and 14). Ten months after the surgery, the child started the orthodontic treatment for traction of tooth #44 (figures 15 and 16).

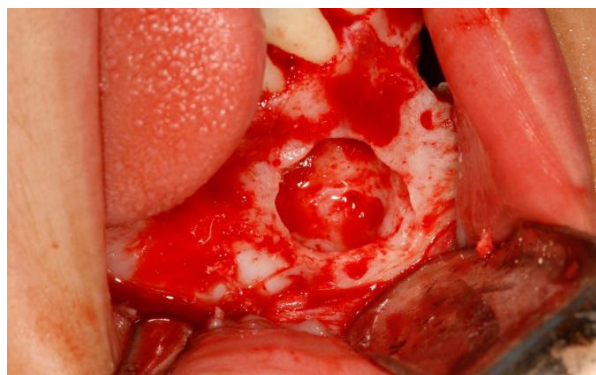


Figure 10 - Final aspect of the cavity after the removal of the denticles and the lesion curettage



Figure 11 - Flap repositioning and suture



Figure 12 - Tooth fragments and teeth #43, #83, and #84 removed through the surgical procedure



Figure 13 - 4-month post-operative panoramic radiographic



Figure 14 - 4-month post-surgical intraoral aspect

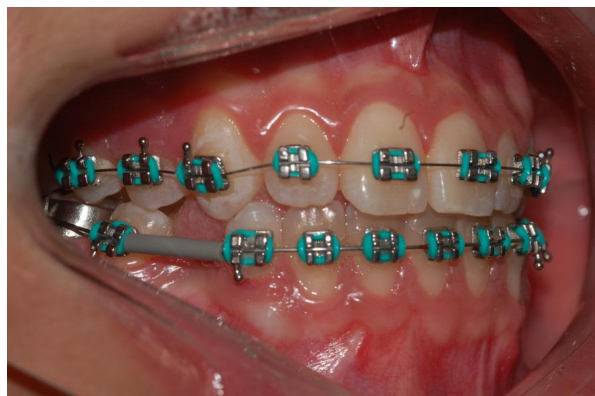


Figure 15 – Installation of orthodontic appliance



Figure 16 – Lingual arch for space maintenance

Discussion

Delays in tooth eruption may be related to the presence of local or systemic changes. Local changes are lack of space in the arch, presence of supernumerary teeth, cysts, tumors [27]. The systemic changes are associated with craniofacial syndromes, hereditary factors, and endocrine disorders [11]. According to this case report, the teeth #44 and #43 were delayed in eruption, because of prolonged retention of teeth #83 and #84 because they were affected by tumor lesion, compound odontoma and the tooth #43 engaged in a dentigerous cyst.

Both injuries affect the mandibular symphysis region, but not associated, with each one located in different anatomic regions, only close to each other, which is rarely described in the literature. When such injuries occur in the same anatomical space, they are called mixed lesions, as described by Costa *et al.* [5]. The literature explains the development of mixed injuries. Some authors advocate the genetic mutation theory [2], the ability of the odontogenic epithelium undergoes morphological and histological

differences for the formation of a mixed injury [3]. Others defend the thesis of the secondary development of injury from a pre-existing lesion [1]. In a classic study of literature evaluated 351 cases of odontomas: 27.6% of cases were involved with dentigerous [9].

The dentigerous cysts and odontomas are lesions with clinical and radiographic features widely described in the literature [6]. Due to present asymptomatic evolution, these injuries are found in routine radiographs, or in those for other purposes, such as research on the late eruption of permanent teeth [23]. The dentigerous cyst is the most common cyst that affects the jaw bones, and in most cases is associated with the crown of unerupted teeth, with predilection for affecting the region of third molars and canines [4]. In this case report, the cystic lesion affected the impacted right mandibular canine. The dentigerous cyst has as clinical features: slow and asymptomatic growth and may cause displacement of the teeth and adjacent structures, facial deformity and root resorption of teeth involved. Commonly, the dentigerous cyst has a characteristic radiolucent unilocular radiographic image, but may have multilocular image, when it reaches great proportions [26]. This information corroborates the case report, in which it was observed a radiolucent unilocular image and displacement of tooth #43. Odontomas are odontogenic tumors that most affect the population [28], and 67% of tumors in maxillary bones are classified as complex odontoma and compound odontoma [20]. According to Oliveira *et al.* [16], the frequency with compound odontoma occurs in 9% to 37% of cases; and complex odontoma 5% to 30% of cases. In this case report, the patient exhibited a compound odontoma involving the teeth #83 and #84. The compound odontoma consists of several rudimentary denticle structures [17]. It frequently reaches the maxilla [15], unlikely this case report in which it affects the mandible. Clinically, odontomas are asymptomatic, of slow and limited growth, with the potential to evolve into complex odontomas often associated with unerupted permanent teeth. Radiographically, the odontoma has centralized radiopaque mineralized structures similar to teeth, circumscribed by a defined radiolucent halo [22], characteristics observed in the radiograph of the case.

The treatment of choice for cystic lesions depends on several features. The decision of which technique is used will depend on the size of the cyst and the proximity to important anatomical structures. The cystic enucleation is the therapy of choice for small sizes of injuries that consists

of surgical excision of the lesion and the involved tooth without compromising adjacent structures; it is a definitive treatment, which provides more information to complete the histopathology result [4]. Marsupialization is another treatment option for dentigerous cyst; however, it is indicated for larger lesions with involvement of important anatomical structures, the technique uses devices to decompress the injury as a result of intracystic decreasing [13]. In the case described here, we used the surgical cystic enucleation, in which tooth #43 was extracted along with the lesion.

Once diagnosed compound odontoma, it must be removed. The recommended treatment is surgical enucleation, followed by curettage of the lesion, to minimize recurrence rates [19]. In the case report here, the compound odontoma was removed completely. The prognosis for both dentigerous cyst and compound odontoma is favorable, with low recurrence rate [5].

Conclusion

The interrelationship between dental specialties pediatric dentistry, oral and maxillofacial surgery, and orthodontics was of great importance for the early diagnosis and treatment of injuries. The multidisciplinary approach of the specialties provided an effective treatment, seeking to rehabilitate the physiology, aesthetics, and masticatory function of the patient.

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