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## CASE REPORT

# Complex odontoma: A clinical case report

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### Keywords

Biopsy, complex odontoma, odontogenic tumors

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## Introduction

The complex odontoma is an odontogenic tumor of ectomesenchymal origin, usually asymptomatic, rare, and characterized by cortical expansion with a possibility to cause pathological bone fracture if not treated.<sup>[1,2]</sup>

Radiographically the complex odontoma can appear as a circular and ovoid shape. For the most part, it can be associated with more frequency to unerupted teeth, usually surrounded by amorphous radiopaque masses, with a thin radiolucent area.<sup>[3,4]</sup>

By having the etiology of idiopathic origin, it is suggested that the dental impaction, traumas, presence of local infection, diastema, and malformation could trigger the formation of an odontoma.<sup>[5]</sup>

Internationally in 1971, the first classification system accepted for odontogenic tumors was published by the World Health Organization, being updated in 2005. According to the Organization, the odontomas can be classified in two types: Compound and complex.<sup>[6]</sup>

## Abstract

Odontomas are mixed odontogenic tumors, composed by mineralized tissue of ectomesenchymal origin. According to the World Health Organization, odontomas are classified into two main types: Complex and compound. They are generally found in routine radiographic exams and may be related to several causes. However, they are rarely associated with impacted teeth. This article aims to demonstrate the clinical and histopathological characteristics of this tumor through a clinical case report. The 18-year-old female patient sought dental assistance and reported pain, edema, and bleeding in the area around the impacted tooth 48, being submitted to biopsy after an injury was found on the imaging exam. After the result of the biopsy, the patient was diagnosed with complex odontoma, in the posterior region of the mandible, which was later removed by curettage.

Both show no predilection for sex or age, but some authors demonstrate that they affect more the female sex in the second decade of life.<sup>[7,8]</sup> The incidence of compound odontoma corresponds to 67% of cases while the complex to 33%.<sup>[9]</sup>

The odontoma presence can cause a series of disorders, being highlighted the problems related to interference in the process of the newly erupted tooth, delaying, or preventing the movements of the eruption and, in some cases, causing an ectopic eruption.<sup>[10-12]</sup>

Possible reported sequels are: The displacement and malformation of neighboring teeth, diastema, anodontia, and the pressure exerted by the odontoma, which can cause pain, devitalization, and dental absorptions. Therefore, it is recommended that once the odontoma is detected, it must be removed surgically.<sup>[13]</sup>

The surgical technique used for removal of odontomas consists generally in applying the principles of the surgical extraction of unerupted teeth. A technique of enucleation

1 for complete removal of the injury is adopted, followed by  
 2 curettage, to circumvent the whole injury and remove it  
 3 completely.<sup>[14,15]</sup>

4 Taking into consideration the importance of the etiology  
 5 knowledge, clinical and radiographic aspects, and the factors of  
 6 certain injuries, which most frequently affected the oral region,  
 7 as well as in the lack of information and articles about these  
 8 diseases, it is necessary to review the literature on the basis of the  
 9 clinical case exposed, to complement the previous work, magnify  
 10 the knowledge of dental surgeons, as an aid in differential  
 11 diagnosis, as well as in the implementation of preventive  
 12 campaigns for reduction of late diagnosis, in municipalities that  
 13 lack information. With this, the aim of this work is to carry out  
 14 a case report of a patient with a complex odontoma since the  
 15 establishment of the diagnosis by means of clinical examination,  
 16 radiographic and histopathological diagnosis, to the finishing of  
 17 the treatment.

20 **Case Report**

21 The patient B.L.S.P 18-year-old, appeared at the service of  
 22 Surgery and Oral Maxillofacial Traumatology Center of Dental  
 23 Specialties of Sao Jose de Ribamar - Maranhão (CDS- SJR/MA)  
 24 routed to specialized treatment, with the objective of performing  
 25 impacted tooth (48) extraction and surgery removal of the injury  
 26 that had not been diagnosed yet.

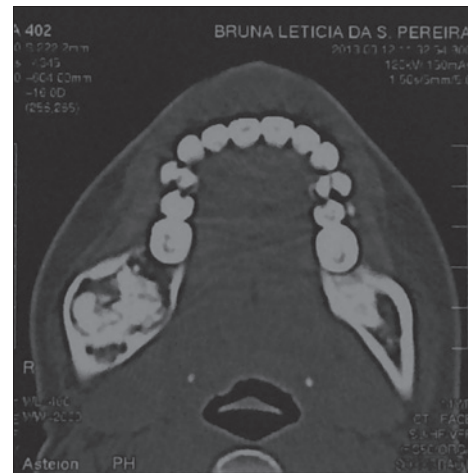
27 After a detailed anamnesis, the patient reported pain in the  
 28 tooth, edema, and inflammation, with persistence of 2 years.  
 29 She also stated that, in 2011, after going through the evaluation  
 30 for orthodontic treatment, an injury was detected through  
 31 panoramic radiographic examination, being then referred to the  
 32 specialized service for diagnosis and treatment.

33 At the extra-oral clinical examination, an asymmetry in  
 34 the lower third of the right side of the face was observed. It  
 35 was also observed in the extra-oral evaluation a hardened and  
 36 fixed area in the region of the right mandible body, which was  
 37 painless to palpation. At the intra-oral clinical examination, it  
 38 was observed edematous gum, which was bleeding at touch, and  
 39 the presence of a fistula in the labial face region of the tooth 48  
 40 [Figure 3]. Regarding the radiographic exam, it was observed  
 41 the presence of impacted tooth in the region of the mandible  
 42 base (tooth 48), with cortical bone thickening, associated with  
 43 extensive radiopaque mass circumscribed by a radiolucent halo  
 44 [Figure 1].

45 The patient returned only 2 years after the initial contact,  
 46 being performed then an incisional biopsy of the injury.  
 47 The result of the histopathological examination indicated  
 48 the presence of a complex odontoma [Figure 7]. With the  
 49 diagnosis completed, it was decided to perform excision of  
 50 the injury in a surgical center, under general anesthesia, since  
 51 due to the size of the injury; there was a substantial risk of  
 52 mandibular bone fracture. Were then requested the following  
 53 pre-operative examinations: Complete blood count, fasting  
 54 glycemia, coagulogram, blood typing, urea, creatinine, and



12 **Figure 1:** Panoramic radiography: Presence of impacted tooth in  
 13 the jaw region (tooth 48), radiopaque area is suggestive of complex  
 14 odontoma



22 **Figure 2:** Computed tomography (fan beam)



32 **Figure 3:** Initial clinical aspect of the jaw injury: Presence of  
 33 exposed bone edge, edematous gum, fistula in buccal region

34 surgical risk. As a pre-operative medication, it was requested  
 35 the internal use of the following medications for reduction of  
 36 the inflammatory infection: Antibiotics (amoxicillin 500 mg,  
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01 pill every 8 h, during 7 days) and analgesic (paracetamol 750 mg, 01 pill every 8 h, during 4 days). She was also guided regarding a rigorous oral hygiene, with the use of mouthwash (0.12% chlorhexidine).

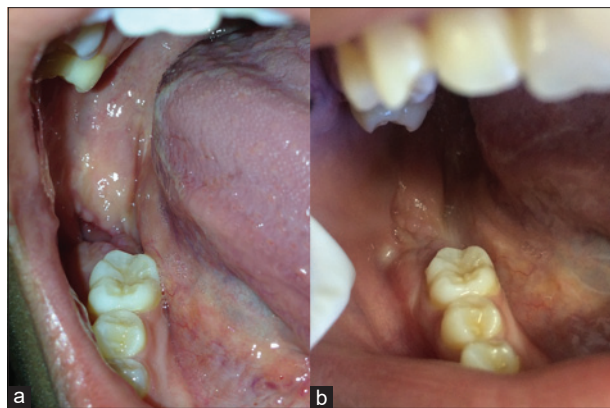
After the delivery of the exams, the patient was forwarded to the Surgery and Traumatology Service of Clementino Moura Hospital in the municipality of Sao Luis - MA for surgery.

After general anesthesia, surgical access was made at the extra-oral submandibular right side, with dissection by planes. After bone exposure, it was observed that the labial bone board was with papraceous consistency. Due to the lesion being located in the base of mandible, and with a length of 42 mm, a total resection in blocks, associated to the removal of the impacted tooth was selected [Figure 4].

After excision of the injury, it was found that the body of the jaw was extremely fragile, with reduced quantity of lingual bone board, opting in this way, by strengthening the structure with



**Figure 4:** Final aspect of the injury: Removal of the bone tissue, obtaining bleeding margins



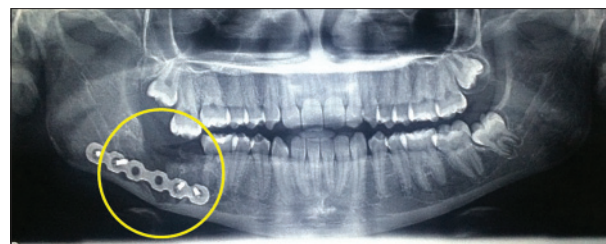
**AQ3 Figure 5:** Clinical aspect after 2 months (a) and after 6 months (b) Intra-oral aspect in the post-operative period, showing good healing, normal aspect of gum, absence of fistula and bleeding

the use of a 2.4 mm thick titanium plate, fixed with four screws, finalizing with suture in layers with resorbable vicryl 3.0 sutures [Figure 6], being that the upper layer corresponding to the skin was sutured with nylon 5.0.

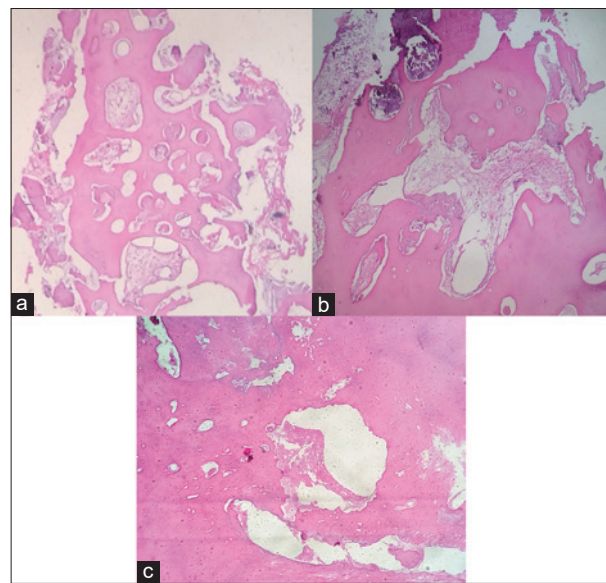
The patient was kept hospitalized, for 48 h to control pain and post-operative edema and infection prevention, with the administration of dexamethasone 10 mg, every 12 h, intravenously, associated to cephalothin 1 g, every 8 h, intravenously, and tramadol hydrochloride 100 mg, every 8 h, intravenously, during the hospitalization period.

After a month and 28 days of the surgical procedure and antibiotic therapy, it was observed an initial improvement of the injury, with a normal aspect of gum, without the presence of intra-oral fistula and extra-oral edema, being requested the realization of a panoramic radiography for evaluation of the titanium plate and bone regeneration at the region.

It was requested the return of the patient to the Surgery and Oral Maxillofacial Service of CDS - SJR/MA after 9 months, for post-operative control, by means of clinical and panoramic radiographic examination, in which total closing of the dental alveolus and normal aspect of the gum were observed.



**Figure 6:** Final panoramic radiography



**Figure 7:** Histopathological exam: The histological sections demonstrated disorganized masses of mature tubular dentin, interspersed by circular spaces filled by enamel matrix

## 1 Discussion

2 The relative frequency of odontogenic tumors types revealed  
3 statistical differences after retrospective studies performed  
4 in Asia, Africa, Europe, and America.<sup>[16,17]</sup> However, we may  
5 suppose that the geographic variation can interfere in the  
6 difference found in these studies since, in some countries,  
7 odontoma is underestimated due to lack of clinical symptoms,  
8 limited growth of some tumors, and even to the negligence of the  
9 patient himself in not seeking care.<sup>[18,19]</sup> As in the case reported  
10 herein, in which the patient took more than 2 years after the  
11 initial discovery of the injury to perform a biopsy and reach  
12 the histopathological diagnosis of complex odontoma. Thus,  
13 many cases are documented incorrectly or even are not sent for  
14 histopathological investigations.

15 In the Brazilian population, we can observe among  
16 odontogenic tumors the prevalence of odontomas with 29.9-  
17 9.7% of these are compound odontomas and 15.3% complex  
18 odontomas.<sup>[20]</sup> However, several odontomas with broad  
19 involvement of the jaw are found very rarely.<sup>[5]</sup> In the clinical case  
20 in question, this is a rare case of a complex odontoma extensive  
21 injury, which was possibly associated with the impaction of the  
22 lower third molar.

23 In contrast, the majority of patients with odontogenic  
24 tumors (86%) have more than 20 years with no predilection for  
25 gender.<sup>[16,21]</sup> The complex odontoma is more common in the  
26 jaw, in the posterior region of the right side that is comparable  
27 to previous studies.<sup>[7,22]</sup> In concordance with these studies, the  
28 clinical case described a jaw injury in the region of the tooth 48,  
29 female, 18 years of age.

30 As it usually is an asymptomatic injury, many cases  
31 end up being discovered during a routine radiographic  
32 check.<sup>[12]</sup> The radiographic aspects of complex odontomas are  
33 very characteristic, with the presence of calcified structures,  
34 similar to a radiopaque mass, not with a tooth, as the compound  
35 odontoma, which is surrounded by a radiolucent area.  
36 Complementing conventional radiography, the computed  
37 tomography shows more details of the internal structure  
38 which cannot be clearly seen in conventional radiography,  
39 allowing us to display in three dimensions, and it is of great  
40 importance in the diagnosis and surgical planning.<sup>[23,24]</sup> In the  
41 case report, the observance of the injury happened through a  
42 radiographic finding in a panoramic radiography requested by  
43 an orthodontist. After the patient's arrival to the specialized  
44 service, it was requested periapical radiographies, new  
45 panoramic radiography and computed tomography of Fan  
46 Bean type.

47 The development of pathological conditions of this  
48 odontogenic tumor can be associated with the presence of  
49 impacted third molars. So, the removal of this dental element  
50 with the presence of the injury needs well-established criteria.<sup>[25]</sup>  
51 Some indications of removal are: The presence of infection,  
52 cysts, tumors, destruction of the teeth and adjacent bone. The  
53 development of tumors related to the presence of impacted third  
54 molars is extremely rare. According to the incidence, it is claimed  
55 to be relatively small. However, in the clinical case described in  
56 the study it was observed the presence of a complex odontoma,  
in the region of the impacted third molar, being a rare injury,  
both by the location as by its size, therefore, we opted for the  
excision of tooth and injury in surgical center under general  
anesthesia due to the lack of bone structure for the fixation of  
titanium plates.<sup>[20,26]</sup>

1 The prognosis of the lesion is excellent, with rare recurrence,  
2 in most cases, when complete excision is performed. To minimize  
3 the recurrence of the lesion, some measures can be taken like:  
4 Enucleation with peripheral ostectomy, with the removal  
5 of the overlying mucosa, and the use of Carnoy solution.<sup>[27]</sup>  
6 The indicated treatment in case of odontoma is enucleation.  
7 However, the size of the injury may interfere in the indication,  
8 especially in cases of more extensive injuries, where the removal  
9 may involve large bone loss, potential fracture of the mandible  
10 and damage in the inferior alveolar nerve. In these cases, the  
11 most indicated technique would be sagittal osteotomy.<sup>[28]</sup> In  
12 the case in question, since we are dealing with an extensive  
13 injury, with the possibility of jaw fracture, the enucleation was  
14 performed by extra-oral access. After the control return of the  
15 patient, 9 months after the surgical procedure, it was observed a  
16 favorable clinical and radiographic scenario of the region where  
17 the injury was present.

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## Conclusion

According to the reviewed literature and the reported case, the  
injury in question was a complex odontoma associated with  
an impacted tooth, which required the resection of part of the  
jaw that contained the injury followed by reinforcement of  
the region with a titanium plate and screws, with a favorable  
prognosis.

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differential diagnosis of the injury.

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