ATHENA - HEALTH & RESEARCH JOURNAL
2026 • Volume III • Nº 1

Diagnosis and treatment of a compound odontoma – a case report

Sara Sobral [1] 0009-0008-7023-2460
Rita Rodrigues [2] 0000-0003-2918-4053
Viviana Macho [2] 0009-0004-5809-3788
Cristina Cardoso Silva [2,3] 0000-0002-1986-8366

[1] Faculty of Health Sciences, Fernando Pessoa University, Porto, Portugal
[2] RISE-Health - Faculty of Health Sciences, Fernando Pessoa University, Porto, Portugal
[3] Center for Health Studies and Research at the University of Coimbra, Coimbra, Portugal

ARTICLE INFO

Received 30 October 2025
Accepted 03 December 2025

Keywords:
compound odontoma
diagnosis
surgical excision
differential diagnosis
complex odontoma

Corresponding Author:
Sara Macedo Sobral; Faculty of Health Sciences, Fernando Pessoa University, Porto, Portugal;
sara2002sobral@hotmail.com

DOI: 10.62741/ahrj.v3i1.98

ABSTRACT

Introduction: Odontomas are the most common benign odontogenic tumors in clinical practice, often asymptomatic and diagnosed through routine imaging tests. They can be divided into compound and complex, the former being formed by tooth-like structures with a predilection for the anterior region of the maxilla.
Objectives: This study aims to present a clinical case of a compound odontoma diagnosed in a female patient during a routine consultation, as well as describing the treatment plan, clinical act, clinical evolution and imaging characteristics of the lesion.
Methodology: This is a descriptive case report study. The data was obtained from the patient's anamnesis, clinical and radiographic assessment. The case was selected due to the occasional discovery of a compound odontoma during a routine consultation, in a patient with no associated symptoms, which reinforces the importance of carrying out complementary diagnostic tests, allowing these alterations to be detected early.
Results: The therapeutic approach consisted of surgical enucleation of the lesion, with removal of the denticles that made it up, followed by curettage of the surgical area. The procedure was uneventful and healing occurred properly. After six months of follow-up, no signs of recurrence or symptoms were observed.
Conclusion: We conclude that early detection of odontomas, even in asymptomatic patients, is essential to avoid complications such as dental retention and aesthetic and functional alterations. Although a single case cannot support definitive recommendations, this report shows that early detection of odontomas and enucleation can be appropriate management options in this clinical context.

Contributions: Conceptualization: SS and CCS; Data curation: SS and CCS; Formal Analysis: CCS; Funding acquisition: xx and xx; Investigation: SS and CCS; Methodology: VM, RR and CCS; Project administration: CCS; Resources: CCS; Software: Not applicable; Supervision: CCS; Validation: VM and RR; Visualization: CCS; Writing – original draft: SS and CCS; Writing – review & editing: VM and RR.

Please cite this article as: Sobral S, Rodrigues R, Macho V, Silva CC. Diagnosis and treatment of a compound odontoma – a case report. *Athena Health & Research Journal*. 2026; 3(1). doi: 10.62741/ahrj.v3i1.98

INFORMAÇÃO DO ARTIGO

Recebido 30 outubro 2025
Aceite 03 dezembro 2025

Palavras-chave:
odontoma composto
diagnóstico
exérese cirúrgica
diagnóstico diferencial
odontoma complexo

Autor correspondente:
Sara Macedo Sobral; Faculdade de Ciências da Saúde, Universidade Fernando Pessoa, Porto, Portugal; sara2002sobral@hotmail.com

DOI: 10.62741/ahrj.v3i1.98

RESUMO

Introdução: Os odontomas são os tumores odontogénicos benignos mais comuns na prática clínica, frequentemente assintomáticos e diagnosticados por meio de exames imagiológicos de rotina. Podem ser divididos em compostos e complexos, sendo os primeiros formados por estruturas semelhantes a dentes, com predileção pela região anterior da maxila.
Objetivos: O presente estudo tem como objetivo apresentar um caso clínico de um odontoma composto diagnosticado numa paciente do sexo feminino durante uma consulta de rotina, assim como descrever o plano de tratamento, ato clínico, evolução clínica e caraterísticas imagiológicas da lesão.
Metodologia: Trata-se de um estudo descritivo do tipo relato de um caso clínico. Os dados foram obtidos a partir da anamnese, avaliação clínica e radiográfica da paciente. O caso foi selecionado pela descoberta ocasional de um odontoma composto durante uma consulta de rotina, numa paciente sem sintomatologia associada, o que reforça a importância da realização de exames complementares de diagnóstico, permitindo detetar estas alterações precocemente.
Resultados: A abordagem terapêutica consistiu na enucleação cirúrgica da lesão, com remoção dos dentículos que a compunham, seguida de curetagem da área cirúrgica. O procedimento decorreu sem intercorrências, tendo a cicatrização ocorrido adequadamente. Após seis meses de acompanhamento, não foram observados sinais de recidiva ou sintomatologia.
Conclusões: Conclui-se que a deteção precoce de odontomas, mesmo em pacientes assintomáticos, é essencial para evitar complicações como retenção dentária, alterações estéticas e funcionais. Embora um único caso não permita estabelecer recomendações definitivas, este relato mostra que a deteção precoce de odontomas e a enucleação podem ser opções de tratamento adequadas neste contexto clínico.

Introduction

Odontomas are mixed benign odontogenic tumors composed of mineralized dental tissue of both epithelial and mesenchymal origin.[1]

Several authors argue that odontomas originate from the proliferation of epithelial cells resulting from hyperactivity of the dental lamina when stimulated by genetic or teratogenic factors. They are considered more of a developmental anomaly (hamartoma) than a true neoplasm due to their limited growth potential.[2]

Odontomas grow slowly but can reach considerable sizes, to the point of causing expansion of the bone cortex. [3]

According to the literature, odontomas are considered the most common odontogenic tumors in clinical practice, with a high prevalence compared to other odontogenic tumors.[3]

Odontomas are divided into two subtypes according to their morphological and radiographic characteristics and can be classified as compound or complex odontomas. Compound odontomas have a higher incidence than complex odontomas.[4]

The compound odontoma consists of small tooth-like structures called denticles. Radiographically, it appears as a hyperdense mass with irregular shape, well-defined edges, surrounded by a radiolucent zone and density similar to that of bone and dental tissue due to the denticles that constitute it.[5] The radiographic image of compound odontoma is a pathognomonic sign of this lesion. [2]

Complex odontoma appears as an amorphous and disordered pattern of calcified dental tissues, but does not resemble dental morphology.[5] The main difference lies in the way these tissues are organized, since in compound odontomas they are organized, while in complex odontomas they present a disorganized pattern.[4]

Odontomas do not show a preference for either sex[4] and it is a condition that can manifest at any age, but preferentially affects individuals between the second and third decades of life.[6]

It has been proven that imaging tests are essential for correct diagnosis and treatment planning, since these lesions are mostly asymptomatic and detected in routine examinations.[4]

The medical history, intraoral and extraoral physical examination, and imaging tests are essential for making a correct diagnosis and subsequent treatment plan to achieve a favorable prognosis for the patient.[7]

The treatment of a patient with odontoma, whether compound or complex, consists of surgical enucleation of the lesion, with an excellent prognosis and low risk of recurrence.[5] Its removal is extremely important to avoid local complications such as tooth retention, tooth displacement, bone destruction, and cystic lesion formation, as well as aesthetic, phonetic, and occlusal problems.[4]

Description of the clinical case

This clinical case describes a thirteen-year-old female patient who attended the Dental Medicine Teaching Clinics at Fernando Pessoa University for a routine consultation in September 2024. After a complete medical history, it was concluded that the patient was clinically healthy, with no relevant medical history.

No significant changes worthy of note were observed during the extraoral physical examination, and the intraoral evaluation also revealed a condition within the expected parameters for the age group. Regarding the history of medical and dental treatments, a frenectomy of the upper labial frenulum was mentioned in June 2024.

During the consultation, and following the protocol for first consultations, a panoramic radiograph was requested (see Figure 1), which identified the presence of a radiopaque image in the lateral region of the mandible, between teeth 33 and 34, suggesting the presence of a supernumerary structure.

Figure 1: Panoramic radiograph. Image created by the authors.

To aid diagnosis, a cone beam computed tomography (CBCT) scan was recommended (see Figure 2). Analysis of the axial and sagittal slices revealed the presence of two radiopaque structures resembling teeth, consistent with a diagnosis of compound odontoma, not associated with any impaction of the adjacent permanent teeth.

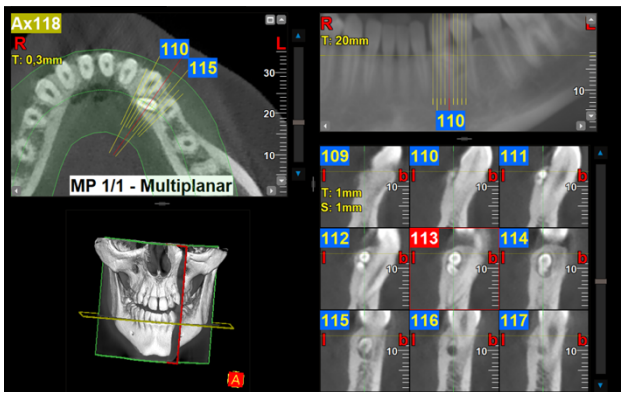

Figure 2: Cone Beam Computed Tomography.
Image created by the authors.

The proposed treatment plan consisted of surgical removal of the compound odontoma.

The legal guardian and the patient were duly informed about the objectives, risks, and benefits of the proposed procedure and expressed their consent for it to be performed. In addition, they also authorized the use of clinical and radiographic data in the context of a thesis for an Integrated Master's Degree in Dentistry, with the possibility of subsequent publication in article or poster format. In this regard, informed consent was signed freely and in an informed manner.

This clinical case also received a favorable opinion from the Ethics Committee of Fernando Pessoa University.

Based on the data provided by CBCT, it was decided to perform a lingual surgical approach due to the lingual location of the structures to be removed.

The consultation for the removal of the lesion took place in January 2025.

The surgical procedure began with the application of topical anesthesia after drying the mucosa. Next, infiltrative anesthesia (see Figure 3a) was performed with 2% lidocaine (Xilonibsa, from Inibsa®), administered via the vestibular approach, with reinforcement of the anesthesia also performed infiltratively in the lingual region using the same anesthetic solution. The total volume of anesthetic administered was equivalent to 1 anesthetic tube, i.e., 36 mg of lidocaine.

The incision was carefully planned, and a sulcular incision (see Figure 3b) was made with a 15C blade, lingually to teeth 33 and 34, with subsequent detachment of the lingual papillae using a Prichard elevator to provide visibility of the surgical field.

Next, an osteotomy was performed (see Figure 3c) using a laminated spherical drill in a contra-angle with controlled speed and torque and abundant saline irrigation to allow adequate access to the structures to be removed.

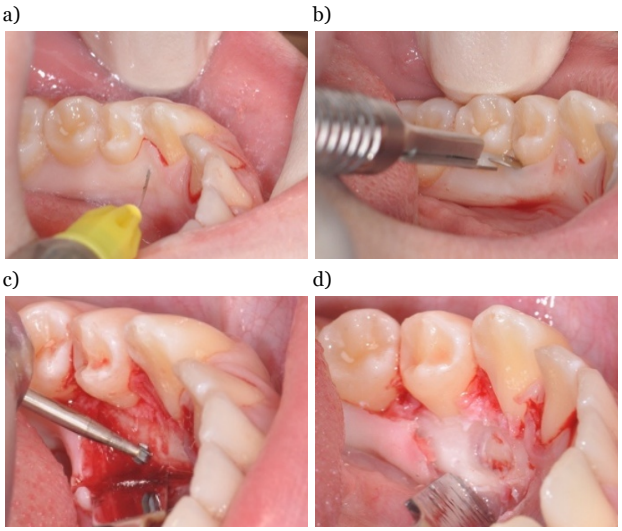

Figure 3: Surgical procedure. Image created by the authors.

The odontogenic denticles were removed with the careful aid of a curette (see Figure 4a) followed by gentle curetage to eliminate any residual soft tissue within the lesion. A white soft structure, still in the early stages of calcification, was also removed, which probably corresponded to a precursor structure of an additional denticle (see Figure 4b).

a) b)

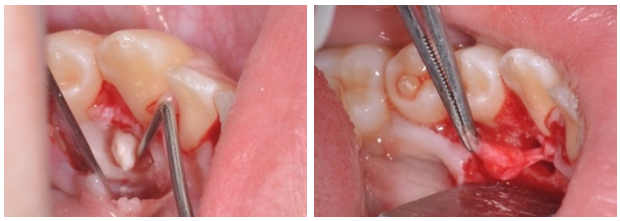

Figure 4: Excision of the denticles that made up the compound odontoma, demonstrating the existence of mineralized denticles a) and another yet to be mineralized b). Image created by the authors.

Finally, suturing (see Figure 5a) was performed with non-absorbable monofilament polytetrafluoroethylene suture (Gore-tex® 5/0), with careful repositioning of the mucosal flap by performing two simple stitches.

a) b)

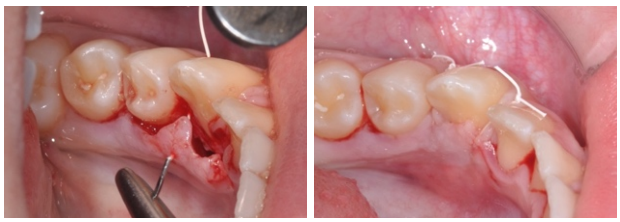

Figure 5: Clinical appearance at the end of the surgical procedure. Image created by the authors.

The medication prescription included Ibuprofen, twice a day for 4 days, at the appropriate weight-based dose, and local application of 0.2% chlorhexidine gel, 3 times a day, until the suture was removed.

After seven days, the patient was reevaluated (see Figure 6a) and reported that postoperative symptoms were practically nonexistent, as was any type of functional limitation. An intraoral examination revealed excellent healing of the treated area, and the suture was removed. Clinical and radiographic follow-up after six months was then recommended.

In June 2025, at the 6-month follow-up appointment after excision of the compound odontoma, as recommended, a periapical radiograph (see Figure 6b) to evaluate the treated area, confirming the absence of radiographic signs of recurrence and observing the existence of bone neoformation, with trabecular bone, in the bone site.

a) b)

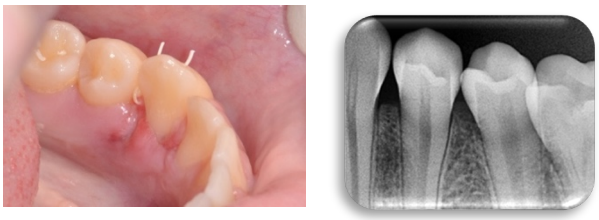

Figure 6: Lingual mucosa healing 7 days after surgery a) and periapical radiograph 6 months after surgical procedure b). Image created by the authors.

As a final recommendation, the guardian and the patient were informed of the added value of regular dental appointments and alerted to the need for a clinical and radiographic evaluation of the treated area during these appointments, in order to confirm that there were no recurrences.

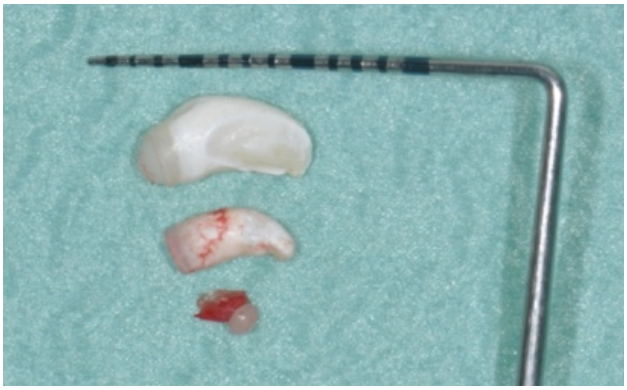

Figure 7: Denticles that made up the compound odontoma after surgical removal. Image created by the authors.

Discussion

According to Mazur et al.[8] odontogenic tumors can be classified as: benign of epithelial origin, benign of epithelial and mesenchymal origin, benign of mesenchymal origin, and malignant. Knowing that odontoma is a odontogenic tumor that originates from epithelial and mesenchymal tissue, the odontoma identified in the clinical case presented was classified as a benign epithelial and mesenchymal (mixed) odontogenic tumor.

In the literature, according to their clinical presentation, odontomas can be classified as central, when they are intraosseous, peripheral, when they are extraosseous, i.e., located in the soft tissue covering the teeth, and erupting, when they can erupt into the oral cavity. [2] In the clinical case presented, it was a central odontoma because it was intraosseous.

For Hamada et al.[9] the incidence rate of odontomas is 24%, with a higher prevalence in compound odontomas (15.3%) than in complex odontomas (9.7%).

According to Almeida et al. [5] and in line with most authors, this condition has an equal incidence between sexes,

although some studies, such as that by Olivares et al.[4] have shown a certain predilection for males.

Clinically, a compound odontoma can be detected by the presence of alveolar swelling or impacted teeth.[10] In agreement to Olivares et al.[4] there is an association ranging from 16% to 61% between this type of tumor and the existence of impacted teeth. Contrary to these data in the literature, in the clinical case presented, no swelling was observed clinically, nor was there any presence of impacted teeth, with the diagnosis being a radiographic finding in a routine panoramic radiograph.

Compound odontoma occurs most frequently in the anterior region of the maxilla, usually above the crown of an unerupted tooth or between the roots of erupting teeth, and although it can occur at any age, it is often associated with permanent dentition in adolescents and children, with the canine being the most frequently affected tooth.[10]

Although the clinical case presented refers to a 13-year-old patient, which is in line with the age range reported in the literature, the odontoma was located in the mandible, between the roots of teeth 33 and 34.

In accordance with Garbin et al.[7] although this lesion is often asymptomatic and is a radiographic finding, as in the present clinical case, edema, pain, interference with the eruption chronology, misalignment, and malpositioning of the teeth may also be present.

The morphology of the tooth, the location where the tumor develops, the available space in the arch, and age are predisposing factors for the development of this type of lesion.[8]

Depending on Merat et al.[3] complex odontoma results from the invagination of the epithelium of the developing tooth germ, unlike compound odontoma, which results from the proliferation of the dental lamina. Complex odontoma occurs mainly in the posterior region of the mandible.

More rarely, there may be an association between complex and compound odontomas, which is referred to as a "complex-compound odontoma"[6] or "mixed odontoma".[11]

Based on the degree of calcification of the odontoma, it can be classified into different stages of development. In the first stage, it appears as a radiolucent lesion due to the lack of calcification. In the second stage, it already shows a degree of partial calcification, and in the final stage, the odontoma appears radiopaque with a radiolucent halo.[4]

When odontomas are in the final stage of calcification, they are easily recognized through radiographic examination. In turn, when they are at an intermediate stage in which the level of calcification is still partial, they cause more concern for the dentist because the list of possible differential diagnoses increases, given that the radiographic image is compatible with other lesions, some of which are more aggressive.[12] In the clinical case reported, the pre-surgical radiographic image showed the presence of two well-calcified denticles, which facilitated the diagnosis. However, during the surgical procedure, after removal of these two denticles, a third denticle was found in an early stage of calcification and, for this reason, was not identifiable in the initial radiographic examinations.

In agreement to Silva et al. [2] compound odontoma has typical characteristics and pathognomonic signs that make this lesion easy to diagnose and usually easy to differentiate from other lesions. In turn, the same author states that it is important to perform a differential diagnosis of complex odontoma with cemento-ossifying fibromas, knowing that odontomas are more radiopaque and tend to be associated with impacted molars, but also with osteomas and condensing osteitis.

For Ribeiro & Ribeiro,[11] it is important to perform a differential diagnosis of complex odontoma with other lesions such as: fibrous lesions, calcifying cystic odontogenic tumor, fibrous dysplasia, and chronic osteomyelitis. The same authors note that in the maxillary sinus, odontoma can be confused with sinusitis, periapical infection with antral polyps, antral mycosis, displaced tooth or root, foreign body, peripheral osteoma, benign mesenchymal neoplasm, inverted papilloma, antral carcinoma, or sarcoma.

Bianco[13] states that a differential diagnosis of odontomas with ameloblastic fibroma, ameloblastic fibroodontoma, and odontoameloblastoma should also be performed. The same author states that when the lesion is located between the roots, it is imperative to perform a differential diagnosis with the following pathological conditions: focal residual osteitis, cementoma, calcifying epithelial odontogenic tumor, adenomatoid odontogenic tumor, supernumerary tooth, and benign osteoblastoma. If the lesion is found at the pericoronal level, the differential diagnosis should be made with adenomatoid odontogenic tumor, calcifying epithelial odontogenic tumor, ameloblastic fibrodentinoma, and odontoameloblastoma.

The compound odontoma described in this clinical case was located between the roots of teeth 33 and 34, which is why the differential diagnosis mainly considered the possibility of a supernumerary tooth. CBCT confirmed the diagnosis of compound odontoma and ruled out the suspicion of a supernumerary tooth.

Regarding the proposed treatment for the removal of an odontoma, the literature shows consensus among various authors, with surgical enucleation being the technique that presents the best results and the lowest probability of recurrence.[4]

Treatment of this lesion consists of surgical enucleation with removal of the surrounding connective tissue capsule, ensuring the preservation of hard and soft tissues to maintain masticatory function, aesthetics, and phonation.[14]

Momesso et al.[15] described a new approach to removing odontomas using a piezosurgery technique. According to the same authors, the piezosurgery technique uses ultrasonic vibrations to selectively cut bone without causing damage to soft tissues, especially in more susceptible

anatomical areas, preserving noble structures. According to the authors, this technique not only reduces damage to soft tissues but also reduces edema and improves bone healing.

Gonçalves et al.[10] state that it is necessary to check the bone cavity and remove all surrounding membrane to prevent recurrence, knowing that although the risk is low, it increases when enucleation is performed in the early stages of calcification. In the clinical case presented, it can be considered that enucleation was performed at an intermediate stage of calcification because, although two of the denticles were completely calcified, there was a third denticle still in an early stage of formation. For this reason, at the end of the removal of the three structures, careful curettage of the surgical area was performed to remove all surrounding membrane and thus avoid the risk of recurrence associated with this stage of calcification.

In the case of complex odontomas, their removal and surgical access may be more demanding than in compound odontomas, presenting a higher risk of causing facial deformities, pathological fractures, sensory alterations due to nerve damage, and impairment of masticatory function.[16] The definitive diagnosis of a compound odontoma relies on the integration of clinical, radiographic (including conventional radiographs) and histopathological features. Compound odontomas typically show, on histology, multiple tooth-like structures composed of enamel, dentin, cementum and pulp tissue arranged in an orderly pattern, each surrounded by a fibrous capsule. Although histological examination was not performed in this case, these features represent the characteristic microscopic presentation of this lesion. The absence of histopathological confirmation represents a limitation of this case; however, the radiographic and surgical findings were highly characteristic of a compound odontoma, supporting the diagnosis with reasonable confidence.

Conclusion

This clinical case highlights the importance of periodic panoramic radiography for the detection of asymptomatic lesions that are not clinically observable. This is an easily accessible diagnostic aid that allows for the early diagnosis of various types of lesions, particularly asymptomatic lesions, as in the clinical case presented. CBCT played a complementary role, providing three-dimensional characterization and assisting in surgical planning. In these situations, the surgical approach must be planned correctly, consisting of enucleation of the lesion, allowing complete removal of the odontoma, associated with curettage of the surgical area, ensuring total removal of the denticles present and minimizing the risk of recurrence. In the clinical case presented, a compound odontoma was identified between the roots of teeth 33 and 34. Two fully calcified denticles were surgically removed, as well as a third structure still in formation. At the follow-up appointment six months after the surgical intervention, no signs of recurrence were identified.

Despite the benign nature of odontomas, their removal is essential to avoid complications such as tooth retention, or even aesthetic, phonetic, or functional changes. The conservative surgical approach, together with imaging tests, has proven to be an effective and safe practice in the management of these cases, ensuring a positive prognosis.

In summary, regular dental examinations are important as the main preventive measure for early detection of asymptomatic clinical changes, while radiographic examinations are complementary and dependent on clinical indication.

Data supporting the results will be provided on request.

References

1. Alves ADS, Alves JC, Dias MWG, et al. Remoção de odontoma composto: relato de caso clínico. *Sci Gen*.2022;3(1):393-401.
2. da Silva NP, Rodrigues RD, Barboza ADA, et al. Odontoma composto em região anterior de maxila: relato de caso. *Braz J Health Rev*. 2019;2(5):4454-4464.
3. Merat BVT, de Andrade LS, Arantes ER, et al. Diagnóstico e tratamento de um caso de odontoma composto-complexo: relato de caso e revisão da literatura. *Rev Fac Odontol Lins*. 2020;30:85-93.
4. Olivares DAD, Simonato LE, Tomo S. Odontoma composto: uma revisão de literatura. *Rev Iberoam Humanid Ciênc Educ*. 2022;8(5):1179-1199.
5. Almeida CSM, Fernandes LEBA, da Silva Pereira R, et al. Remoção cirúrgica de odontoma composto causando impacção do dente 21: relato de caso. *Braz J Health Rev*. 2020;3(2):3674-3684. doi:10.34119/bjhrv3n2-193
6. Khalifa C, Omami M, Garma M, et al. Compound-complex odontoma: a rare case report. *Clin Case Rep*.2022;10(4):e05658.
7. Garbin Júnior EA, Mazur N, Vidor ND, et al. Odontoma composto em região anterior de mandíbula associado a canino retido: relato de caso. *Braz J Health Rev*. 2023;6(3):8896-8907. doi:10.34119/bjhrv6n3-044
8. Mazur M, Di Giorgio G, Ndokaj A, et al. Characteristics, diagnosis and treatment of compound odontoma associated with impacted teeth. *Children (Basel)*. 2022;9(10):1509. doi:10.3390/children9101509
9. Hamada M, Okawa R, Nishiyama K, et al. Compound odontoma removed by endoscopic intraoral approach: case report. *Dent J (Basel)*. 2021;9(7):81.
10. Gonçalves AKA, de Almeida KG, Vasconcelos AC. Diagnóstico, tratamento e prognóstico de odontoma composto associado ao folículo pericoronário: relato de caso. *Rev Saúde Multidisciplinar*. 2019;6(2):1-5.
11. Ribeiro TVB, Ribeiro TS. Impactação de elemento dentário por odontoma composto em paciente odontopediátrico: relato de caso clínico [undergraduate thesis]. Universidade Tiradentes; 2017. *Accessed 20 January 2025*.
12. Bicalho SES, Simukaua ERS, Rezende JG, et al. Diagnóstico diferencial de odontoma em fase mista: relato de caso em criança. *Braz J Surg Clin Res*. 2020;33(3):40-45.

13. Bianco BCF. Revisão e considerações sobre a classificação dos tumores odontogênicos e levantamento epidemiológico do Laboratório de Patologia Bucal da Universidade Federal de Alfenas [master's thesis]. Universidade Federal de Alfenas; 2018. https://bdtd.unifal-mg.edu.br:8443/handle/tede/1349. *Accessed 20 January 2025*.
14. Lustosa BS, do Nascimento JDS, Sobra LGGC. Odontoma composto em região anterior de mandíbula. *Res Soc Dev*.2023;12(7):e9512742586. doi:10.33448/rsd-v12i7.42586
15. Momesso GAC, de Sousa CA, de Lima VN, et al. Removal of compound odontoma with piezosurgery technique. *J Craniofac Surg*. 2017;28(2):584-585.
16. Pereira LDC, Miceli ALC, Louro RS. Odontoma complexo extenso em mandíbula: revisão e relato. *Rev Cir Traumatol Buco-Maxilo-Fac.* 2015;15(4):49-52.