CASE REPORT

Jurnal Radiologi Dentomaksilofasial Indonesia April 2025, Vol. 9, No. 1: 61-4
P-ISSN.2685-0249 | E-ISSN.2686-1321

http://jurnal.pdgi.or.id/index.php/jrdi/index

Incidental findings of suspect multiple odontomas and impacted supernumerary teeth on panoramic radiograph: a case report

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ABSTRACT

Objectives: This case report aimed to describe radiographic features of suspect multiple odontomas in an incidental case.

Case Report: A 32-year-old man non syndromic patient was referred to the Dental Radiology Unit of RSGM Unpad for panoramic examination. He was complaining about a pain in lower mandible and was clinically diagnosed with an impacted 48. Radiographic findings appeared irregular radiopaque with radiodensity that resembles enamel and dentin, surrounded by a thin radiolucent capsule in the left and right regions body of the mandible. Additionally, there is radiopaque that resembles a para premolar supernumerary tooth, inferior from the lesion to the mandibular cortical bone.

Conclusion: In this case, irregular radiopaque areas with radiodensity that resembles enamel and dentin, surrounded by thin radiolucent capsules, were found as the radiographic features that led the radiodiagnosis of odontomas.

Keywords: *Odontoma, impacted, supernumerary teeth, panoramic radiograph*
Cite this article: Munasyifa T, Pramanik F. *Incidental findings of suspect multiple odontomas and impacted supernumerary teeth on panoramic radiograph: a case report.* Jurnal Radiologi Dentomaksilofasial Indonesia 2025;9(1)61-4. https://doi.org/10.32793/jrdi.v9i1.1285

INTRODUCTION

Odontoma is a hamartoma (developmental malformation) that is distinguished by the production of mature tooth tissue such as enamel, dentin, cementum, and pulp tissue.[1] WHO classified odontoma into two basic types: complex and compound. The complex odontoma appears as an amorphous calcification mass of the dental hard tissues, while compound odontomas have more discrete, irregular small toothlike structures (denticles).[1,2]

The incidence of odontoma was reported ranging from 0.24% to 1.21%, with an overall incidence was 0.64% cases of histological maxillofacial samples and 30.4% among all the diagnosed odontogenic tumors.[3] Odontomas usually occur in the 2nd–3rd decades of life and have no gender predilection. The posterior body of the mandible is the most common site for complex odontomas, while the compound odontomas are commonly found in the anterior maxilla.[4]

Odontomas are usually discovered during routine radiographic examinations because of their asymptomatic nature. Radiographically, the contents of these lesions are heterogeneously radiopaque structures that may or may not bear anatomic resemblance to a tooth-like structure, sometimes enamel, dentin, and pulp spaces can be visualized.[1,5] Different-sized tooth-like structures, or denticles, resembling malformed teeth, are seen in compound odontomas. An uneven but somewhat more uniform mass of calcified tissue is present in complex odontomas. Different amounts and types of hard tissue that have grown within these lesions can be reflected in variations in the density of the mineralized matrix. A thin, radiolucent capsule encircling the radiopaque component of the lesion resembles the follicle enclosing a developing tooth crown.[1]

Generally, both types of odontomas occur as solitary lesions in the jaw. However, numerous odontomas can develop involving one to four quadrants of the jaws.[2] Both complex and compound odontoma were shown to cause disturbance in the tooth eruption and resulting impaction or delayed eruption[6]. Most cases were associated with impacted permanent teeth, retention of deciduous teeth, displacement of adjacent teeth, expansion of the cortical plates, and congenitally missing teeth.[7]

Supernumerary teeth are teeth present in an excessive quantity of normal dental formula and may be erupted or unerupted.[3] Supernumerary teeth can erupt or remain impacted, and most impacted supernumerary teeth are asymptomatic and diagnosed on routine radiographs. The shape of a supernumerary tooth may vary from an odontoma to a supplemental tooth[8]. Although odontomas and supernumeraries are classified as

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Received on: September 2024
Revised on: February 2025
Accepted on: April 2025

distinct entities, they seem to be the expression of the same pathologic process, either malformities or hamartomatous.[3]

This study aimed to report the findings of suspected multiple odontomas and impacted supernumerary teeth on panoramic radiographs.

CASE REPORT

A 32-year-old male non-syndromic patient was referred to the Dental Radiology Unit of RSGM Unpad for a panoramic examination. The patient complained of pain in the lower mandible and was clinically diagnosed with impacted 48. No visible swelling either intraoral or extraoral (Figure 1). Other than the impacted lower third molar and upper right canine, radiographic findings appear irregular radiopaque with radiodensity resembling enamel and dentin, surrounded by a thin radiolucent capsule between apical 45 and 46 and apical 36 and 35. There is also radiopaque resembling supernumerary tooth para premolar, inferior from the lesion down to the mandibular cortical bone (Figure 2). A suspect diagnosis of complex odontoma and impacted supernumerary para premolars was established.

DISCUSSION

Odontomas arise from abnormalities in the proliferation of dental tissues (both epithelial and mesenchymal components), however, they are not regarded as true neoplasms.[9] This lesion is classified as a hamartoma rather than a true tumor due to its well-differentiated tooth tissue and limited, gradual growth.[1] In this case, odontoma was detected while panoramic radiograph examination for other clinical diagnosis. Most of these lesions are asymptomatic and are often detected incidentally on routine radiographs in the second and third decades of life and without any gender predominance.[10,11] Epidemiological data suggests that compound odontomas are considerably more prevalent than complex odontomas, with the former being

Figure 1. A. Clinical examination showed no swelling

Figure 2. Panoramic radiograph examination results showed radiological features of suspected odontomas and impacted supernumerary teeth

observed at a rate over three times higher than the latter.[7]

The lesions presented as well-defined radiopaque surrounded by a radiolucent rim. This case was diagnosed with complex odontoma that described on radiographs as malformations in which the dental tissues are arranged more or less in a disorderly pattern with little or no resemblance to normal teeth. Compound odontoma was established as a differential diagnosis that presents with normal dental tissues arranged in an orderly pattern so it looks like multiple small tooth-like structures (denticles).[7] The majority of compound type occur in the anterior maxillary region, whereas the great majority of complex type located in the posterior areas, especially in the mandible, as in this case.[11]

When diagnosing complex odontoma lesions using panoramic radiographs, it is essential to be familiar with the differential diagnosis of similar radiopaque lesions, such as osteoma, periapical cemental dysplasia, ameloblastic fibro-odontoma, and cementoblastoma. Osteomas are well-defined radiopaque lesions formed from sclerotic bone on the trabeculae, and the distinguishing feature from odontomas is that the internal structure of odontomas is usually uniformly radiopaque if composed solely of compact bone or has an internal trabecular structure if containing cancellous bone, whereas odontomas exhibit a more complex pattern of radiolucent and radiopaque areas. The mixed-stage appearance of periapical cemental dysplasia can resemble a complex odontoma lesion, but the former is typically located in the periapical area of the tooth. Ameloblastic fibro-odontomas consist of radiopaque lesions with well-defined radiolucent borders, but they have a greater soft tissue component compared to odontomas. Cementoblastomas are radiolucent and radiopaque lesions with well-defined borders surrounded by a halo-radiolucent zone, but they usually exhibit a wheel-spoke pattern in the roots of premolars and molars in the mandible.[1,12,13]

Accounting for 22% of all odontogenic tumors of the jaws, odontomas are the most common odontogenic tumors; however, multiple odontomas involving several sites of the jaws are not frequently encountered.[2,10] Multiple odontoma is characterized by numerous odontomas involving multiple quadrants of the jaws, may be extensive or composed of several localized lesions. Different histologic forms of odontomas, such as compound, complex, or both, can combine to form multiple odontomas.[2] In the case we presented, the suspect odontoma was localized to the mandible bilaterally and associated with impacted supernumerary teeth. According to the study by Tomizawa et al., impacted teeth erupted spontaneously in 8 out of 25 cases after surgical removal of odontomas. Generally, if the root development is incomplete, spontaneous eruption is anticipated; otherwise, the likelihood of eruption is diminished. The probability of successfully preserving an impacted tooth decreases with increasing age, as does the potential for spontaneous eruption.[14]

Based on the presence of distinctive tooth-like structures, radiologic diagnosis of a single or multiple compound odontomas is not difficult. However, numerous, massive, complex odontomas that show amorphous calcification present a diagnostic and therapeutic challenge due to the multitude of differential diagnoses that may arise. Multiple expansive lesions involving the maxilla and mandible that have mixed radiopaque and radiolucent density are a common presentation of fibrous dysplasia. Lesions of florid osseous dysplasia, which are found in both jaws apical to teeth, can be bilateral and have different densities, ranging from nearly total radiopacity to an equal mixture of radiolucent and radiopaque regions. Occasionally, ossifying fibromas can also be massive and multiple, displaying finely tuned tumors with internal calcifications. Addition of multiple osteomatous jaw lesions, dental anomalies, or extracolonic epidermoid cysts are possible presentations of Gardner syndrome.[2]

Odontomas are limited to occurring within the dentition-bearing regions of the jaws.[7] Both odontoma and supernumerary teeth have an asymptomatic nature and often associated with same pathologic manifestation such as impacted of permanent dentition and inflammatory or cystic complication.[3,6]

Morphologically, supernumerary tooth may classify as supplemental if resembles to a normal tooth, conoid if it is conical or peg shaped, tuberculate if the occlusal crown surface presents several cusps, infundibuliform or invaginated if the crown presents a deep central groove starting from the occlusal surface, and odontoma-like or mis-shaped if mass of dental tissue which could not be described or cannot be included in any other morphological type. Supernumerary teeth represent a common occurrence in the oral cavity and can lead to aesthetic and functional alterations.[3,8] Supernumerary teeth can cause several complications like hinder the eruption of permanent teeth, dilacerations of neighboring teeth, tooth displacement, abnormal root formation, whereas 42.5% caused no complication at all.[8] Based on the location of supernumerary teeth, they can be classified into several subtypes: mesiodens, para premolar, para molar, and distomolar. Mesiodens refers to a supernumerary tooth situated between the central incisors, para premolar denotes one located in the premolar region, para molar describes a tooth in the molar area, and distomolar indicates a supernumerary tooth distal to the third molars.[8] Mandibular para premolars are among the most common supernumerary teeth, and they can manifest as a single supernumerary tooth, or as two or more premolars located bilaterally, or even in conjunction with other types of supernumerary teeth.[15]

In the present case para premolar supernumerary teeth are impacted near mandibular cortical bone as stated in the literature around 75% of supernumerary teeth are impacted,

and most are discovered incidentally during a radiographic examination.[16] Impacted supernumerary teeth are usually in close proximity to cortical bone. The shortest distance between the supernumerary tooth and adjacent cortical plate varied between 0 to 2.50 mm with a mean of 0.66 mm.[8]

There is a common origin based on epidemiological, clinical, immuno-histochemical and genetic data for both supernumerary and odontomas. They express the same odontogenic process with different degrees of morpho-differentiation, depending to a time and site signaling pathway of molecules and factors.[3] Hyperactivity of restricted dental laminate linked to teratogenic or genetic stimuli is responsible for the development of clusters of epithelial cells that result in odontomas and supernumerary teeth. The dental lamina and/or papillae provide stimuli and regulatory elements that may cause these cells to grow toward atrophy or become dental structures. However, their exact origin is unknown.[17] Factors such as inflammation, infection, trauma, hyperactive odontoblasts, and genetic abnormalities have all been linked to the development of odontomas. Aberrant sonic hedgehog and Wnt/β-catenin signaling pathways were thought to have a role in the development of odontoma.[5]

An additional examination using cone-beam computed tomography is recommended as a diagnostic investigation to prepare for surgery. A meticulous assessment is conducted not only of the odontoma but also of the impacted teeth, evaluating their topographical features, the state of the adjacent cortical bone, and the potential for root resorption. The utilization of cone-beam computed tomography facilitates the planning of orthodontic intervention and the precise identification of the location for surgical excision. While the radiological and macroscopic features following surgical removal are highly indicative of the diagnosis, histological examination should be conducted as a confirmatory measure.[18,19]

CONCLUSION

In this case, a suspect complex odontoma in the bilateral mandible and impacted supernumerary teeth were established, which were discovered incidentally on a panoramic examination. Irregular radiopaque areas with radiodensity resembling enamel and dentin, surrounded by thin radiolucent capsules, were the radiographic features that led to this radiodiagnosis.

ACKNOWLEDGMENTS

None.

FOOTNOTES

All authors have no potential conflict of interest to declare for this article. Informed consent was obtained from the patient for being included in this case report.

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