



Bilateral Maxillary Bone Swelling - Comprehensive Differential Diagnosis and the Role of Impacted Wisdom Teeth

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Abstract

Maxillary bone swelling (MBS) is frequently observed intraorally, and its differential diagnosis involves various factors including genetic predisposition, occlusal trauma, tumors, malignancy, inflammation, and hormonal changes. Establishing a comprehensive differential diagnosis when evaluating maxillary bony exostosis is crucial for guiding clinicians in conducting appropriate investigations to reach a definitive diagnosis. Although there are numerous case reports discussing unilateral exostosis, limited guidance is available for dental professionals in establishing a differential diagnosis for bilateral maxillary exostosis. We present a case of an 18-year-old female with prominent bilateral posterior maxillary bony protrusion, which, following appropriate radiographic investigations, was revealed to be secondary to impacted wisdom teeth. Our aim is to illustrate the rationale behind formulating differential diagnoses and the necessary investigations.

Keywords: Benign Bone Lesions; Maxillary Exostosis; Bone Swelling; Torus

Abbreviations

MBS: Maxillary Bone Swelling; DPT: Dental Panoramic Tomogram; CBCT: Cone Beam Computed Tomography

Introduction

Maxillary bone swelling (MBS) can result from various factors including genetic predisposition, occlusal trauma, malignancy, benign tumors, inflammation, and hormonal changes [2,3-8]. The prevalence of MBS varies among different populations, ranging from 1% to 40% [2,9-12]. It is usually diagnosed incidentally during routine dental examination or radiographically [10,11]. It is essential to take into account the anatomical elements unique to the maxillary region in order to construct a differential diagnosis for a well-defined swelling in that area [12]. Some of these features, such as tori or exostosis, may result from developmental factors [12]. Bilateral Maxillary bone swellings are commonly associated with benign conditions while unilateral, can be an enigma until appropriate radiological investigations and possible biopsy is performed [12,13]. The condition is exceedingly uncommon but deceptive, as numerous other conditions can imitate its symptoms including ossifying fibroma, developmental odontogenic cyst, or unerupted teeth commonly associated mandibular third molars and maxillary canines [13].

Although there are multiple case reports and reviews associated with unilateral bone swelling, little guidance is available for

clinicians who encounter bilateral maxillary bone swellings regarding how to establish a differential diagnosis and conduct investigations [12,14-17]. Consequently, we aim to present a case report of an 18-year-old female patient who presented with a marked posterior maxillary bony enlargement, along with detailing the overall process of establishing a differential diagnosis and the required investigations.

Case Report

An 18-year-old female patient presented to the dental clinic reporting a history of dental caries and intraoral swelling with no associated discomfort, discharge, fever, size fluctuations, or comparable swellings elsewhere on the body. Her medical and social histories were both unremarkable with no history of tobacco or alcohol use. On clinical examination, she had multiple decayed teeth in both arches, with visible plaque and calculus deposits. The patient exhibited an unusual asymptomatic bony expansion in the posterior buccal and palatine regions of both the upper right and upper left maxilla, particularly near the molars. The molar teeth in these areas were vital and non-tender upon percussion, with no corresponding mandibular expansion observed. This expansion, hard to the touch and covered by normal mucosa as seen in Figure 1, differed from gingival hyperplasia. It extended from the distal aspect of the second molars to the tuberosity area, measuring approximately 2 cm in width and 1 cm in height on each side. The patient reported no similar bony enlargements externally.



Figure 1: Intra-oral view. (A) right side (B) left side (C) Upper Jaw (D) Lower Jaw.

Dental Panoramic Tomogram (DPT) revealed multiple carious lesions and a bilateral dense radiopacity in the posterior maxilla, consistent with impacted wisdom teeth (Figure 2). Further Dental

Cone Beam Computed Tomography (CBCT) (Figure 3) confirmed the findings demonstrating bony enlargement secondary to impacted wisdom teeth.



Figure 2: Panoramic View.

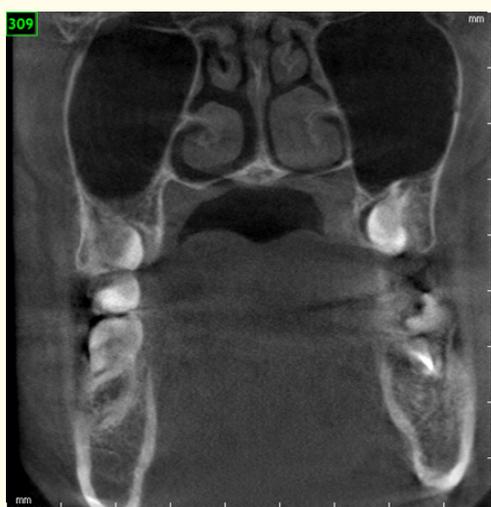


Figure 3: Dental cone beam computed tomography CBCT: coronal view.

The treatment plan encompassed addressing multiple carious dental lesions and periodontal disease identified, along with considering the possible extraction of the impacted wisdom teeth. Surgical extraction of the impacted molars was presented as an option, but the patient was keen to avoid this due to the asymptomatic nature of the maxillary bone swellings and their lack of functional impact on her bite. The patient agreed to regular check-ups with the local dentist and to consider surgical removal of the teeth if symptoms were to develop or if there were changes in the overall appearance of the swellings”.

Discussion

Bony enlargements or exostoses are uncommon in the maxilla, especially in young patients [18].

The pathogenesis of bony enlargements is not fully understood, but some possible factors that may influence their formation are genetic predisposition, occlusal trauma, inflammation, and hormonal changes [1,7,15,18]. It may be a response to mechanical stress or strain on the alveolar bone due to mastication or occlusal forces. Other studies have proposed that bony enlargements may be related to chronic inflammation or infection of the periodontal tissues [4-6]. Exostoses manifest in varying sizes, categorized as either small nodules, which tend to occur in multiples and the most prevalent; or large, singular nodules, which are rare and may encompass extensive areas [14]. Overall, the third upper molar usually serves as the primary cause of bilateral swelling when exostoses appear symmetrically [14]. Bony enlargements secondary to impacted molar teeth if asymptomatic may not require treatment unless they cause problems such as difficulty in chewing, speech impairment, denture instability, ulceration, or cosmetic concern [19].

While there was evidence of periodontal disease, indicated by a few deep pockets associated with calculus, there was no apparent significant bone loss. Holtzclaw and Hinze (2014) reported palatal exostoses in patients with a history of periodontal disease; however, in this case, the patient declined any previous periodontal treatment [20].

The majority of exostoses are diagnosed based on clinical appearance and common radiographs, including periapical, occlusal x-rays, and panoramic radiographs [12,21]. CBCT provides multi-planar images and a thorough three-dimensional view, improving visualisation by reducing overlapping structures, differentiating between medullary and cortical components, and ultimately being essential for developing accurate surgical plans [22]. Radiological investigations are usually sufficient for diagnosing bilateral exostoses, although in certain cases, biopsy may be required to clarify the diagnosis after establishing a differential diagnosis [12,23].

Maxillary bone exostosis can be attributed to a spectrum of conditions, each with distinct characteristics [24,25]. These in-

clude odontoma, osteoma, osteosarcoma, Gardner’s syndrome, and fibrous dysplasia, as outlined in relevant medical literature [16,26-31]. Benign tumours composed of tooth tissues, known as odontomas, often present as painless lumps [32]. Conversely, osteomas are slow-growing, benign bone growths that typically cause no symptoms [32]. A malignant bone tumour called osteosarcoma frequently advances swiftly and can be painful [33]. Fibrous dysplasia, which is defined by abnormal bone development, weak, fibrous bone tissue, and a distinctive ground-glass appearance on imaging examinations, is another diagnosis in the differential [34].

The process of differential diagnosis necessitates a comprehensive evaluation of imaging results, clinical symptoms, and histological testing in order to accurately identify the underlying illness and guide future therapy decisions [35]. In order to guarantee that the patient receives timely therapies appropriate for their specific condition, this multimodal technique is crucial [12,14-16].

Conclusion

In conclusion, this case offers a perceptive illustration of the challenges associated with diagnosing and managing maxillary bone enlargements. It highlights the necessity of a multidisciplinary approach that incorporates clinical knowledge, radiographic assessment, and patient-centered care in order to maximise results and guarantee the implementation of customised treatment plans.

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Conflict of Interest

The authors declare no conflict of interest.

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