

Alveolar ridge exostoses of mandibular

A cases report

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Abstract

Alveolar exostoses are benign, broad-based surface masses of the outer or facial aspect of the maxilla and less commonly, the mandible. They begin to develop in early adulthood and may very slowly enlarge over the years. They are painless and self-limiting, but occasionally may become several centimeters across and then contribute to periodontal disease of the adjacent teeth by forcing food during chewing in toward the teeth instead of away from them, as is normally the case. The following paper presents a very rare case of Alveolar ridge exostoses and its management with surgical exploration.

Case Situation

1- A female Yemeni patient aged 62 years, the chief complaint of vague facial pain extending from the angle of mandible to retromolar region since 3 months. The history of swelling on the right angle of the mandible. gradually increase the size. The exostoses was oblong in shape, measuring 1.5cm × 1cm. mucosal tissue and did not interfere with speech, chewing, or other oral functions

2- A 80 year old man, He is edentulous and need to restore function and esthetic by make denture and his suffering hypertension. located in the right alveolar ridge of the mandibular at anterior region, that he firstly noticed 10 years earlier. Its dimensions constant over time. The mass appeared nodular, pink and white. It was no mobile, anchored to the gingiva and not pain when palpated.

Conclusion:

- 1- The exostoses of the jaws in Yemen are rarity because the Congenital disorder of jaws are not common.
- 2- The cusses of Alveolar exostoses a traumatic or traumatic extraction and not occurring by Hypertension.
- 3- Remove the bony exostoses for good retention and stabile of the denture.

Keywords: Exostoses torus, Palatal, Torus, mandibular, Tubercles, Palatal, Grafts, bone, Surgical flap and excision

Introduction

An exostosis is a benign, localized, peripheral overgrowth of bone of unknown etiology. It may be a nodular, flat or pedunculated protuberance located on the jawbones' alveolar surface. It frequently occurs in long bones where tendons and muscles are inserted. Exostoses or abnormal bone growth within the ear canal is called as Surfer's ear.

In the jaws, depending on the anatomic location they are named as torus palatinus (TP), torus mandibular is (TM), or buccal bone exostoses (BBE) TP that occurs along the midline of the hard palate is a sessile, nodular mass of bone. TM is a bony overgrowth located on the lingual aspect of the mandible, most seen in the canine and premolar areas. buccal bone exostoses (BBE) occur along the buccal aspect of the maxilla or mandible, usually in the premolar and molar areas. Palatal exostoses are found on the palatal aspect of the maxilla, and the most common location is the tuberosity area.

Multiple exostoses occasionally occur in the same individual. They may appear as isolated, discrete bony overgrowths on the facial aspect of alveolar bone in young, dentate subjects or as somewhat less usually found multiple exostoses in maxilla (torus palatines) and in mandible (mandibular tori).

Case Report: The

1- A female patient aged 62 years, the chief complaint of vague facial pain extending from the angle of mandible to retromolar region since 3 months. The history of swelling on the right angle of the mandible. gradually increases the size. On clinical examination intraorally, the patient's overall oral hygiene was fair to poor. Generalized moderate gingivitis was present with only minimal bone loss and severe attrition on all teeth

surfaces. Gingival tissues were erythematous and edematous. The patient had a large, exostoses [Figure 1]. The exostoses were oblong in shape, measuring 1.5cm × 1cm. It was covered with thin mucosal tissue and did not interfere with speech, chewing, or other oral functions

2-A 80-year-old male, He is edentulous and need to restore function and esthetic by make denture and affected by arterial hypertension. located in the right alveolar ridge of the mandibular at anterior region, that he firstly noticed 10 years earlier. Its dimensions constant over time. The mass appeared nodular, pink and white. It was no mobile, anchored to the gingiva and not pain when palpated. [Figure 2].



Fig 1



Fig 2

Material and Method:

Material			
1	Mouth mirror	11	Cotton and gauze
2	Cheek retractor	12	Normal saline solution (NSS)
3	Hemostat	13	Local anesthesia
4	Disposable syringe	14	Head cap
5	Scalped (Number15)	15	Masks
6	Scalped holder	16	Gloves
7	Tissue forceps.	17	suture (Silk size 0'3)
8	Kidney dish	18	panorama x-ray (Fig 2)
9	Specimen cup	19	Hand pies (Height Speed)
10	Section up	20	Bur

Method:

First: Preparing the patient before extraction by scaling and make good oral hygiene.

Second: The operation

- A. Use local anesthesia. Mandibular nerve block (infiltration using 1: 200000) lignocaine with adrenaline.
- B. Incision flap by blade number15 reflection flap by periosteal elevator Cutting the exostoses by hand pies.
- C. Completely dislodged of the exostoses, collected on the periosteal elevator and taken out, smoothing of bone by an acrylic trimming bur and bone file then using iodine 5% and normal saline finally suturing by non-absorbed silk size 0'3
- D. During operation use the Section for Dry the surgical area.
- E. Comeback after 7 days.

Third: Post operation instruction:

- Take medication (antibiotic, analgesic).
- Gargle chlorhexidine twice a day for 7 days.
- Avoid touching the affected.
- Avoid stressful activates.
- Soft diet for 7 days
- A follow-up

Fourth: Histopathology

The Histological examination

- A. Composed of a dense mass of mature bone with well-developed lamellae and harversian systems,
- B. Osteocytes in lacunae and a few marrow spaces filled with loose fibrous connective tissue.
- C. Osseous hyperplasia occurring on the edentulous ridge beneath a fixed partial denture replacing a mandibular first molar which was surgically removed.



After 3 weekes



Radiographs showed hemispherical radio opacities on the alveolar ridges.

Discussion

In 1989 Hauser and De Stefano et al, studied about the alveolar ridge exostoses of mandibular foreign body reaction is recognized as a bony ridge or series of bony nodules or lumps appearing on the lingual surface of the alveolar margin of the mandible, generally in the premolar region These tori may be completely absent or present in varying degrees, and may present a variety of forms. Mandibular tori are not associated with any pathological condition and can be easily distinguished from instances where the osteological activity is the result of a pathological condition causing abnormal growth, such as trauma or tumor. Torus mandibular is generally manifested bilaterally, though it may be present just on one side of the mandible. There is often a degree of asymmetry between sides, with the right side most commonly presenting a more pronounced torus than the left.¹

In 1991 Eggen et al, Studied about the Etiology: The etiology of tori has been investigated by several authors; however, no consensus has been reached. Some of the postulated causes include genetic factors,^{22–26} environmental factors ^{11,13,14} masticatory hyperfunction,^{11,16,27–29} and continued growth.³⁰ Several authors have postulated that the etiology of tori consists of an interplay of multifactorial genetic and environmental factors. ^{13,21,31,32} The role of nutrients in the etiology of tori¹⁶ who suggested saltwater fish consumption in Norway possibly supplies higher levels of polyunsaturated fatty acids and Vitamin D that is involved in bone growth which increases the chances of tori²

In 1992 Haugen, Seah et al, Studied about the torus may be bosselated or multi lobulated but the exostosis is typically a single, broad-based, smooth surfaced mass, perhaps with a central sharp, pointed projection of bone producing tenderness immediately beneath the surface mucosa.

The functional influences may contribute to the development of exostoses. There is an increasing correlation between marked exostoses and a significant attrition of teeth in some older subjects, This may be a similar phenomenon as that which occurs in subpontic hyperostosis, which postulates that stress causes the crest alveolar bone to grow under the pontic along a vector opposing the forces of occlusion. Therefore, the altered function may lead to exostosis development in genetically predisposed populations.³

In 1999 Kerdpon D, et al, studied about the stated that flat, shelf-like bony excrescences are commonly found on the palatal alveolar bone from the mesial side of the second molar to the tuberosity. Prichard also noted that discrete osseous nodules are often found on the palatal side of maxillary molars and may require removal during corrective periodontal surgery, and the further stated the importance of avoiding damage to the structures in the region of the greater palatine foramen while removing these exostoses. The anatomic location of the tubercle is generally immediately lateral to the greater palatine foramen and palatal to the second to third molar. Removal of this tubercle is often necessary to ensure proper healing, but caution must be exercised to avoid injury to the greater palatine artery⁴

In 2000 Jainkittivong A, et al, Studied about the They reported no re-occurrence even after 1 year postoperatively. Islam et al. reported 3 cases of subpontic hyperplasia. Out of the 3 cases, one of the case was on bisphosphonate and the authors speculated that the benign bone overgrowth under the pontic could be due to the medication that the case received. presented three cases of subpontic hyperplasia occurring on the edentulous ridge beneath a fixed partial denture. One of the case presented by them had the hyperplasia in the maxillary arch, the second case in the dental literature⁵³ and the first being reported by Conservative surgical removal with bony recontouring and with relief of prosthesis induced mechanical stresses is the treatment of choice, with occasional recurrences expected. A case report of exostosis following atraumatic blow and speculated it to be due to combination of trauma, occlusal stresses and genetic factors. Another case report of alveolar exostoses following orthodontic implant placement.⁵

In 2001, Reichart PA, Neuhaus et al, Studied about the showed a similar radiograph of osseous growth under the pontic of a fixed partial denture. Subsequently, the demonstrated radiographs of a case with osseous deposition under the pontics of bilateral I bridges in the mandibular left and right molar regions and reported clinical and radiographic findings of nine cases with bone growth in an edentulous region of the posterior mandible covered with a pontic, and proposed that the reasons for such bone growth could include genetic predetermination, functional stresses, and chronic irritation. Evaluation of the 12 cases reported in the above-mentioned re-reports revealed that osseous hyperplasia under the pontic of a fixed partial denture was seen only in adults, in the mandibular molar or premolar region with a variety of pontic designs. A case of osseous hyperplasia under the pontics of fixed partial dentures in right and left mandibular first molar regions was presented.⁶

In 2002, Seah YH et al. examined 680 skulls of various ethnic origins and found that 40.5% had palatal exostoses. They found the highest prevalence in the skulls of European and Oceanic-Asian specimens (46%)

while those of African or South American origin had a prevalence of 26%. The exostoses were also classified into 5 categories with respect to size and shape. In one study involving U.S. population, palatal tori were more prevalent among American Indians, Eskimos, and among women. Mandibular tori were also more prevalent in Eskimos and Aleuts, but with similar prevalence in males and females. A clinical study by King and More reported that African-Americans had approximately 25% fewer mandibular tori than Caucasians. In this study on 100 American males and 100 females, they found that 42% of females and 25% of males had palatal tori, but no significant gender difference was found in the prevalence of mandibular tori.⁷

In 2003 Topazian et al, Studied about the hypothesized that the quasi continuous model of inheritance or threshold may also apply to BBE and palatal exostoses. The mechanism for proposed buttressing bone formation phenomenon is still unclear, but evidence suggest that bone flexion could result in the release of bone morphogenic proteins, which could stimulate bone growth, express as thickening, lip-ping or exostoses at a point of stress.¹⁹ Some observation suggest that the internal functional stresses associated with dental implant may also prevent otherwise expected alveolar bone loss.³⁴ Studies reviewed by Marx and Garg indicated that mechanical factor of micro strain could have a significant effect on bone modeling. When mechanical loads are low (less than 0.2% deformation), bone atrophy occurs; when normal mechanical loads are experienced (0.2–0.25%) normal bone turnover occurs; when higher mechanical loads occur (0.25–0.4%) bone hypertrophy occurs with increased lamellar bone and when pathologically higher loads are imposed (more than 0.40%) woven bone formation occurs. These findings are consistent with those of Pietrokovsky and Massler³⁶ who observed that following extraction alveolar bone becomes atrophic and resorbs. Exostoses as a post-operative sequel of dental treatment procedures Bony exostoses development secondary to soft tissue graft procedures has been reported.⁸

In 2004 Carl OB et al, Studied about the⁴³ speculated that the bone formation after an FGG may be the result of a periosteal trauma combination during site preparation and the activation of osteoprecursor cells contained in the connective tissue of the graft. Chambrone and Camborne suggest that patients presenting tori or any kind of bony exostoses are highly susceptible to bony overgrowth responses the state that ‘it is also possible that other clinicians might have assumed the thick gingival grafts they saw during their patients’ postoperative visits were not thick soft tis-sue grafts, but were, in reality, exostoses.⁹

In 2008 Haugen D, et al, Studied about the previously noticed that the exostoses that have been related after an autogenously FGG were most commonly located in the cuspid premolar area. They suggested that the grafted areas may be influenced by factors acting at this level, e.g., excessive forces, surgical trauma and genetic factors. Among the related reports, all the authors suggest that the periosteal trauma seemed to be the main etiological agent associated with the exostoses development. In cases of skin grafts, the occurrence of periosteum fenestration after the graft suture position has also been observed. This surgical trauma can be associated with the liberation of osteoprogenitor cells from the periosteum-bone interface inducing osteogenesis. Subpontic osseous hyperplasia under fixed partial denture¹⁰

In 2008 Bruce et al, Studied about the Owing to their benign innocuous nature, exostoses in majority of cases does not necessitate any surgical intervention unless in the event of tissue trauma, periodontal or prosthodontics complication's. Intra-oral bony growths of all types, present a clinical challenge for the dental team attempting to perform periodontal surgery in the posterior maxilla. Careful surgical planning while keeping the basic flap design and the gingival anatomy in mind would definitely culminate satisfactory out-come for both the clinician and the patient. When treatments elected, the exostoses may be chiseled off of the jaw or re-moved by bone-burr cutting/smoothing through the base of the bony lump. Further while attempting to capture accurate detail for final impressions of crown and bridge, removable prosthetics, oral appliances, accurate opposing models, study models, and whitening trays, stock impression trays often cannot be seated to the depth, because of the interference by these bony anatomical variants. These bony protuberances may cause pain during the impression making, as there is often only a thin oral mucous membrane covering these osseous protuberances which is easily irritated. Mandibular tori can present significant challenges for endotracheal intubation⁵⁸ and laryngoscopy. Lingual tori and palatal exostoses may also limit the space for the tongue and can result in speech impediment. Boksman and Carson presents a new approach to taking impressions of exostoses, torus mandibular is, torus palatinus and mal-positioned teeth, which incorporates the use of a disposable heat moldable tray. Even though these bony areas can create a clinical challenge with impression making, these areas are prime sites for harvesting autogenously bone for bone grafting for dental implants placement, alveolar ridge augmentation and maxillary sinus lifting, periodontal osseous defect and can be used for multiple reconstructive uses such as nasal reconstruction.¹¹

Conclusion

- 1- The exostoses of the jaws in Yemen are rarity because the Congenital disorder of jaws are not common.
- 2- The cusses of Alveolar exostoses a traumatic or traumatic extraction and not occurring by Hypertension.
- 3- Remove the bony exostoses for good retention and stabile of the denture

Differential diagnosis

- a) Bone exostoses
- b) Peripheral giant cell granuloma
- c) Cystic lesion
- d) Gingival overgrowth
- e) Foreign body reaction

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