

DENSE BONE ISLAND OF THE JAW: A CASE REPORT

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SUMMARY

Dense bone island of the jaw: a case report

The "Dense Bone Island" (DBI) is a radiopaque lesion referred in literature as idiopathic osteosclerosis, enostosis, focal osteosclerosis, periapical osteopetrosis, and bone scar. The DBI are accidentally found in routine X-ray of bone structures. In the maxillary bones, often localized in the mandible, especially in the molar region, with a reported incidence ranging from 2.3 to 9.7%. DBI does not seem to develop until the first phase of adolescence and it is usually found in adolescents and in young adults. In 40% of cases DBI seems to increase in size after a 10 year follow-up, because the DBI found in jaws and in long bones seem to increase proportionally to the bone growth. A case of a 26 years old patient and the surgical treatment is presented. This is the first reported case where complete X-ray Orthopantomography follow-up showed the evolution of the lesion since its onset.

Key words: enostosis, radiopaque lesion, bone island.

RIASSUNTO

Dense bone island della mandibola: descrizione di un caso

La *Dense Bone Island* (DBI) è una lesione radiopaca descritta in letteratura come osteosclerosi idiopatica, enostosi, osteosclerosi focale, osteopetrosi periapicale, cicatrice ossea. La DBI è spesso riscontro casuale in radiografie di routine eseguite per altri motivi. Si localizza principalmente a livello della mandibola in regione molare con incidenza compresa tra il 2,3 e il 9,7%. Sembra che il suo sviluppo inizi dopo la prima fase dell'adolescenza. Il riscontro diagnostico avviene normalmente in soggetti adolescenti o giovani adulti. Nel 40% dei casi la DBI sembra aumentare di volume dopo circa 10 anni, probabilmente perché si accresce proporzionalmente alla crescita ossea. Viene presentato un caso di una paziente di 26 anni sottoposta a trattamento chirurgico. Il caso presentato è il primo caso in cui la lesione è stata documentata radiograficamente dal momento della sua insorgenza fino al trattamento chirurgico.

Parole chiave: enostosi, lesioni radiopache, bone island.

Introduction

A "Dense Bone Island" (DBI) is a localized, well-defined, radiopaque mass in the jaw with a round, elliptical or irregular shape and a variable size (1). Most of these lesions are asymptomatic, and represented casual finds in routine X-rays.

Although DBI has been reported with a variety of names including enostosis, bone scar, focal osteosclerosis, idiopathic osteosclerosis and periapical osteopetrosis, their cause and classification are controversial (2).

On radiographic evaluation, they are well separat-

ed from the surrounding normal bone, and smooth or irregular in outline.

Histopathologically, DBIs are composed of dense calcified tissue without marrow spaces and generally no inflammatory cell infiltration (3, 4). Most of the DBIs described in literature are smaller than 2 cm (2, 3); this leads to hypothesize that they may not reach the sufficient size to cause jaw expansion.

Case report

Twenty-six-year-old female patient, negative anamnesis for systemic diseases, showed no rele-

vant alterations at the intra-oral examination. The radiographic examinations (Orthopantomography, CT Dentascan), showed a 1cm osteocondensing lesion, localized under the left first lower molar (Fig. 1, 2).

The patient had radiographic examinations that showed the evolution of the lesion since its onset (Fig. 3, 4, 5).

In consideration of its remarkable increase in the last 10 years, and of an intermittent painful symptomatology, was decided to perform a surgical enucleation of the lesion.

Surgical treatment was performed under general anesthesia using ultrasonic device. DBI was removed preserving surrounding bone tissue and alveolar nerve (Fig. 6, 7). Notwithstanding the lack of cleavage plane between lesion and sur-



Figure 1
Preoperative orthopantomography.

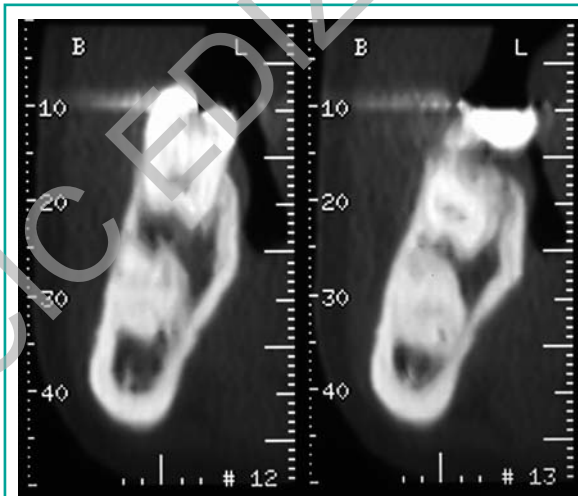


Figure 2
Detail of CT Dentascan in axial projection.



Figure 3
OPT Rx at 6 years of age with mixed dentition, absence of endosteal lesions.



Figure 4
OPT Rx at 12 years of age, with permanent dentition, absence of endosteal lesions.



Figure 5
OPT Rx at 16 years of age, initial onset of endosteal lesion near the left first lower molar.

rounding bone, precision and selective cut of ultrasonic device allowed a conservative excision (Fig. 8). Microscopic examination showed cortical lamellar bone tissue partly sclerotized in the site of previous reworking, locally in continuity with porous bone whose medulla spaces were occupied by vascularized loose fibrous tissue (Fig. 9).



Figure 6
Osteotomy performed by ultrasound device.



Figure 8
Removed lesion.



Figure 7
Intraoral view showing precise and selective cut with complete excision of lesion.

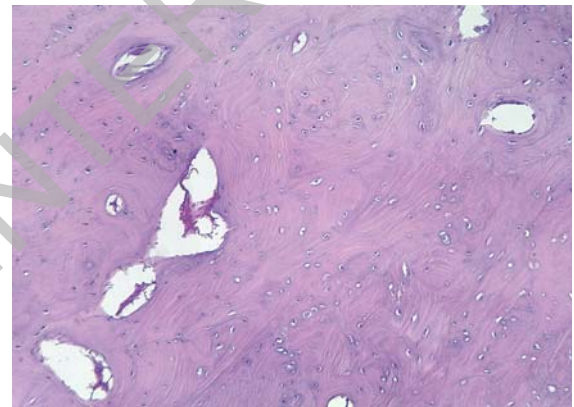


Figure 9
Histological section. Cortical lamellar bone tissue (HE, 10X).

The diagnosis made, in consideration of both the histological and radiographic examination of the lesion, was of solitary enostosis, known as “bone island”.

No recurrence was showed in one year follow-up radiograph (Fig. 10).

Discussion

DBI are generally modest in size and do not change overtime (5). Mirra (6), presented the case



Figure 10
One year follow-up showing a prosthetic rehabilitation and good bone healing.

of a 5-year-old child with a lesion of 1.1×1.7 cm in the distal portion femur, initially considered as a DBI, whereas 6 months later the lesion had reached the size of 4.2×3.0 cm, and a biopsy showed evidence of osteosarcoma. The author suggests to perform an open surgery biopsy of DBI when the size of the lesion increases by 25% in 6 months or by 50% in one year.

DBI may be differentiated from more aggressive or malignant bone lesions by one of the following: absence of a primitive tumor, slow growth over a period of years, a clearly demarcated margin with thorny radiation from the sclerotic lesion and the absence of pain.

Petrikowski and Peters (1) noted that, for practical purpose, the calcifying encondroma, medullary bone infarct, healing non-ossifying fibroma, osteosarcoma and osteoid osteoma can be eliminate from the differential diagnosis of DBI.

Always according to Petrikowski and Peters (1), the age in which a DBI is found ranges between 9.4 and 14.0 years, whereas according to other studies, DBI seems to be more frequent in the third decade of life (7, 8).

Various therapeutic choices apply. If the lesion is an isolated radiopaque area without any connection with the teeth, and no painful symptomatology occurs, it is preferable not to surgically intervene.

When, the thick radiopaque area is associated to a

secondary infection, through the element involved, the surgical procedures must be carefully carried out in order not to cause lesions to the surrounding areas.

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