

## Case Reports

### MULTIPLE SCLEROTIC MASSES OF THE JAWS

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تصلب العظم في الفكين يحدث غالباً لدى الإناث السود المتوسطي العمر. ويفترض أن هذه الظاهرة تحدث بسبب حدوث انتان خفيف أو بسبب سوء تشكل للنسج العظمية. وفي بعض الحالات السيرة العائلية قد تكون سبباً أحياناً. وبالفحص الشعاعي تبدو الكتل بشكل كثافات عظمية متعددة ظليلة ذات محيط متخلخل. ومن الممكن هذه الخاصة تميز هذه الكتل عن التهاب العظم والنقي المزمن المنتشر.

Multiple sclerotic masses of the jaws commonly occur in middle aged black females. A plethora of terminologies to describe these entities exist, it is speculated that the phenomenon is due to low grade infection or dysplastic changes of osseous tissue. Familial history has been noticed in some cases. Radiographically, the masses appear as multiple, dense, and globular radiopacities with a radiolucent rim. This criterion may be used to distinguish the masses from chronic diffuse sclerosing osteomyelitis. Secondary infection leading to sequestration is a common complication.

#### Introduction

Multiple sclerotic masses restricted to the alveolar ridges of the jaws present a diagnostic challenge to the clinician. Controversies exist concerning the nomenclature of such lesions. It is doubtful if the masses appear because of separate disease processes, or as a result of varying manifestations of a singular fibroosseous dysplasia. There are no definitive histological criteria for recognition of such lesions. The radiological changes are non-specific. The familial history of occurrence may be contributory in delineating some of the lesions. This condition does not exhibit extragnathic skeletal involvement and there is no change in the blood chemistry of patients with multiple sclerotic masses.

One of the conditions known to produce multiple sclerotic masses in the jaws is chronic diffuse sclerosing osteomyelitis.<sup>1</sup> The sclerotic masses have been attributed to low grade infection such as chronic periodontitis. Radiographically, the margins of the sclerotic masses are indistinguishable from the normal adjacent bone. Waldron et al<sup>2</sup> described a condition with a similar appearance

having cemental rather than osseous tissue. They called the lesion "sclerotic cemental masses of the jaws". Shafer<sup>3</sup> mentioned that both osseous and cemental tissues can be recognized in such a lesion. He stated that the existing similarity between the two lesions may indicate two ramifications of a single disease process.

A third condition has been described by Melrose et al.<sup>4</sup> They recommended a new descriptive term "Florid osseous dysplasia" to encompass the exuberant cemento-osseous dysplastic changes. They noticed a concomitant occurrence of simple bone cysts in 40% of a series of 34 cases. Shafer<sup>3</sup> stated that the so-called florid osseous dysplasia virtually presents the same clinical, radiographical, and histological findings as the diffuse sclerosing osteomyelitis.

Gigantiform cementoma is another condition which demonstrates multiple sclerotic masses in the jaws.<sup>5</sup> It is analogous to periapical cemental dysplasia. This condition is hereditary and a positive family history usually establishes the diagnosis. Sedano et al<sup>6</sup> described a condition termed autosomal dominant cemental dysplasia which presents multiple cemental masses in the jaws. The condition was detected in ten members of a single family and segregated as autosomal dominant. They referred to another condition which exhibited similar cemental masses and familial tendency. The salient feature of this condition was generalized

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osteoporosis of extragnathic bones, which had a tendency to fracture.

Sclerotic masses in the jaws are usually asymptomatic but may produce slight expansion of the cortical plate in some cases. Chronic osteomyelitis leading eventually to sequestration of the masses may occur. Four cases with sclerotic masses in the jaws, which were diagnosed at King Saud University College of Dentistry, are reported in this study (Table 1). Radiographic features and their implication in differential diagnosis are discussed.

*Case 1 :*

A 51-year-old Saudi female was referred to the Oral Diagnosis Clinic for routine dental examination. Clinical examination revealed gingival recession, supragingival calculus deposition and severe periodontitis.

Panoramic radiographic examination revealed multiple dense globular radiopacities surrounded by irregular radiolucent rims [Fig. 11]. The opacities were localized to the entire height of the alveolar processes of the maxilla and the mandible. The bony architecture of the intervening areas were normal. A retained root of the maxillary left second molar was noted. The retained root was surrounded by a radiopaque lesion.

Under local anesthesia, the retained root was extracted and the opaque material was curetted and submitted for histopathological examination. Radiographically, a tentative diagnosis of multiple cemento-osseous dysplasia was made.

Laboratory investigations did not indicate any changes in serum calcium, phosphate or alkaline phosphatase levels from the normal. Histological examination revealed a mixture of mature and immature trabeculae with osteoblastic seams. Fibrous tissue surrounding the trabeculae demonstrated mild chronic inflammatory reaction. The condition was diagnosed as florid osseous dysplasia.

*Case 2:*

A 38-year-old black female reported to the Emergency Clinic with acute pain in the left second mandibular molar area. Clinical examination revealed gross carious involvement of all the teeth. Moderate to severe periodontitis was noticed.

Panoramic X-ray examination revealed multiple discrete radiopacities of about one- centimeter diameter localized to the entire body of the mandible bilaterally [Fig. 2a]. Each opacity was surrounded by a thin radiolucent rim, The lamina dura circumscribing the teeth was intact and there was no evidence of root resorption. No bony expansion

Table 1. Clinical and radiographic features of patients with sclerotic masses of the jaws.

Case	Sex	Age	Dental Formula	Carious	Radiographic Appearance								
1	F	51	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="padding: 2px;">14 13 12 11</td> <td style="padding: 2px;">21 22 23 24 26</td> </tr> <tr> <td style="padding: 2px;">44 43 42 41</td> <td style="padding: 2px;">31 32 33 34</td> </tr> </table>	14 13 12 11	21 22 23 24 26	44 43 42 41	31 32 33 34	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="padding: 2px;">11</td> <td style="padding: 2px;">21 24 26</td> </tr> <tr> <td style="padding: 2px;">42</td> <td style="padding: 2px;">31</td> </tr> </table>	11	21 24 26	42	31	Multiple globular opacities with lucent rims distributed bilaterally in the mandible and the maxilla.
14 13 12 11	21 22 23 24 26												
44 43 42 41	31 32 33 34												
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3	F	40	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="padding: 2px;">17 16 15 14 13 12 11</td> <td style="padding: 2px;">21 22 23 24 25 26 27 28</td> </tr> <tr> <td style="padding: 2px;">47 45 44 43 42 41</td> <td style="padding: 2px;">31 32 33 34 35</td> </tr> </table>	17 16 15 14 13 12 11	21 22 23 24 25 26 27 28	47 45 44 43 42 41	31 32 33 34 35	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="padding: 2px;">11</td> <td style="padding: 2px;">21 22</td> </tr> </table>	11	21 22	Opacities located bilaterally in the mandibular molar region. Solitary radiolucent lesion is present in the left mandibular molar area.		
17 16 15 14 13 12 11	21 22 23 24 25 26 27 28												
47 45 44 43 42 41	31 32 33 34 35												
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4	F	47	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="padding: 2px;">15 14 13 12 11</td> <td style="padding: 2px;">21 23 24 25</td> </tr> <tr> <td style="padding: 2px;">42 41</td> <td style="padding: 2px;">31 32 33</td> </tr> </table>	15 14 13 12 11	21 23 24 25	42 41	31 32 33	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="padding: 2px;">12</td> <td style="padding: 2px;">21</td> </tr> <tr> <td style="padding: 2px;">41</td> <td style="padding: 2px;">31 32</td> </tr> </table>	12	21	41	31 32	Opacities with lucent rims noted in right maxilla and mandible bilaterally. Intervening bone has ground glass appearance.
15 14 13 12 11	21 23 24 25												
42 41	31 32 33												
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was noticed. Extragnathic radiographic examination was negative. A tentative clinical diagnosis of multiple cemento-osseous dysplasia was made.

Under local anesthesia, the first and second right mandibular molars were extracted and healing was uneventful. One year radiographic follow up did not show any change in the dimension or texture of the opacities [Fig. 2b].

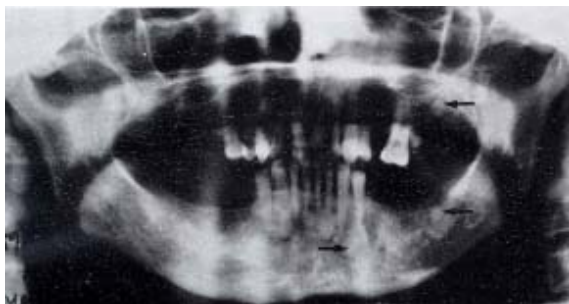


Fig. 1. Panoramic X-ray view showing multiple sclerotic masses (closed arrows) involving both the maxilla and mandible bilaterally.



Fig. 2a. Panoramic radiograph, demonstrating globular masses distributed bilaterally in the molar regions of the mandible (closed arrows).



Fig. 2b. One year follow up radiograph after extraction of teeth #47 and #46. The globular masses (closed arrows) distributed bilaterally in the molar regions of the mandible remained the same as in Fig. 2a.

**Case 3 :**

A 40-year-old black female patient presented to the Oral Diagnosis Clinic for routine dental check up. The clinical examination revealed moderate periodontitis and badly decayed maxillary incisors.

Panoramic X-ray examination showed multiple, dense radiopaque masses, each about a centimeter in diameter, distributed bilaterally in the molar areas of the mandible [Fig. 3a]. The masses had a lucent margin and a definite corticated rim. The right second mandibular molar was extracted because of severe mobility. The socket was curetted and submitted for histopathological examination. No bony expansion of the jaws was noticed. Radiographic examination of the skull was negative.

Microscopic examination of the curetted socket tissue showed small aggregates of fibrous tissue stroma with interspersed irregular bony trabeculae. Osteoid tissue was seen along the borders of some trabeculae. Viable osteocytes were seen. A diagnosis of fibrous lesion was made. One year follow up did not show any changes in the radiopaque masses [Fig. 3b]. There was normal filling of the extraction socket with fine bony trabeculae [Fig. 3b].

**Case 4 ;**

A 47-year-old black female presented to the Emergency Clinic with a diffuse swelling localized to the edentulous right alveolar ridge in the maxillary molar area. The clinical examination revealed slight buccal and palatal expansion of the cortical plates in the right maxilla. The patient depicted severe periodontitis.

Panoramic X-ray examination showed multiple dense and discrete radiopacities of five-millimeter diameter in the maxillary molar area [Fig. 4a]. The radiopacities were surrounded by irregular, ill-defined, radiolucent areas. The surrounding bone showed massive condensing osteitis resembling the so-called ground glass appearance. The panoramic radiograph also demonstrated solitary osteosclerotic lesion in the left mandibular first molar area. A radiolucent area with central opacity was noted in the right mandibular first molar area. Extragnathic radiographic examination proved negative.

Laboratory investigation indicated nothing of significance. Under antibiotic cover and local

anesthesia, the radiopaque lesions in the maxillary molar area were curetted. Histological examination revealed bony sequestra surrounded by granulation tissue. It was diagnosed as a fibrous lesion with secondary infection. Healing was uneventful [Fig. 4b].



Fig. 3a Panoramic view of the jaws showing multiple radiopaque masses (closed arrows) surrounded by a lucent margin located bilaterally in the molar areas of the mandible. Solitary radiolucent lesion is present in the left mandibular molar region.



Fig. 3b. One year radiographic follow up after extraction of the right mandibular second molar. There is gradual filling of the socket with bony trabeculae (open arrows). The radiopaque masses of the mandible remained unchanged (closed arrows).

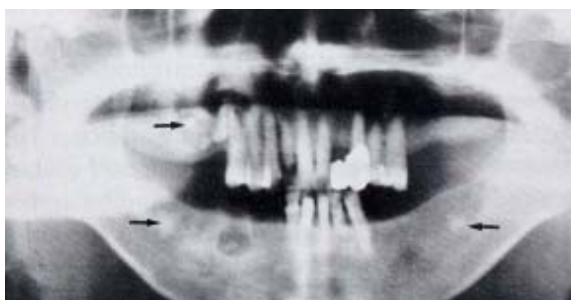


Fig. 4a. Radiopaque masses (closed arrows) involving the right maxilla and the mandible. The surrounding bone has a ground glass appearance.



Fig. 4b. Post surgical panoramic view of the jaws, showing gradual filling of the curetted socket (open arrows). The radiopaque masses remain unchanged (closed arrows).

### Discussion

A number of terminologies to describe multiple sclerotic masses of jaws are used. It seems that these terms connote a single disease process. The more descriptive term, multiple cemento-osseous masses of jaws, encompasses all such lesions. A consensus about the origin of these masses does not exist. Blashke<sup>7</sup> reported that the cemento-osseous masses form as a result of a reactive response from the cells in, or near, the periodontal ligament spaces. All cases in this study showed moderate to severe periodontitis with many grossly carious teeth. The role of low grade infection to stimulate an osteoblastic response may be suspected. The incidence of periodontitis is usually very high in middle-aged patients, and it may be a concomitant affliction rather than indicating a cause and effect relationship. Radiographically, the reactive sclerosis of the bone in chronic diffuse sclerosing osteomyelitis does not exhibit a radiolucent rim or globular texture as seen in these masses. Waldron et al<sup>2</sup> considered multiple cemento-osseous masses to be an exuberant form of periapical cemental dysplasia. They stated that the masses may represent part of the spectrum of benign fibrous lesions of periodontal ligament origin. The clinical, radiographical, and histological appearances of the masses closely resemble those of periapical cemental dysplasia. The masses are analogous to cemental dysplasia in its predilection for middle-aged black females as was also noticed in the present study. Lucas<sup>8</sup> suspected the masses to be hamartomas in nature. The incidence of masses found in the older patients negates this hypothesis. According to Puniamoorthy,<sup>9</sup> sclerotic masses of the jaws as a disease may be an exaggerated form

of hypercementosis resulting from continued growth of cemental remnants left behind after the removal of associated teeth. He added that the familial nature of this condition, such as gigantiform cementoma, has not been proven. Familial occurrence in the present series could not be established.

Radiographically, the lesions can be divided into two groups based upon the appearance of the margin of the opacities. Conditions like chronic diffuse sclerosing osteomyelitis do not demonstrate radiolucent rims. The adjacent bone may show gradual transition from dense opacity to a ground glass appearance transitioning into normal bone. The entity described, as multiple cemental masses, show similar border. On the other hand, the lesions, like gigantiform cementoma and florid osseous dysplasia, are characterized by discrete globular dense radiopaque masses surrounded by a thin radiolucent rim of regular width. The surrounding bone shows normal architecture. In the absence of infection, the radiographic appearance does not show any change even after a period of one year as seen in three of the cases present in this study.

Multiple radiopaque masses described as cotton wool appearance may occur in Paget's disease. Although Paget's disease of bone is more commonly seen in older patients, it is characterized by extragnathic involvement and specific changes in blood chemistry. The masses in Paget's disease do not have a radiolucent rim and the involved bones show expansion. On rare occasions, multiple radiopacities can also result in jaws from metastatic breast or prostate carcinoma.

Cemento-osseous masses are usually asymptomatic unless complicated by supervening

infection. Secondary osteomyelitis with sequestration is known to occur in these patients. Treatment of carious teeth and prevention of periodontal disease will prevent the infection from gaining entrance into the area.

In the authors' opinion, the term cemento-osseous masses should be restricted to the conditions of the jaws which appear radiographically as multiple globular radiopacities delineated from the normal bone by a regular radiolucent margin. The term chronic diffuse sclerosing osteomyelitis should be used to refer to generalized condensing osteitis of the jaws where the margins of the lesions merge imperceptibly with the surrounding normal bone.

### References

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