

Enlarging soft tissue mass involving the mandibular left alveolar ridge

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A 74-year-old male was referred to the oral and maxillofacial surgery clinic for excision of an enlarging soft tissue mass on the mandibular left alveolar ridge. The patient had previously undergone an incisional biopsy of the mass in another office. He was edentulous and had worn complete maxillary and mandibular dentures for 20 years. He stated that he had been unable to wear his mandibular denture for approximately 1 month because of tenderness and enlargement of the lesion.

The clinical examination revealed a firm, sessile, dome-shaped, purplish, 2.5 × 2.5-cm mass in the premolar area on the crest of the edentulous mandibular left alveolar ridge (Fig 1). A 0.5-cm area of ulceration on the superior surface indicated the site of the previous biopsy. A panoramic radiograph disclosed a well-circumscribed "cupped" defect of the

mandibular bone—3 cm in diameter, extending inferiorly beyond the mandibular canal (Fig 2). An occlusal radiograph showed extensive buccal cortical expansion (Fig 3). No evidence of paresthesia or other sensory nerve

deficit was detected. No lymphadenopathy or other palpable neck masses were found.

The patient's medical history included hypertension, obesity, benign prostatic hyperplasia, and a history of trauma



Fig 1 ■ Soft-tissue mass involving the mandibular left alveolar ridge.

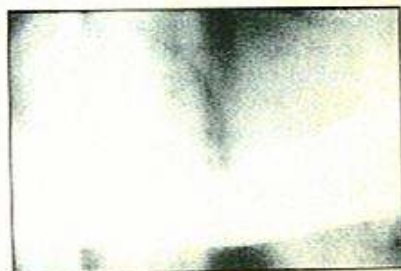


Fig 2 ■ Panoramic radiograph illustrating a large "cupped" defect of the mandibular bone.

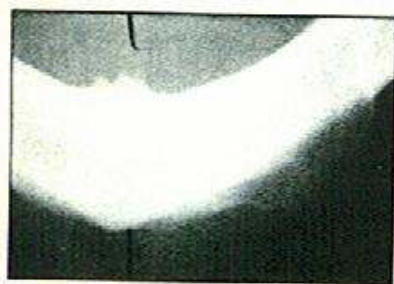


Fig 3 ■ Orclusal radiograph illustrating a large area of buccal cortical expansion.

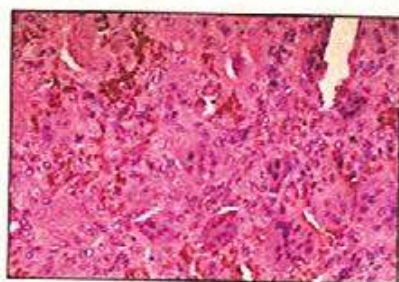


Fig 4 ■ Tumor composed of vascular connective tissue with many small capillaries, foci of hemorrhage, numerous proliferating fibroblasts, and multinucleated giant cells.

to the anterior mandible for approximately 40 years. Current medications included verapamil hydrochloride, 80 mg per day; clonidine hydrochloride, 2 mg per day; hydrochlorothiazide hydrochloride, 25 mg per day; and triamterene, 37.5 mg per day. Laboratory measures of parathyroid hormone, serum calcium, phosphorus, and alkaline phosphatase were all within normal limits. A total body technetium 99 bone scan revealed a solitary area of increased uptake in the left side of the mandible. No somatic complaints were reported.

Diagnosis

Excision of the tumor was performed in the operating room under general anesthetic. During surgery, the tumor appeared partially encapsulated and could be easily dissected from the adjacent soft tissue. The mass was highly vascular, and increased bleeding was encountered as it was elevated from the underlying bone. Near the inferior margin of the tumor, the inferior alveolar neurovascular bundle was identified, completely encompassed by tumor. Because of the extensive involvement by tumor, the nerve was resected. After excision, frozen sections of the surrounding soft tissue confirmed the adequacy of resection margins. The bony crypt was debrided thoroughly, with surgical removal of an additional 3 mm in all areas. Overlying mucosal tissue was approximated and sutured to cover the resulting defect.

Microscopic examination of sections from the surgical specimen showed segments of fibrous connective tissue containing numerous proliferating fibroblasts and multinucleated giant cells. The tissue was highly vascular, with many small capillary channels and foci

of hemorrhage scattered throughout (Fig 4). Small collections of hemosiderin pigment were observed. In view of the extent of bone destruction and inferior alveolar nerve involvement, coupled with the characteristic histological appearance and absence of abnormal laboratory findings, the diagnosis of central giant-cell granuloma was made, confirming the diagnosis of the incisional biopsy made by an outside facility.

Discussion

There has been considerable discussion in the literature as to the exact nature of the central giant-cell granuloma and its relationship to the central giant-cell tumor. In the past, the term giant-cell tumor was used indiscriminately to

considered the two lesions to be separate entities, as did Abrams and Shear,² who identified subtle histological differences between them. Other authors³ have presented equally convincing arguments that the two lesions actually represent one disease process. Regardless of the controversy, the more commonly used terminology for this jaw lesion—central giant-cell granuloma—will be used for this report.

Central giant-cell granuloma of the jawbones is a relatively uncommon tumor. Typically occurring in individuals younger than 30, the tumor is seen twice as frequently in females. Central giant-cell granuloma most commonly arises in the anterior and premolar regions of the jaws. Extension across the midline to involve the contralateral side is common, a rarity with other tumors of the jaws. The mandible is the site of origin twice as frequently as the maxilla.⁴ Pain is an uncommon feature of central giant-cell granuloma, although patients usually report some mild discomfort.⁵ The tumor may be discovered accidentally on routine examination, or bony expansion of the affected area may be the first indication of a problem (as in this case) when a dental prosthesis ceases to fit.

The radiographic appearance of central giant-cell granuloma is variable. The tumor is destructive, producing a unilocular or multilocular radiolucent area with smooth or irregular borders.⁴ When cortical perforation occurs, it is typically on the alveolar ridge or crest of the

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alveolus.³ In the dentulous patient, the tumor commonly causes displacement of teeth without root resorption.⁴ The radiographic findings are not pathognomonic, and the differential diagnoses may include: ameloblastoma, myxoma, metastatic jaw tumor, aneurysmal bone cyst, and central hemangioma.

Microscopically, the lesions are characterized by a fibrous stroma containing proliferating fibroblasts and numerous small capillaries. Hemosiderin deposition is commonly seen. Multinucleated giant cells are present in varying numbers but tend to have a patchy distribution. The

Controversy persists, however, regarding the relationship between the more common "true" central giant-cell tumor (which reportedly occurs primarily in long bones), and the central giant-cell granuloma (which occurs almost exclusively in the jaws). Shklar and Meyer¹

size of the giant cells and number of nuclei they possess are also highly variable. Osteoid formation may be seen, particularly at the periphery.^{4,5}

Lesions that are histologically similar to, or indistinguishable from, central giant-cell granuloma may include aneurysmal bone cyst, central giant-cell tumor, and the giant-cell lesions of cherubism, hyperparathyroidism, and Paget's disease. As a result, clinical, radiographic, and laboratory evaluations must be correlated with histopathological findings to establish a definitive diagnosis. Laboratory value assessments must include serum calcium, phosphorus, alkaline phosphatase, and parathyroid hormone levels to rule out the various forms of hyperparathyroidism and Paget's disease.³

Treatment of central giant-cell granuloma usually consists of thorough curettage or surgical excision. Chemical cautery has also been suggested and used occasionally after enucleation in the past.⁶ The friable nature of this tumor, the frequent association with roots of teeth, and the extension into cancellous bone indicate that remnants are commonly left behind after curettage. This does not seem to inhibit resolution of the tumor in most cases.⁶ After reviewing a large series of central giant-cell granulomas, however, Cherrick⁷ found an increased recurrence in tumors that were larger than 2 cm in diameter. He suggested that the larger lesions should be treated with surgical excision.

Close follow-up is suggested for the first 6 to 9 months postoperatively. There-

after, semiannual examinations are recommended.

Although some authors have reported recurrence and more aggressive behavior after irradiation of benign giant-cell tumors of long bones, malignant giant-cell lesions of the jawbones are remarkably rare.⁸ Mintz and coworkers⁸ reported the first documented case of a primary malignant giant-cell tumor of the jawbone in 1981. In a review of the literature, they also verified one case of malignant transformation of a benign giant-cell tumor of the jawbone.

Summary

The central giant-cell granuloma is a benign, fairly uncommon lesion that can appear clinically and radiographically similar to many other lesions. When histopathological examination discloses a giant-cell lesion of bone, clinical, radiographic, and laboratory data must be obtained and carefully analyzed to rule out such conditions as hyperparathyroidism, Paget's disease, and cherubism, and to confirm the diagnosis of central giant-cell granuloma. Once the diagnosis is established, thorough curettage or surgical excision of the tumor is recommended to assure complete removal. Although recurrence is rare, periodic postoperative examination is also suggested.

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