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Maxillary Myxoma: Surgical Treatment and Reconstruction with Buccal Fat Pad Flap: A Case Report

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Abstract

Myxoma is a benign tumor that arises from mesenchymal tissue and is found less commonly in the bone than in soft tissue. The majority of bony myxomas occur in the jaws. When compared with other odontogenic tumors, myxoma of the jaws is a rare entity. Numerous types of treatment have been used for these tumors including simple curettage, enucleation, curettage with peripheral ostectomy, and en bloc resection with or without immediate reconstruction. The buccal fat pad (BFP) is a lobulated mass of fatty tissue in the oromaxillofacial region, which has long been a source of grafts in facial augmentation. A case of an odontogenic myxoma in the left maxillary molar area of a 34-year-old female that was treated by curettage and peripheral ostectomy is presented. The surgical defect was successfully repaired with a pedicled BFP flap.

Keywords: Odontogenic myxoma, buccal fat pad flap, BDP, benign tumor, oral surgery

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Introduction

Myxoma is a benign tumor that arises from mesenchymal tissue and is found less commonly in the bone than in soft tissue.[1] It is usually found in the heart, skin, subcutanous tissue, and certain bones. The majority of bony myxomas occur in the jaws. When compared with other odontogenic tumors, myxoma of the jaws is a rare entity.[2]

Odontogenic myxoma predominantly affects females at a mean age of 28 to 30 years, but the possible age range is wider. A slow-growing, painless swelling of the jaw is the typical presentation.[1] It is mainly asymptomatic and usually shows a multilocular radiolucency with either distinct or poorly defined margins.[3]

The buccal fat pad (BFP) is an anatomically rounded and biconvex structure that is of great importance in the facial contour. It is an adipose tissue surrounded by a thin capsule and located inside both masticatory spaces in the oromaxillofacial region.[4] The BFP has a central body with four extensions: pterygopalatine, temporal, pterygoid, and buccal.[5] The central body and buccal extension account for approximately 50% of the BFP and are the most clinically significant portions.[6] The blood supply of the BFP is from three sources: the maxillary, superficial temporal, and facial artery.[7] The BFP has long been a source of free and pediculated fat grafts in facial augmentation and to reconstruct oral mucosal defects.[8]

Numerous types of treatment have been used for these tumors including simple curettage, enucleation, curettage with peripheral ostectomy, and en bloc resection with or without immediate reconstruction.[2]

The following describes a case of odontogenic myxoma in the left maxillary molar area that was treated by curettage and peripheral ostectomy and immediately reconstructed with a pedicled BFP pediculed flap.

Case Report

Diagnosis

A 34-year-old woman was referred with a complaint of infra orbital swelling over the left maxilla. Physical examination revealed facial asymmetry and a swelling extending from the alveolar ridge in the premolar and molar region to the infra orbital ridge on the left side. An extensive osteolytic area with fine trabeculations in the molar region of the maxilla, associated with displacement of the second molar, was observed in the panoramic radiographic examination (Figure 1). The tumor invaded the left maxillary antrum. Computerized tomography showed an expansible, homogeneous mass in the left maxilla associated with thinning of the adjacent bony structures including the anterior and medial walls of the maxillary antrum (Figure 2).

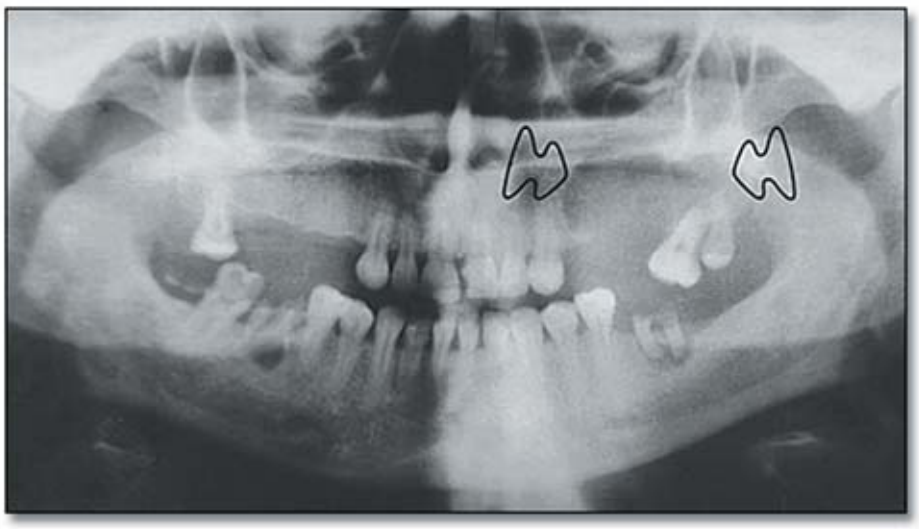

Figure 1. Preoperative orthopantomograph of the patient showing fine trabeculations within the lobular radiolucent tumor.

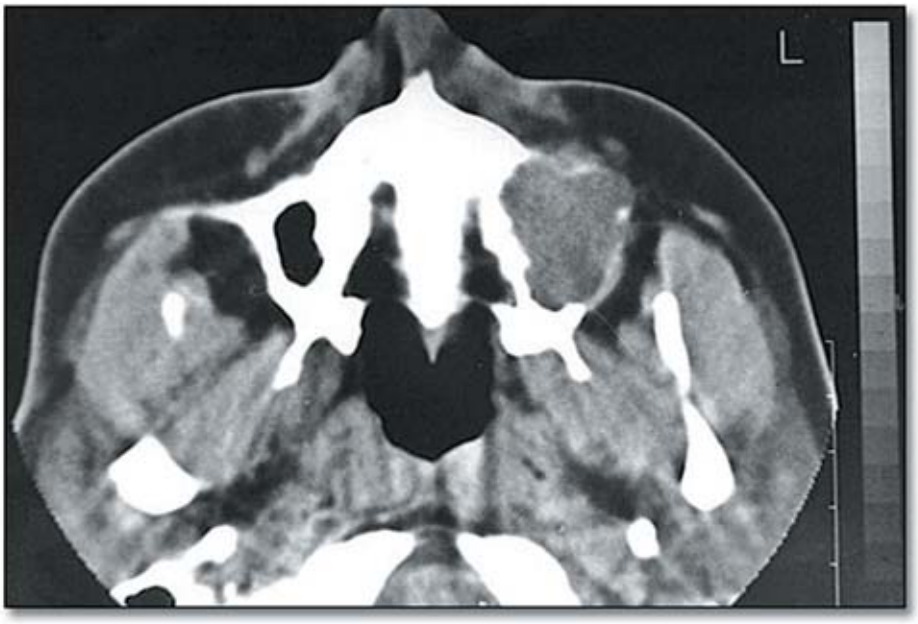

Figure 2. Bony destruction of the tumor on lower left antral walls on an axial CT image.

Odontogenic myxoma, ameloblastoma, central giant cell granuloma, hemangioma, and aneurysmal bone cyst were considered in the differential diagnosis. An incisional biopsy was made. The microscopic image was compatible with odontogenic myxoma.

Surgical Procedure

A buccal mucoperiosteal flap was reflected extending from the maxillary tuberosity to the canine tooth in the left infraorbital region under local anesthesia. The tumor was totally removed with peripheral ostectomy. The remaining bone defect was filled partly with HA granules (Osteograf®/LD, Ceramed, USA). Then, the BFP was approached via a long horizontal incision through the periosteum. A curved haemostat was introduced through the periosteal incision aiming cranially, in the region of the third molar, and then withdrawn, wide open, in such a way that a submucosal tunnel was created. This manoeuvre was repeated until the BFP appeared in the mouth. After the BFP was mobilized intraorally by blunt dissection, suction discontinued to prevent the aspiration of the fat. The remaining large oro-antral opening was covered using the pedicled BFP flap followed by partial mucosal flap closure with 3/0 vicryl sutures (Figure 3).

Figure 3. Mucosal flap closure (long arrow) and BFP (short arrow) placement after tumor removal.

Histopathology

The histopathologic examination of the excised specimen confirmed the previous diagnosis of odontogenic myxoma. Proliferation of loosely arranged and spindle-shaped cells in the mucoid stroma was observed (Figure 4a). Tumor cells were smooth muscle actine (SMA) and vimentine positive but stained negative for S-100 (Figure 4b).

Post-Operative Follow-up

The postoperative period was uneventful. The patient's progress was followed monthly for the first six months following surgery and continues to be examined yearly.

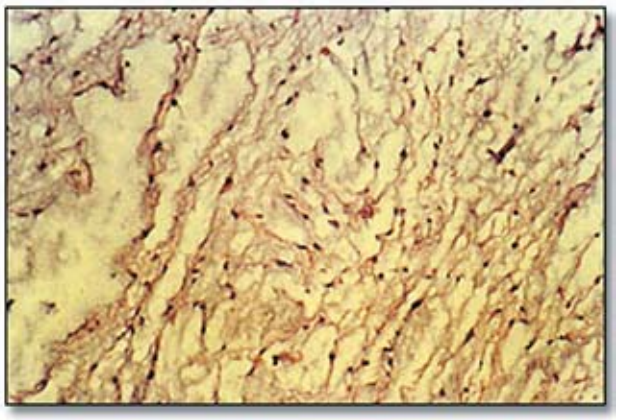

Figure 4a. Low power appearance the tumor extending under the gingival mucosa (Hematoxylen & Eosin; x100 magnification).

Figure 4b. Tumor cells SMA stain positive for smooth muscle actine (x400 magnification).

Figure 5. Intra oral view of the patient after two years showing no signs of recurrence.

Good aesthetic and functional results were obtained. No clinical and radiographic signs of recurrence were noted at the two year follow-up (Figures 5 and 6).

Discussion

Odontogenic myxoma is a rare tumor, which in spite of its benign histologic aspect occasionally can infiltrate and destroy the jawbone.[3] It appears to be odontogenic in origin related to malformations or missing teeth. Odotogenic myxoma predominantly affects females. It usually occurs between 10-29 years of age, although

Figure 6. Postoperative orthopantomograph of the patient after two years showing no signs of recurrence.

young infants and older persons can also be affected.[1] Kaffe et al.[9] in a series of 164 cases found the male to female ratio was 1:1.5. They diagnosed most of the tumors (75%) in the second to fourth decades. In the same series tumors were located in the mandible in two-thirds of the cases and in the maxilla in one-third of the cases. In the maxilla the alveolar and zygomatic processes are the most common sites of occurrence, with frequent invasion of the tumor into the maxillary antrum.[2] In the present case the tumor showed similar features to the literature in terms of age and location.

Myxomas are mainly asymptomatic.[1-3] The lesion grows slowly and may be present several years before consultation is sought, occasionally attaining sufficient size to produce considerable facial deformity. The involved teeth may be malpositioned or mobile and are usually viable. Pain or paresthesia is rarely present until considerable enlargement of the mass has occurred.[1-2] Similarly, in the present case the left second molar was malpositioned by the tumor expansion with no neurologic symptoms.

The radiographic features are non-specific and vary according to the size and duration of the lesion. Typically the tumor is a multilocular radiolucent lesion, often demonstrating coarse bony trabeculae in the central area with or without well-defined margins.[1-2] Terms such as soap bubble, honeycomb, and string of a tennis racket have been frequently used to describe these features.[1-3] In the maxilla the antrum is frequently involved, giving a cloudy image. A few lesions are unilocular and behave less destructively than the larger, multilocular variety.[2] Kaffe et al.[9] reported the following in 164 cases: a multilocular appearance was observed in 55%, a unilocular appearance was observed in 36%, and 9% were not loculated. There was a statistically significant correlation ($p<0.000$) between size of the lesion and its locularity with the larger lesions more likely to be multilocular.[9] Peltola et al.[10] found unilocular lesions were mostly located in the anterior and multilocular in the posterior areas of the jaws. The tumor in the present case was an unilocular type in the posterior maxilla.

Histologically, odontogenic myxoma is characterized by spindle-wedge or stellate shaped cells with branching processes lying loosely in an abundant background of acid mucopolysaccharide.[3] Small amounts of collagen fibers may also form, and there may be small, scattered epithelial rests.[1] The ultrastructural features suggest lesional cells are very similar to myofibroblasts. Lo Muzio et al.[3] found all the odontogenic myxoma were positive for vimentin and muscle specific actin and negative for keratin, desmin, neural markers, and S-100. By contrast, Lombardi et al.[11] demonstrated the spindle cells of two odontogenic myxomas were keratin, nonspecific enolase, glial-specific protein, neuroflament, and factor-VIII-related antigen negative but were strongly positive for S-100 protein. However, tumor cells were SMA and vimentin positive but stained negative for S-100 in the present case.

Radical surgery, excision, or enucleation followed by curettage of the surrounding bony tissue has all been advocated as treatment options. Myxomas are benign but can infiltrate widely. Recurrence after excision is common even after vigorous and repeated surgical treatment and residual tumor can persist in the jaws for many years.[1] Because of the potential for local invasion of the bone and a high rate of recurrence ranging from 6% to 60% following conservative treatment, radical treatment including wide resection or en bloc resection has been strongly advocated by many authors. Although radical surgery appears to eradicate the tumor completely, it also causes a significant functional and aesthetic disturbance.[2] In addition radical surgery should be carried out in the hope of preventing recurrence, but this is not always successful. An alternative treatment involves wide resection with a small cuff of normal tissue or a generous amount of apparently uninvolved surrounding tissue. The peripherally resected margin beyond the lesion varies from 5 to 10 mm. This method has also been used to cure recurrent maxillary myxoma following conservative treatment and has the advantage of preserving vital structures and maintaining oral function.[2] For the same reason, we treated our patient with curettage and peripheral ostectomy and no recurrence was noted after two a year period.

A number of surgical procedures have been advocated for the reconstruction of defects in

the oral cavity after ablative surgery including various bone grafts and allografts such as hydroxiapatite granules, primary closure, split-thickness skin graft, regional rotational flap, and distant flaps. The choice of coverage is based on the type and size of the defect.[9] Granules represent a natural skeleton that appears to behave more physiologically during wound healing. They have shown a favourable clinical and histologic profile and consistency of chemical content, porosity, size, and shape.[12] Because of its bone substitution capabilities, a low density synthetic was used in our case. The BFP is a lobulated convex mass of fatty tissue covered by a very delicate membrane extending upward to reach the temporal fossa and inferiorly into pterygomaxillary space.[13] It is a supple and elastic structure; therefore, reconstruction of small defects in the oral cavity resulting from wide excision can be managed effectively with BFP. The indications for use of the BFP include defects of the oral mucosa and defects after excision of a benign or malignant tumor, preferably smaller than 5 cm.[8] The use of the BFP graft in conjunction with a pedicled mucosal flap provides vascular support to both soft tissue layers and bone grafts, thereby, favouring tissue healing of both. The BFP graft serves as a bed for secondary granulation by reducing dehiscence in the soft tissue layer and it physically aids in closure by obliterating dead space between the oral and nasal cavities. In addition the BFP creates a soft tissue hydrophobic middle layer that acts as a barrier by virtue of the physiologic composition of adipose tissue.[14]

Potential complications of the use of BFP grafts are minimal, although hematoma, infection, or even facial nerve injury has been reported.[8,13] However, these complications can be avoided by careful incision of the buccinator fascia and limited dissection within the masticatory spaces.[13] In our case healing was perfect with no complication after the defect was reconstructed with a BFP flap. It was concluded a pedicled BFP was an effective technique in surgical closure of the intra oral defect in the present case.

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