

Simultaneous Implant Placement and Osseous Regeneration in a Resected Mandibular Site: A Case Report

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Abstract



Reconstruction of alveolar bone in patients presenting with severe osseous defects resulting from gross pathologies is a challenging front in the field of oral rehabilitation. The task is all the more demanding when it comes to a resected mandibular site. A mandibular site presents with a challenge to preserve and prevent damage to the inferior alveolar nerve bundle which, if bypassed, would pose problems of paresthesia of the supplied region, temporary or permanent.

The treatment alternatives to rebuilding the alveolar ridge include bone grafts, guided bone regeneration and distraction osteogenesis. Autogenous bone grafting is by far considered the gold standard technique and is most widely used for

alveolar reconstruction with success rates ranging from 39% to 100%. Although the procedure of grafting such an area warrants a bone regeneration period of many months before implants can be placed in healthy bone, simultaneous placement of both is now commonly performed.

In this case report we describe the removal of a rare mandibular parasymphiseal Adenomatoid Odontogenic Tumor and subsequent simultaneous osseous and implant rehabilitation using allografts and dental implants in a young female patient who presented with a mandibular asymptomatic swelling of 3 month duration involving teeth 20-23. The histopathology confirmed an extra follicular Adenomatoid Odontogenic Tumor.

KEY WORDS: Adenomatoid Odontogenic Tumor, pathology, bone grafting, dental implants

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Figure 1a: Pre-operative radiograph (panoramic).



Figure 1b: Pre-operative radiograph (occlusal).

CASE REPORT

A 17 year old female patient reported with a complaint of painless swelling in the mandibular parasymphyseal region of 3 months duration. The patient had no relevant medical history or used any medication in that period. There was no history of trauma, pain, discharge or any other related lesions at that site. On clinical examination there was a facial asymmetry with a diffuse small swelling below the left commissure. The skin over the swelling was normal and the mass was slow growing, gradually increasing in size. Intraoral examination showed no buccolingual expansion of the left mandible and the teeth were mobile. There was displacement of the canine-premolar teeth in the region. The swelling was bony hard in consistency with egg shell crackling of the buccal cortical plate in the vestibule. The margins were well defined with normal overlying mucosa. There were no palpable lymph nodes in the area of drainage.

The swelling was aspirated at the first visit and it yielded minimal amounts of blood tinged serous fluid. The possibility of ameloblastoma and calcifying odontogenic epithelial tumor were considered preoperatively. Microscopic features suggested it to be an extra follicular Adenomatoid Odontogenic Tumor. Teeth 20-23 were extracted. The lesion was approached through the extraction socket and the tumor was removed.

The patient was followed up regularly and six months post operatively implant placement was planned out. Four implants were planned in the region of 20-24 with simultaneous osseous regeneration of the alveolar ridge in the same region. Tooth 24 was kept as a transitional abutment until the day of surgery. A mucoperiosteal flap was elevated with a crestal incision in the same region to expose the alveolar bone and three osteotomies were accomplished using surgical burs. The angu-



Figure 2: Removal of tumor with lining.

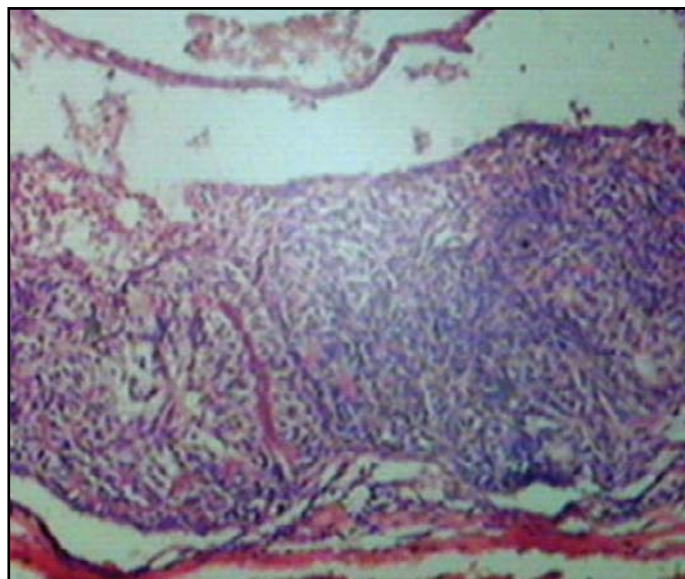


Figure 3: Biopsy confirmed the diagnosis of AOT.



Figure 4: 6 months after tumor removal.



Figure 5: Tooth #24 kept as transitional until day of implant placement.

lations were verified using paralleling pins and implants were placed (3.5x12mm, Biohorizons, Alabama, USA). Tooth #24 was extracted with immediate implant placement (3.5x12 mm, Bio-

horizons, Alabama, USA). The area was then grafted using particulate graft (Bone Gen, USA) which was further secured in place by a barrier membrane (Biomend, Zimmer Dental,

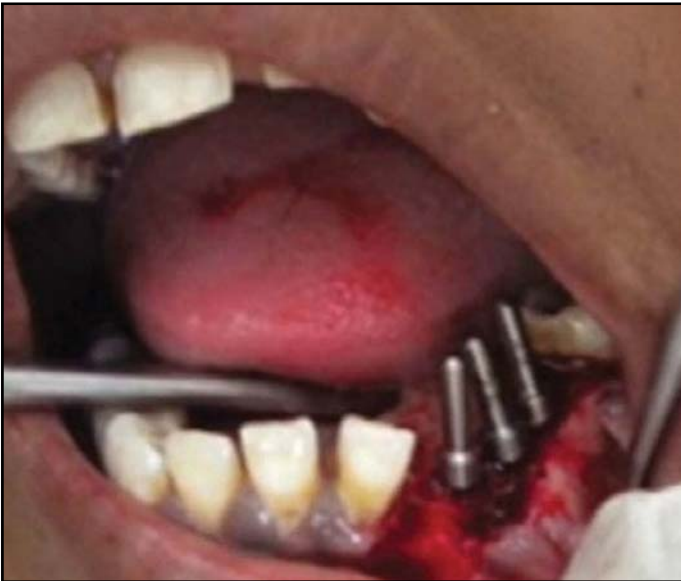


Figure 6: Paralleling pins at implant sites.



Figure 7: Bone graft secured in place with barrier membrane.



Figure 8: Post-operative view with 4 implants and bone graft.



Figure 9: Post-operative radiograph.



Figure 10: Clinical view after prosthesis insertion.

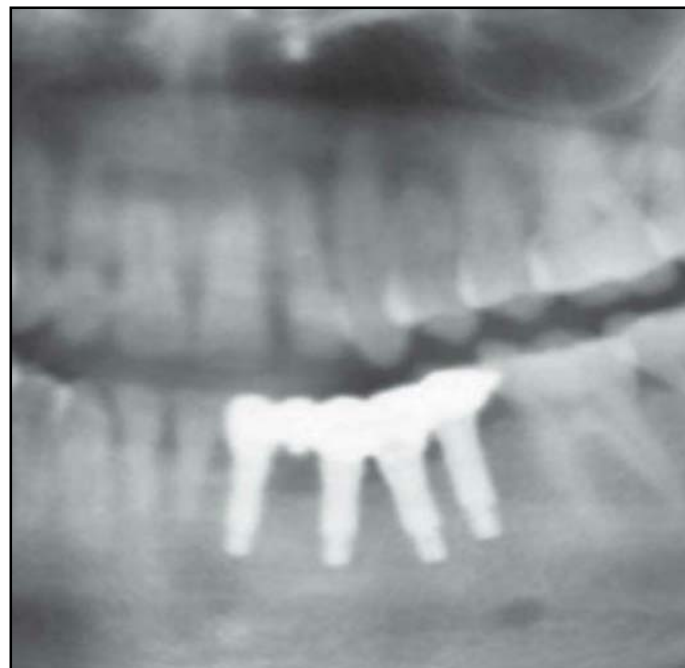


Figure 11: Radiographic view after prosthesis insertion.

California, USA). A cement retained crown and bridge prosthesis over angled custom-made abutments was later delivered. Recall over the next 4 years has been uneventful.

DISCUSSION

The treatment of oral pathologies such as large cysts and tumors not only includes their removal but also the compensation of the oral and dental losses inferred by them. Adenomatoid Odontogenic Tumor is an uncommon and completely benign tumor. It represents 3-7% of all odontogenic tumors. Clinically it is found in late adolescence or young adults. Females are twice as frequently affected as males. The tumor is most frequently located in the anterior maxilla and forms a very slow growing swelling. It appears usually as an asymptomatic swelling with cortical expan-

sion and displacement of adjacent teeth.

The treatment protocol suggests complete removal of the tumor with its lining, as was done the case presented, and regular reviews for any recurrences. Once the clinical and radiographic findings ensure complete healing, rehabilitation is the second phase. The routine problem encountered after tumor removals, apart from whole or part of missing dentition, is primary and secondary bone loss. The bone loss may be vertical or buccolingual but is usually a combination of both. This defect challenges the placement of dental implants as was the case in this young patient. The next protocol is then bone regeneration using grafts. Ideally, the osseous structure is regenerated first and then dental rehabilitation in a second operation after a period of healing. However, all other criteria being satisfactory, a simultaneous



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