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Pre-Prosthetic Alveoloplasty and Soft Tissue Excision in a Completely Edentulous Patient - A Case Report

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Abstract

Pre-prosthetic surgery is performed to restore oral function and facial form of the patient. The goal of this approach is to create a dental prosthesis that fits properly and is aesthetically pleasing by surgically altering the alveolar process and the tissues that surround it. In this case report, a 60-year-old systemically healthy female patient had been referred to the Department of Periodontics. The patient was diagnosed with bony prominence on the labial aspect of the left lower canine region and soft tissue overgrowth on the right upper anterior region. Soft tissue excision and Alveoloplasty with bony recontouring was performed for the same to provide a smooth ridge form for the fabrication of a well-fitted complete denture.

Keywords: Periodontal intervention, Pre-prosthetic surgery, Soft tissue excision, Alveoloplasty, Recontouring

Introduction

Pre-prosthetic surgery refers to procedures intended to enhance the prognosis of prosthodontic care or to expedite prosthesis fabrication whereby certain lesions or abnormalities of the hard and soft tissues of the jaws are surgically eliminated with the goal of successfully placing the prosthetic appliances further on.[1] The reduction of alveolar margins and interdental gingival papillae following dental extractions by Willard et al. (1853) was a pioneer step in this regard.[2] Beers et al. promoted "excisions of alveolus after extraction of teeth" in 1876. Furthermore, he provided a thorough explanation of how the aberrant protrusion of the alveolar process may necessitate the resection of the bone.[3] Pre-prosthetic surgery evolved from merely a ridge trimming service to a fully reconstructive surgery when Kazanjian reported on the prototype of labio-buccal vestibuloplasty, which created an additional denture-bearing surface for greater denture stability.[4]

Pre-prosthetic surgery aims to eliminate pre-existing bony and soft tissue deformities, correct the relationship between the maxillary and mandibular ridges, and provide sufficient bony and soft tissue support with optimal vestibular depth in order to create the proper supporting structures for the prosthetic appliance replacement that follows. The resulting stable, appropriately extended conventional prosthesis should permit a wide dispersion of functionally generated forces and allow for good function and aesthetics.[5]

Two such treatments, soft tissue excision and alveoloplasty, are performed to remove soft tissue and bony prominences, respectively. An unstable denture foundation may result from the presence of redundant crestal soft tissue, which is a fibrous, hyperplastic tissue. They appear on the crest of the alveolar ridge as additional or superfluous tissue.[6] The

term "alveoloplasty" refers to the process of removing and trimming some interdental and interradicular bone, together with the labio-buccal alveolar ridge, either during or after tooth extraction. Conservative resolution of any undercuts, sharp crestal bone, or bony protrusion is the aim of this procedure.[7]

This case study describes how smoothening an uneven ridge and reducing severe soft tissue and bony prominence improved the denture foundation which if hadn't been treated, the patient would have experienced severe discomfort, sore spots, and difficulty seating the denture.

Case Report

Two weeks after having all of her natural teeth extracted in order to fabricate a set of dentures, a 60-year-old woman with no systemic comorbidities, reported to the Department of Prosthodontics. An ovoid facial profile that was symmetrical was identified upon extraoral examination with no palpable lymph nodes, and there were no abnormalities in the TMJ. The maxillary and mandibular alveolar ridges were completely edentulous. The upper right anterior region had two pedunculated soft tissue overgrowths spaced around 1 cm apart (Figure 1) and there was a bulbous bony prominence on the lower left canine region of the edentulous ridge (Figure 2). The patient was referred for a soft tissue excision and alveoloplasty procedure to the Department of Periodontics.

The patient was informed regarding the procedure and a signed consent form was acquired. Following the standard draping and painting procedures, the muco-buccal fold over the prominent soft tissue and bony prominence was infiltrated with a local anaesthetic solution (2% lignocaine hydrochloride with 1:2,000,000 adrenaline) and additional palatal and lingual infiltrations were given for the upper and lower arches, respectively.

Following assessment of the subjective and objective symptoms, the pedunculated overgrowth was retracted with a tissue holding forceps and excised from the base along with soft tissue contouring over the region in concern using a surgical blade no 15 (Figure 1). For the Alveoloplasty procedure, crestal and vertical releasing incisions were given, and a surgical blade number 15 was used to raise a full thickness flap. With generous irrigation, carbide round and flame-shaped burs were used to achieve bony contouring. The homogeneity of the ridge was assessed using digital palpation. Bone files and rongeurs were used for smoothening in order to achieve the appropriate ridge contour (Figure 3). Following the establishment of haemostasis, the flap margins were approximated and secured using non-resorbable suture (3-0 silk suture, STERILON) with simple continuous suturing technique (Figure 4). After the surgical procedure the course of Cap. Amoxicillin 500 twice a day for 5 days and Tab. Zerodol SP SOS was prescribed and post-operative instructions were given. Suture removal was done seven days postoperatively and the healing was satisfactory (Figure 2).

Discussion

Preparing the patient's mouth for the placement of a denture (or prosthesis) is known as pre-prosthetic surgery. To prepare the mouth for a denture, procedures such gingival tissue reduction, additional bone elimination, and/or bone smoothening and contouring may be required to ensure an optimal level of comfort, stability, and retentivity for the denture.[1]

Alveoloplasty is more likely to have a major role in the treatment plan when a patient has had several dental extractions in succession which refers to the recontouring of the alveolar process as opposed to its removal. The aim is to preserve as much hard and soft tissue as feasible while achieving favourable tissue support for the planned prosthesis by contouring the alveolar ridge and removing any bony and soft tissue prominences.[8] Dental practitioners ought to be able to assess and identify any adjustments that are necessary for the denture loading regions, as well as communicate to the patient the significance of carrying out this vital treatment.[2] By adequately compressing the socket and eliminating the bony spicules after extraction, complications of subsequent minor surgical procedures can be minimized.[9] After performing quadrant-wise surgical correction of the patient's uneven ridges and bony prominences in an 81-year-old patient, Bhuskute et al. came to the conclusion that alveoloplasty is an effective technique to fabricate comfortable, well-fitting prostheses.[10]

In their case report, Dhingra et al. noted that gingival overgrowth may result from tooth extraction or from the incorporation of a particular subpopulation of gingival fibroblasts in the mucosa of the alveolar

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ridge. Surgical excision of the overgrowth was recommended as a corrective measure and as a pre-prosthetic procedure for the fabrication of dentures.[6]

Conclusion

For complete dentures to be fabricated effectively, it is essential to accurately diagnose the patient's edentulous ridge condition and pre-prosthetic surgical techniques such as soft tissue excision and alveoloplasty can be performed since they shorten operating time, lessen patient discomfort, hasten healing and in this instance, effectively aid in the creation of a comfortable and well-fitting denture.

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Figures

Figure 1: Before and After clinical images for Soft tissue excision procedure

Figure 2: Before and After clinical images for Alveoloplasty procedure

Figure 3: Elevation of full mucoperiosteal flap and removal of sharp edges and smoothening of Bone

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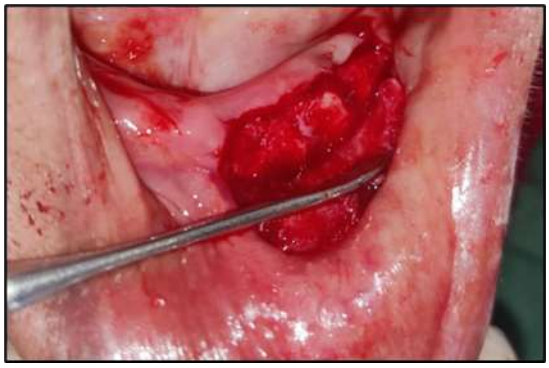

Figure 4: Wound closure with simple continuous suturing technique

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