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Non-Surgical Management of Complete Denture in Presence of Anatomical Challenges

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Abstract

Complete denture fabrication can be a challenging task to achieve especially patients requiring pre-prosthetic surgery. In this case report, we discuss the treatment of a fully edentulous 73-year-old female with upper and lower complete dentures and nonideal ridge morphology. The patient denied pre-prosthetic surgical intervention indicated to improve the alveolar residual ridge and facilitate denture fabrication. The objective of this case report is to present a modification of traditional steps for fabrication a complete denture that needed a pre-prosthetic surgery.

Keywords: Prosthodontic Diagnostic Index (PDI), Maxillomandibular, Dentures, Pre-Prosthetic Surgery.

Introduction

When treatment planning complete dentures, clinicians should consider a variety of factors necessary for success. The Prosthodontic Diagnostic Index (PDI) can guide clinicians in their assessment of case difficulty.

Mandibular bone height, maxillary ridge morphology, muscle attachments, maxillomandibular skeletal relationships, conditions requiring pre-prosthetic surgery, inter-arch space, tongue anatomy, and other modifiers are all important considerations during the initial patient examination. [1,2]

Indications for pre-prosthetic surgery include localized or generalized hyperplastic replacement of resorbed ridges, epulis fissuratum, papillomatosis, unfavorably located frenal attachments, pendulous maxillary tuberosities, bony

prominences and undercuts, discrepancies in jaw sizes and relationships, and pressure on the mental foramen. [1,2]

In this case report we focus on modification of treatment as it pertains to maxillomandibular relationships and alveolar ridge morphology as indications for pre-prosthetic surgery. The patient's maxillomandibular relationship is Angles' class III, exacerbated by mandibular and maxillary ridge bone atrophy.

The patient in this case report presents with a large bony undercut which could compromise denture insertion, thus indicating the patient for pre-prosthetic surgery. In conjunction, these factors describe the patient as PDI Class III.

Findings

The patient presented with a large mandibular buccal exostosis extending from canine to second premolar area resulting in severe, long spanning bony undercut. (Image 1.1), an asymmetrical mandibular ridge when viewed from the horizontal plane. (Image 1.2)

Furthermore, the patient presents with a skeletal class 3 relationship (Image 1.3). Pre-prosthetic surgery was recommended to the patient to improve patient's skeletal class 3 profile by reducing the buccal exostosis, facilitate the denture's path of insertion, and result in a retentive functional and esthetic full denture. 1,2,3

Image 1.1

Image 1.2

However, the patient declined undergoing a pre-prosthetic surgery and requested an alternative plan. The patient was treatment planned for maxillary and mandibular complete dentures. In accommodation for the patient's request, while explaining the risks resulting from not following the optimal treatment plan, we decided to attempt to bypass pre-prosthetic surgery by setting the denture in teeth in a class 1 relationship and changing the path of insertion of mandibular denture to prevent engaging the soft tissue undercut.

The patient was notified that esthetics may be compromised on the final dentures. To prevent engagement with the bony undercut, the path of insertion for the denture base was changed to be from the labial direction as opposed to the occlusal direction. It was noted that the mandibular denture's lingual flange did not interfere with insertion due to the extensive residual ridge resorption in the posterior areas of the mandible.

Image 1.3

0-degree mandibular teeth were set along the existing ridge, while 0-degree maxillary teeth were set labial to the ridge to achieve a dental relationship closer to the Class 1 relationship. (Image 2.1) An appropriate vertical dimension of occlusion (VDO) was established, and bilateral balanced occlusion was achieved with the assistance of bilateral mandibular molar ramps. Midlines and phonetics were confirmed. Esthetics, although slightly compromised from the provider's perspective, were adequate for the patient who was very satisfied with the outcome. [5]

Image 2.1

Discussion

Although pre-prosthetic surgery stands to be the optimal treatment, in some cases, such as certain medical conditions, finances, or patient preferences, require modification of the plan to accommodate the patient's needs while resulting in a functional and esthetic full denture. [4]

The extent of modifications that can be done depends on the severity of the case and the nature of the indication. In this case, planning an alternative approach to treatment was possible without performing pre-prosthetic surgery. Alteration to the path of insertion and setting teeth in the desired class I occlusion achieved a clinically acceptable result.

To improve the camouflage of the exostosis, the acrylic was thickened on the contralateral side of the exostosis to improve soft tissue and labial contours. (Image 2.2) Mandibular teeth were set along the residual ridge. However, over the bony exostosis, mandibular teeth were set slightly lingual to the center of exostosis to help maintain arch form. (Image 2.1) It is important to note that when changing the mandibular denture's path of insertion, the extent of the lingual flange must be evaluated.

In this case report, the patient has extensive posterior ridge resorption, enabling the denture to have a shorter lingual flange which did not interfere with the path of insertion. All these factors in conjunction helped to camouflage the exostosis and maintain acceptable aesthetics and function.

When treatment planning complete dentures on a difficult case with nonideal ridge morphology, it is extremely important to perform a thorough clinical analysis, treatment plan appropriately, discuss patient expectations and achieve results that are proportional to the starting point.

Image 2.2

Image 2.4

Conclusion

Pre-prosthetic surgical procedures are necessary to achieve a retentive, functional, and esthetic full denture. Occasionally a modification of traditional treatment is also necessary to accommodate the patient's specific circumstances and autonomy. This case changes in the path of insertion in conjunction with camouflaging techniques worked well to bypass pre-prosthetic surgery while achieving satisfactory results.

In some cases where patients either deny pre-prosthetic surgery or are unable to undergo pre-prosthetic surgery for several reasons including medical and financial, camouflaging bony undercuts and altering the path of insertion can achieve clinically acceptable results.

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