Treating Compromised Maxillary Dentition with a Novel Technique for Full Arch Extraction, Alveoloplasty and Immediate Complete Denture: A Case Report

Compton C., Pafford M., Serag M.
School of Dental Medicine, East Carolina University, Greenville, North Carolina, United States

Introduction

Alveoloplasty is often a necessary adjunct treatment utilized to allow for adequate restorative space for a prosthesis. [1] The amount of alveoloplasty required depends greatly on the type of prosthesis being planned. Different prostheses mandate different restorative spaces. [2] To determine the amount of restorative space available, the first factor that should be assessed is the vertical dimension of occlusion (VDO). [3] If the patient presents with collapsed or diminished VDO, and the plan is to restore it, the amount of alveoloplasty will be reduced and in some cases completely eliminated. The second factor that should assessed, is the incisal edge position. The incisal edge position dictates the level of the plane of occlusion which will have a great effect of the restorative space available for maxillary prosthesis and the amount of alveoloplasty required. Although immediate dentures/prostheses are considered one of the most challenging treatment in dentistry, they have been used successfully for a long time. For an immediate denture to be successful, significant amount of planning is necessary. Immediate denture success depends predominantly on the practitioner’s experience and artistry due to the lack of the try-in step where many aspects would be verified before processing the prosthesis. In cases where immediate dentures require significant amount of alveoloplasty, communication between prosthetic dentist and the oral surgeon always provides a challenge. [4] This table presentation will show a challenging case, maxillary extractions and immediate delivery of maxillary denture where a novel alveoloplasty technique was utilized.

Case History

A 57 year-old, African American female patient with a medical history consisting of hypertension, osteoporosis, and hyperthyroidism, negative to review of systems, presents for comprehensive treatment. Chief complaint consisted of her wanting to restore her dentition and to fix her smile. Intraoral examination revealed interarch class I relationship. 100% anterior overbite and lack of restorative space. Vertical Dimension of Occlusion was adequate, patient was not collapsed. Prosthetic treatment plan included an immediate interim maxillary complete denture and an immediate mandibular interim partial denture. After 3-4 months of healing, prosthetic treatment plan included conventional complete maxillary denture and a mandibular cast metal partial denture. Surgical treatment for the maxillary arch included full maxillary extractions, 8 mm anterior maxillary alveoloplasty and 3-4 mm posterior maxillary alveoloplasty. During the immediate denture planning phase, the maxillary incisal edge was moved 8-9 mm in a gingival direction. Maxillary complete denture setup was done following maxillary cast surgery/modification which was determined based on the incisal edge position [5] and the new plane of occlusion. A maxillary interim complete denture and a mandibular interim partial was processed in heat cure acrylic resin. A full thickness flap was elevated from #2 → #15; the maxillary central incisor incisal edge was used as reference to make markings on the facial aspect of the maxillary ridge to determine the level of alveoloplasty. A Surgical suture bur was utilized to remove alveolar bone around maxillary teeth to the line that was marked. Extraction of all maxillary teeth was completed with minimal resistance. Extraction was facilitated by the initiation of alveoloplasty. Surgical rongeur was used to remove lingual aspect and to plateau the maxillary ridge. Suturing was completed using 3-0 PTFE suture material in a continuous with lock suturing style and primary closure was achieved. The maxillary interim denture was adjusted and relined using soft liner Co-Soft. The mandibular partial interim denture was also delivered after being relined with CO-soft relining material. Mandibular interim partial denture was also delivered after being relined with CO-soft relining material.

Discussion

As a full mouth rehab case, three factors are crucial, the vertical dimension of occlusion (VDO), the centric relation (CR), and lastly the incisal edge position. In this presented case, the VDO was not collapsed however there was a lack of restorative space, this led to the need for more aggressive alveoloplasty. Preoperatively, there was also a significant deep anterior overbite which was almost 100%. Elevating the maxillary incisal edge also made it crucial to provide space by significant amount of alveoloplasty. In this case using teeth as a reference when determining the level of alveoloplasty, provided a accurate measurement that allowed the surgeon to eliminate the guess work and remove the right amount of bone, no more, no less. The other advantage is the fact the removing the facial and interproximal bone related to the remains maxillary teeth. This allowed easy and quick the maxillary teeth extraction with minimal trauma and discomfort to the patient.

Conclusions

Reversing the sequence by initiating the alveoloplasty and then extracting the teeth offered many advantages. First, it allowed use of the existing maxillary teeth as references. Second, it facilitated the extractions of the remaining maxillary teeth simply by removing of the facial and interproximal bone related to the remains maxillary teeth. This allowed easy and quick the maxillary teeth extraction with minimal trauma and discomfort to the patient.

References