Prosthetic Rehabilitation of Maxillofacial Trauma Patient - A Case Report

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Prosthetic Rehabilitation of Maxillofacial Trauma Patient - A Case Report

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Abstract

Rehabilitation of maxillofacial trauma patients is a challenging task. The most common prosthetic treatment problem with such patients is, getting adequate retention, stability and support. The size and location of the defect usually influences the amount of impairment and difficulty in prosthetic rehabilitation. In cases of large maxillary defect, movement of the prosthesis is inevitable. This clinical report describes method of rehabilitation of trauma patient with non invasive procedure.

Introduction

The defects in maxillofacial region may result due to certain disease, pathological changes, radiation, burns, trauma or surgical intervention. The extension of defect may be small or it may include any portion of the hard and soft tissue, either intraorally or extraorally. These defects can result in hypernasal speech, fluid leakage into the nasal cavity and impaired masticatory function. The primary objectives in rehabilitating the maxillofacial trauma patients are to restore the function of mastication, deglutition and speech and to achieve normal oro-facial appearance.[1] Techniques for the prosthetic rehabilitation of these patients have been described. Patients with complete avulsion of the palate are rare, and their treatment requires a different approach with extensive surgical and prosthetic rehabilitation. Lack of hard palate may result in speech and masticatory difficulties for the patient. The tongue is unable to make contact with a solid surface during mastication, making eating and drinking difficult and less pleasurable. Patients invariably also have cosmetic deformities such as facial collapse with loss of support of the middle third of the face, overclosure of the mandible, and a “nose-to-chin” appearance. This may be accompanied by temporomandibular joint and dental problems. Unopposed mandibular teeth tend to extrude, causing an altered occlusal plane and exposing cervical margins. These oral disabilities can be minimized by restoration with a maxillary prosthesis, which also can reduce cosmetic deformities by replacing the missing teeth and properly supporting the maxillary lip and cheek.[2]

Case Report(s)

This case presents prosthetic rehabilitation of a maxillofacial trauma patient with maxillary complete denture.

The past history of patient revealed that he met a roadside accident three years before. In that accident he has lost his eye sight as well as various fractures of the midfacial region, at that time the maxillary bone was removed because it was not restorable and later on a bone graft was placed to maintain normal contour of the maxillary bone. This surgical treatment could not result into a satisfactory outcome. On examination, there are decreased mouth opening and poor oral hygiene. All of the mandibular teeth were present, and in maxilla only left second and third molar were present. (Figure-1) The tissue of the palatal region was mobile and tender to palpation.

The treatment plan includes surgical as well as prosthetic components. Due to failed autogenous graft, many difficulties were encountered in attempts to restore the dentition, including lack of a firm, immobile bony basal seat for denture support; no ridges and peripheral tissue, loss of the preexisting jaw relationship. An initial impression of the maxillary partially edentulous tissue was recorded in alginate impression material (Zelgan 2002, Dentsply, New Delhi, India). The cast was made (Figure-2) in type III dental stone (Kalstone; Kalabhai Industries, Mumbai, India). Two sheet of base plate wax (Modelling wax; Dental Product of India, New Delhi, India) was adapted over the residual tissue and for added retention we also added two clasps (Figure-3) over the remaining dentition (26,27). Permanent denture base was fabricated and it was inserted into the mouth. In this patient biometric guidelines can not be used successfully for the positioning of teeth (such as arch form and position, residual alveolar ridges, incisive papilla, rugae, and maxillary tuberosity).[3] So for the teeth arrangement, we used phonetics and the neutral zone concept. The arrangement of the 6 anterior teeth was first guided by esthetics & their position was verified with phonetic tests that required the patient to pronounce /s/, /f/, /v/, and /th/ sounds. According to Weinberg[4] the best positioning of the posterior teeth can be achieved by placing buccal cusp and fossa
over the crest of the ridge. Because the patient had no remaining ridge to use as a guide, the posterior part of the arch form was determined to a great extent by the neutral zone, with muscular forces created during function of the cheeks, tongue, and lips. On the molded occlusal rims teeth (Figure-4) setting was done according to the functional shape produced. On delivery of the finished prosthesis (Figure-5), special attention was given on occlusal adjustments to ensure that dislodging interferences were minimized wherever possible. In an attempt to improve retention and comfort, the prosthesis was completed with a heat-polymerized permanent soft lining material (Permasoft, Dentsply, New Delhi India) on the fitting surface (Figure-6). Post insertion instructions were given to the patient for the maintenance and care of the prosthesis.

Discussion

For the rehabilitation of the maxillofacial trauma patient the approach should be multidisciplinary including the oral surgeon, Prosthodontist and oto-rhino-laryngologist. At the prosthetic phase when the artificial teeth were arranged, normal biometric guides were absent, and the Prosthodontist had to rely on esthetics, phonetics, and neutral zone concepts to identify the best position for the teeth. Although literature on use of the neutral zone to improve denture retention, masticatory and speech functions, and comfort is inconclusive, in the patient described, the neutral zone was a useful aid in establishing the correct posterior tooth position. Hard acrylic resin may create a problem with soft and tender tissues through irritation. Lining the prosthesis with a soft material has been suggested. The lining also aid in retention supplementary to clasp retention. The other treatment option includes osseointegrated implants for improved retention, stability and support but the patient has undergone such a mental trauma after the accident that he could not opt for an additional surgical procedure.

Conclusion

The patient of maxillofacial trauma patient was treated by conservative approach and the patient was adapted well to his prosthesis. He also reported that his mastication and speech had returned to near normal. Esthetics has also improved with the artificial prosthesis and patient was quite satisfied

References

Illustrations

Illustration 1

Figure-1 Pre-operative Intra oral View

Illustration 2

Figure-2 Definitive cast showing defect
Illustration 3

Figure-3 Wax up for permanent denture base

Illustration 4

Figure-4 Finished prosthesis
Illustration 5

Figure-5 Integlio Surface lined with permanent soft liner

Illustration 6

Figure-6 Post - operative intraoral view
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