

Occlusal Rehabilitation in a Patient with Major Maxillofacial Trauma-A Case Report

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Case Report

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Abstract: Maxillofacial trauma cases are associated with facial fracture and dental injuries. The trauma cases may suffer through hard tissue as well as hard tissue injuries causing anatomic deficiencies. Treatment of such cases should be planned keeping in mind the patient's expectation both esthetically and functionally. Mostly after fracture reduction these cases result in occlusal derangement due to delayed reporting to the dental department. Hence, such patients require an extensively planned multidisciplinary approach with surgical and prosthodontic rehabilitation. The planned prostheses should replace the missing teeth along with restoration of soft tissues and occlusal rehabilitation to benefit the patient esthetically as well as functionally. In this case report we will present occlusal rehabilitation of a patient with major maxillofacial trauma.

Keywords: Rehabilitation, Maxillofacial Trauma, facial fracture, dental.

INTRODUCTION

Maxillofacial emergencies include dental injuries along with facial fracture [1, 2]. The patients with maxillofacial trauma due to road traffic accident might result in soft tissue as well as hard tissue injury. These fracture or avulsions might also result in neurological involvement or TMJ dislocation [2, 3]. Glossary of Prosthodontics Terms (GPT 9) defines trauma as an injury or wound, whether physical or psychic. Extensive trauma especially in the maxillofacial region involve both, however the latter component dominates once the physical aspect of the injury is taken care of [4, 5].

Main aim of a Prosthodontist is to always preserve what is present, to achieve the proposed treatment goals and the final outcome of the treatment should be acceptable to the patient as well as the family members. To achieve and maintain acceptable treatment result in the cases of maxillofacial trauma, the treatment plan must include satisfactory esthetic and functional outcome. Once the acute phase of trauma is over and remaining tissues are stabilized, patient's primary priority is restoration of lost function and esthetics [6, 7].

CASE REPORT

A 30 year old male patient with severe facial trauma was referred for dental rehabilitation. The patient's history revealed a blow to his face in a severe road traffic accident. According to the medical records, he had a severe soft tissue injury and accompanying comminuted bone fractures of anterior maxilla, right zygoma, mandibular symphyseal region, right peri-orbital and upper lip soft tissue injury area. The loss of both maxillary central incisors left lateral incisors and

mandibular left central incisors, lateral incisors and canine with deranged occlusion post-surgical management.

The case was very complicated due to maxillofacial trauma, soft tissue injuries, and anterior missing teeth in both maxilla and mandible so it required a proper multidisciplinary approach. The accident was very severe so patient underwent flail chest injury. After the completion of his treatment in the medical department he reported to the dental office. The oral surgeons placed their best efforts to treat his maxillofacial trauma but he came one month after his accident so ended up having occlusal derangement in the left side. After the completion of maxillofacial treatment, patient reported to the prosthodontic department for oral rehabilitation.

His clinical examination showed soft tissue defect in relation to right peri-orbital area and upper lip (figure 1). The panoramic radiograph demonstrated mini plates and screws used for fixation of fracture in

the mandibular symphyseal region and left zygoma (figure2). Intra-oral examination revealed the missing maxillary central incisors, left lateral incisor and

mandibular central incisor, lateral incisors and canines and derangement of occlusion in relation to the left side (figure 3).



figure 1: Facial View shows right peri-orbital soft tissue injury and upper lip injury.



figure 2: panoramic radiograph shows mini plates and screws used to fix fracture of mandibular symphysis and left zygoma.



figure 3: intra oral examination revealed missing anterior teeth and occlusal derangement in left side.

After complete clinical and oral examination, a proper diagnostic wax-up was done to propose a good treatment plan (figure 4). As a treatment method, porcelain fused to metal tilite crown bridge prosthesis had been planned for anterior rehabilitation from canine to canine in relation to maxillary and mandibular anteriors. In order to rehabilitate the deranged occlusion

of left side placement of 3/4th crowns in relation to maxillary premolars and molars was planned for the occlusal rehabilitation. Hence, 3/4th crown preparation was done in relation to maxillary premolars and molars (figure 5) and final impressions were made along with facebow transfer record (figure 6 and 7).



figure 4: diagnostic wax-showing occlusal rehabilitation.



figure 5: occlusal view of prepared teeth.



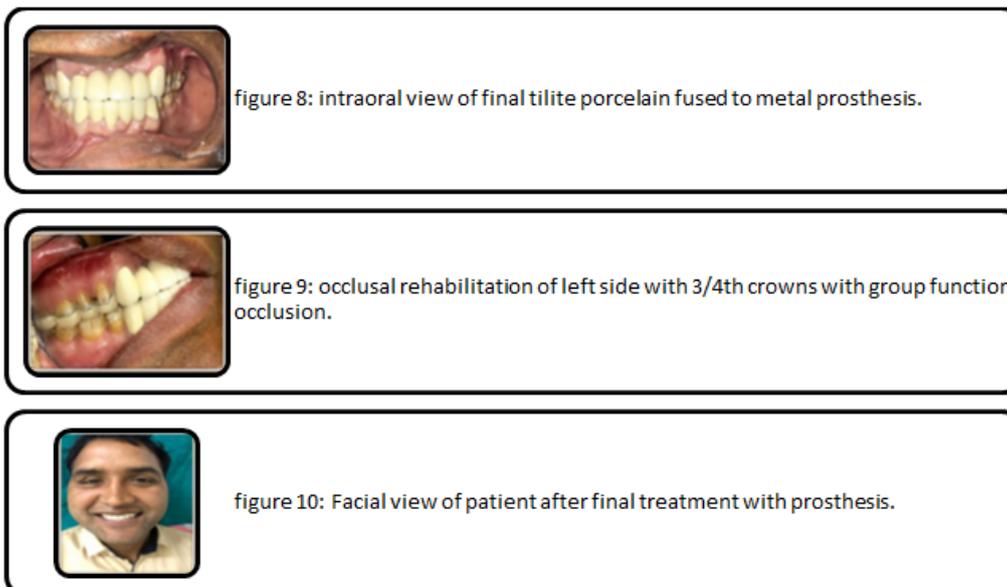
figure 6: final impression.



figure 7: facebow transfer

The final impressions and facebow records were sent to the laboratory for the fabrication of final prosthesis. The metal coping trial of prosthesis was done and it was sent back to lab for ceramic build up. For the occlusal rehabilitation of the patient group function occlusal scheme was planned. In this case

canine guided occlusion was not indicated due to the anterior bridge with canine as an abutment. So the final prosthesis was inserted following which (figure 8, 9 and 10) speech impairment was eliminated considerably and the patient's profile improved to a certain degree.



DISCUSSION

Maxillofacial trauma due to motor vehicle accident leaves a patient esthetically, functionally and mentally compromised which is caused due to edentulous area and occlusion derangement. These cases end up leaving extensive soft tissue and hard tissue loss, which usually require implant supported prosthesis to achieve adequate facial support and restore the masticatory efficiency of the patient. Hence, an enhanced prosthodontic support will result in increased retention, stability and preservation of existing hard and soft tissues. But in maxillofacial trauma cases after dealing with so much of surgical exposure patient loses motivation both physically and mentally to undergo another surgical procedure. However, placement of implant-retained fixed prosthesis was the desired treatment in such type of large trauma cases. In this case, patient denied for one another surgical procedures which would be needed to provide an implant therapy [8-10]. Therefore, alternative treatment plan with Tilite based porcelain fused to metal bridge prosthesis was applied for anterior rehabilitation and a conservative treatment approach was followed for occlusal rehabilitation of left side, by placing partial coverage crowns in relation to left maxilla from 1st pre-molar to 3rd molar.

Tilite is a 100% Medically Pure Metal Ceramic alloy made utilizing seven medically pure earth elements from Talladium USA. Tilite formula is based on the same science that NASA used in the fabrication of the Porcelain Fused to Metal shield for the Apollo space program. Tilite ceramic bond & compressive strength proved to be 30% greater than the highest rated precious alloy & more than twice that of the most popular Non-Precious metal alloy test to date. It is FDA approved and ISO certified and has earned a

CE mark. Tilite PFM is ideal to be used with Implants because of its Medical Purity.

This paper confirms that patients with traumatic injuries have specific treatment needs. Modified prosthetic rehabilitation can enhance the esthetic of the final restoration and provide support for dental rehabilitation, supplying missing teeth, and hard and soft tissue. The patient adapted well to his prosthesis and was satisfied with the final esthetic and functional outcome and reported improvements in both speech and mastication as well.

CONCLUSION

In the large defects of the maxilla, detailed pre-surgical planning and evaluation of each case individually can minimize the difficulty of the prosthetic rehabilitation. It is often necessary for many dental disciplines, including Prosthodontics, oral, and Maxillofacial Surgery and Orthodontics to interact in the planning and treatment of patients who have severe maxillofacial trauma. The treatment options should be evaluated according to the patient's need and appropriate case selection with the dental team by careful treatment planning and interdisciplinary cooperation.

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