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Case Report

Complex maxillofacial injury in an alcoholic-road to reconstruction

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Abstract

Road traffic accidents are the eighth leading cause of death worldwide, with a significant impact on individuals aged 5 to 29 years as per WHO. Traumatic maxillofacial injuries, often resulting from road traffic accidents, account for a substantial proportion of these injuries. Facial reconstructions following such injuries demand top priority. In this study, we present the management of a 25-year-old male patient with multiple complex maxillofacial fractures and soft tissue defects, emphasizing the crucial role of skilled and multispecialty management in such cases. The following article elucidates the importance of skilled and multispecialty management in a complex maxillofacial injury case.

Keywords: Road traffic accident (RTA), Maxillofacial Injuries, Plastic Surgery, Trauma, Fractures.

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1. Introduction

Roads are the backbone of developing countries. They contribute to the overall performance and social functioning of the community. According to WHO, Road traffic accidents are the eighth leading cause of death for all age groups, affecting mainly children and young adults aged between 5–29 years.[1] In India, two-thirds of road traffic injury (RTI) deaths are reported in the age group of 15 – 44 years.[2] In 2018, officially reported road accidents were 4,67,044, out of which 1,51,417 died and 4,69,418 injured persons. These numbers give an average of 1,280 accidents and 415 deaths every day and nearly 53 accidents and 17 deaths every hour.[3] Out of all road traffic injuries, 20% to 60% of cases involve some form of maxillofacial injury.[4] Maxillofacial injuries pose a socioeconomic health hazard because of the age group it affects. Though maxillofacial injuries can be caused by traffic accidents, falls, assaults, sports injuries and work injuries, still traffic accidents are the most common cause of maxillofacial injuries.[5] The case report presents a road map for reconstruction for tackling such a complex maxillofacial injury in a young patient. A multistage reconstruction was planned and various turns arose in the road to reconstruction because of complications at various steps.

2. Case History

The 25-year-old male patient was seen in our Plastic, Reconstructive, and Maxillofacial Surgery OPD in late June 2019. He presented with a complex medical history following a road traffic accident in May 2019, resulting in severe injuries, including exposed bone on the right side of the skull, open wounds on the upper and middle face, complete loss of vision in the right eye, and extensive facial fractures as revealed by CT scans. A comprehensive multistage reconstruction plan was formulated to address the patient's multifaceted injuries following a thorough evaluation.(**Figure 1**, **Figure 2**)

After a surgical intervention to address a left parasymphyseal jaw fracture, the patient underwent placement of titanium plates via an intraoral approach for the removal of a previously implanted non-union plate. The procedure also involved the placement of additional titanium plates (**Figure 3**) in the right frontal bone, frontozygomatic suture area, and right zygomatic region. Further, the intervention encompassed the excision of infected orbital contents and the utilization of a hair-bearing scalp flap to envelop the frontal bone fragments and metal plates, followed

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by the employment of a split-thickness skin graft (STSG) to address the remaining defects.

Figure 1: Preoperative

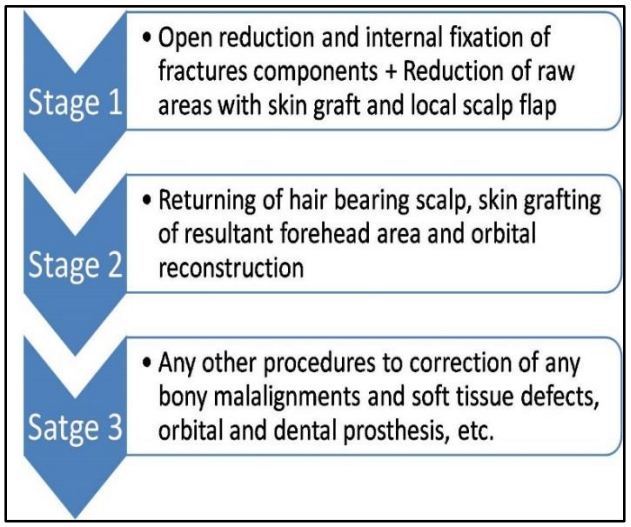

Figure 2: Plan of treatment

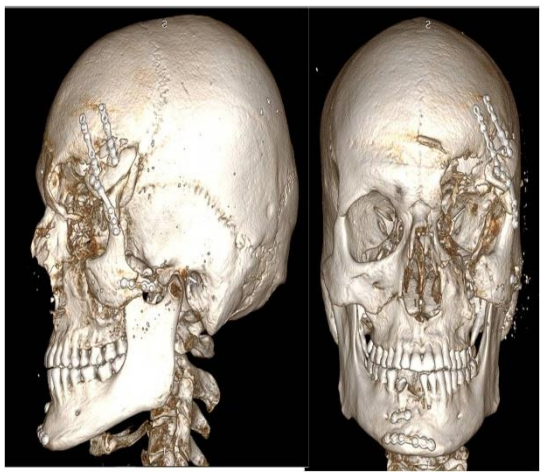

Figure 3: Post ORIF

Following successful re grafting after some graft loss, the patient's discharge was facilitated. Subsequently, non-union in the right infraorbital region was noted during a six-month evaluation, and the patient elected not to pursue correction. However, during the COVID-19 lockdown phase, the patient experienced severe pain, swelling, and pus discharge from the right cheek region, along with a draining sinus. Upon examination, a localized, ill-defined single swelling of 4 x 3 cm was observed in the right zygomatic arch area, with tenderness and firm consistency and a small amount of seropurulent discharge.(**Figure 4**)

Figure 4: Local scalp flap (left) and defects (right)

Figure 5: Nasolabial flap

Figure 6: 3 Years postoperative

After in-depth preoperative investigations and removal of the infected, loosened titanium screw plate and surrounding granulomatous tissue reaction, followed by saline lavage, the patient's fistula between the right intraorbital and nasal cavity was delayed due to travel restrictions during the lockdown. Nonetheless, after 10 days, the draining sinus healed, and the swelling subsided. The previously grafted skin over the parietofrontal scalp was excised, and the forehead raw area above the eyebrow was grafted with a medium-thickness split skin graft. Intraoperatively, three full-thickness defects in the superiomedial and inferiomedial aspects of the orbit were noted and covered with delayed extended prelaminated superior-based nasolabial flap for a single bilayer cover (**Figure 5**). The patient is in follow up and satisfied waiting for eye prosthesis (**Figure 6**).

3. Discussion

Maxillofacial injuries, ranging from simple soft tissue injuries to complex panfacial injuries, pose management challenges and vary in prevalence from 17% to 69%.[6] Around 20% to 60% of road traffic injuries involve maxillofacial injury, with 62% involving motorized two-wheeler accidents. Factors such as alcohol influence, non-compliance with helmet use, and disregard for traffic regulations contribute to these injuries. Males within the working age group (21–60 years)[7] are disproportionately affected, possibly due to their increased vulnerability during travel for employment. Studies show a significant gender disparity, with males being more affected than females in maxillofacial injuries. The highest incidence of maxillofacial trauma (38.0%) occurs in the evening hours between 6 pm and 12 am,[8] attributed to increased traffic and alcohol consumption during this time.

Maxillofacial injuries commonly involve soft tissue trauma such as contusions, abrasions, and lacerations, often caused by severe trauma like traffic accidents and gunshot injuries.[9] The mandible is frequently affected,[10] particularly the parasymphysis area. Management of these injuries is challenging, requiring significant skill and expertise.[11] Different fractures are treated conservatively or through closed/open reduction and fixation to achieve functional and cosmetic recovery.

Following extensive trauma, a Free anterolateral thigh (ALT) flap was considered, but concerns about its bulkiness led to it being reserved as a last resort.[12] The scalp flap's[13] robust vascularity and hair-bearing skin provided advantages for eyebrow reconstruction. Bony union allowed for the removal of a loose screw and the resolution of infection, following an algorithm by Rosa et al.[14] The complete graft loss may be attributed to compromised vascularity, chronic subclinical infection, and full-thickness defects in the orbit. Similar factors have been explored in a study by Turissini et al.[15]

4. Conclusion

The maxillofacial region is highly susceptible to injuries, particularly in road traffic accidents, especially among younger individuals. Preventive strategies are crucial due to the impact on quality of life, disability, and rehabilitation costs. Tailored treatment and management based on reconstructive surgery principles are essential. The complexity of these procedures increases the risk of infection and complications, leading to higher morbidity and financial burden. Effective management requires thorough planning, specialized skills and a multidisciplinary approach, and access to advanced facilities for optimal outcomes.

5. Patient Consent

Patient consent has been taken prior to publications.

6. Source of Funding

None.

7. Conflict of Interest

None.

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