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Original Research Article

A study on faciomaxillary trauma in a tertiary care hospital: a prospective study

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ABSTRACT

Background: Faciomaxillary injuries are increasing in incidence in Tirunelveli district due to the increasing number of vehicles on the street which are inadequate and due to assault. The common denominator in both these situations is alcohol abuse. This study aims to assess the incidence, causative factors and management options of Faciomaxillary trauma.
Methods: Around 50 case of faciomaxillary injuries admitted in the Department of Plastic surgery, TVMCH were taken up for study. The cases were studied for age, sex, personal habits, mode of injury, associated injuries, involved bones and type of fracture, clinical features, treatment modalities, and complications.
Results: Road Traffic Accident (RTA) was the most common cause. Males aged 20-30 were the most commonly involved. Alcohol abuse and Intoxication was the most common antecedent event. Associated head, limbs and chest injuries were common. Mandible was the commonest bone to be fractured followed by zygoma, maxilla and nasal bones. ORIF and IMF was the common surgery performed.
Conclusions: Alcohol abuse is the leading cause of faciomaxillary injuries. Educating the public about the traffic rules and the ill effects of drunken driving will go a long way to prevent these injuries.

Keywords: Alcohol, Faciomaxillary fractures, Soft tissue injuries

INTRODUCTION

Faciomaxillary region involves soft and bony tissues and being the most exposed part of the body, it is particularly prone to trauma. Faciomaxillary injuries represent one of the most life-threatening problems in developing and developed nations representing 7.4-8.7% of the emergency medical care.[1,2]

Over the past decade, faciomaxillary injuries have increased dramatically in our region. The main reasons for these increasing numbers of faciomaxillary trauma are a rapid increase in the number of two wheeler and 4 wheelers and widespread abuse of alcohol in our region. Road traffic accidents followed by interpersonal assaults contribute to the major bulk of mortality, morbidity, and disabilities and are largely preventable.

Principles of management of facial fractures-these involve setting priorities, understanding the indications for operative intervention and developing techniques, of which one of the most significant is the wider exposure of the maxillofacial skeleton. This, together with interosseous fixation with mini and microplates and the use of primary bone grafting, has brought about the most significant advances in this area of patient management. Ideally primary repair of soft tissues of the face and scalp should be carried out within 12hours of injury but in practice a delay of up to 48hours is allowable, especially where there are more urgent problems to be dealt with.

Skin wounds require accurate debridement. Debridement should be conservative, especially in the area of vital structures such as eyelids, lip, nose and ears. Where there is such loss of skin that direct closure is not possible without distortion of key anatomical structures, then skin grating may be preferred as a primary option. In different situations split skin grafts, full-thickness grafts and virtually all of the plastic surgical flaps can and have been used. Microvascular tissue transfers are now routinely used in repairing avulsive soft tissue injuries and reconstructing defects of the facial skeleton by vascularized bone grafts.[3-5] This study aims to assess the incidence, causative factors and management options of Faciomaxillary trauma.

METHODS

A total of 50 cases of Faciomaxillary injuries admitted in the Department of Plastic Surgery, Tirunelveli Medical College Hospital was analyzed prospectively from 2018 January to 2018 July. Inclusion criteria ncludes patients diagnosed with facial bone fractures. Exclusion criteria includes patients whose information was not available, uncompleted, lack of patients consent were excluded. All patients were treated irrespective of age, sex, caste, religion and socioeconomic status. Patients were evaluated for soft tissue injuries of the face and any maxillofacial fracture by assessing clinically the displacement of fractured fragments, functional and cosmetic deficits, patient's age and patient's medical status.

Patients are assessed clinically for bony deformities of the face, abnormal movements and functional aspects like extraocular movements, vision, nasal airway patency, mouth opening, and dental occlusion. Any sensory loss over the face is also noted. The patient is assessed radiologically by X-rays, OPG and CT facial skeleton including 3D CT scan. Undisplaced/minimally displaced midface fractures without significant cosmetic or functional deficit were managed conservatively with liquid or semisolid diet for 3 weeks and attention to oral hygiene. Zygoma fractures were elevated, and a displaced fracture of mandible, maxilla, and zygoma were treated with ORIF and IMF. IMF was continued for 3 weeks postoperatively. Dental injuries and dental alveolar fracture and nasal bone fractures were identified and treated. Data were analyzed using MS-Excel and presented as frequency and percentage.

RESULTS

Of 50 cases taken up for study, 46 were males (92%), and 4 were females (8%) with a ratio of 23:2. The commonest age group involved was 20-30 years when the patients are in the prime of youth. Alcohol abuse is the single most important factors behind these injuries. Among the 50 patients, 35 were under the influences of alcohol at the time of the accident. Road traffic accidents were the commonest cause (62%) followed by assault (18%) Other causes include accidental fall from a height (20%). Most of the cases sustained polytrauma with the involvement of limbs, chest, abdomen and head injuries (Figure 1).

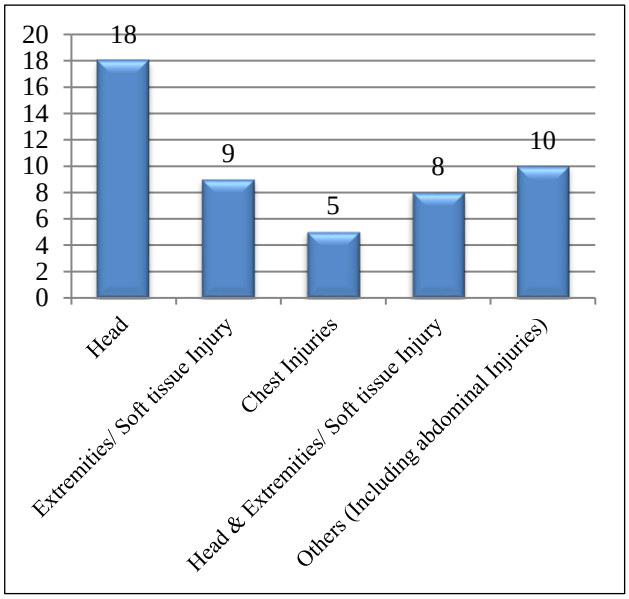

Figure 1: Distribution of associated injuries.

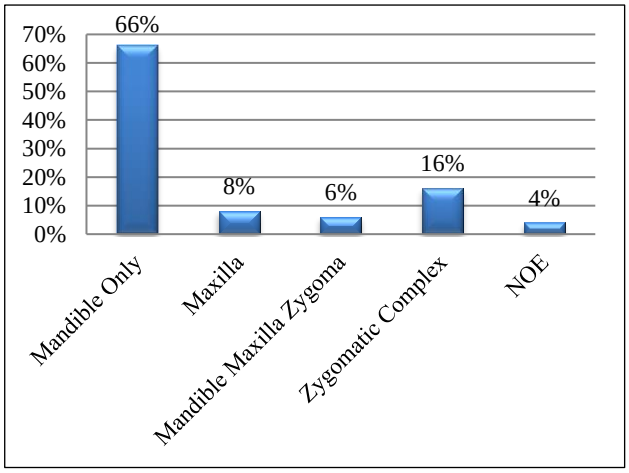

Figure 2: Distribution of bones involved.

Fracture mandible (66%) was the most common followed by zygoma (16%), maxilla (8%) and nasal bone (4%) (Figure 2). In the mandible, the common sites of fractures are the prominent chin (para symphyseal), the anatomically weak areas (condyle, angle) (Figure 3). In the midface, zygoma fracture (38%) was commonest, followed by Lefort II (35%) and Lefort I (10%) and Lefort III (6%), nasal bones (11%) and NOE fractures (Figure 4). Dental and dentoalveolar fractures (3%) were also common. The initial clinical assessment of the functional deficit was made using mouth opening and dental occlusion. They were compared postoperatively to assess treatment outcomes. Pre-operative mouth opening was poor (<20mm) in the majority of the cases (68%). There was significant improvement following surgery

when the majority of the cases had good mouth opening (>30 mm) in around 80% of the cases (Figure 5).

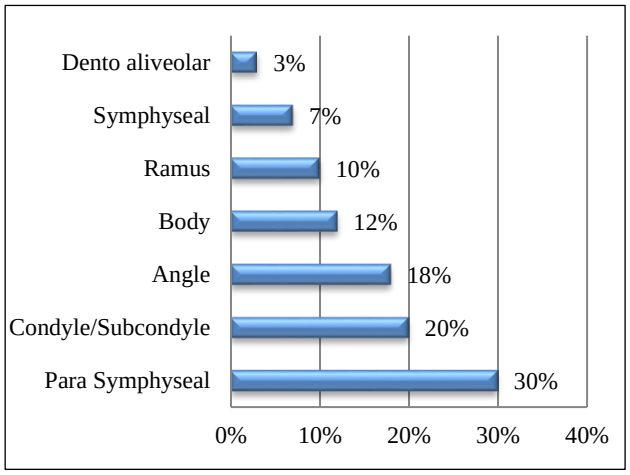

Figure 3: Distribution of mandible site of fracture.

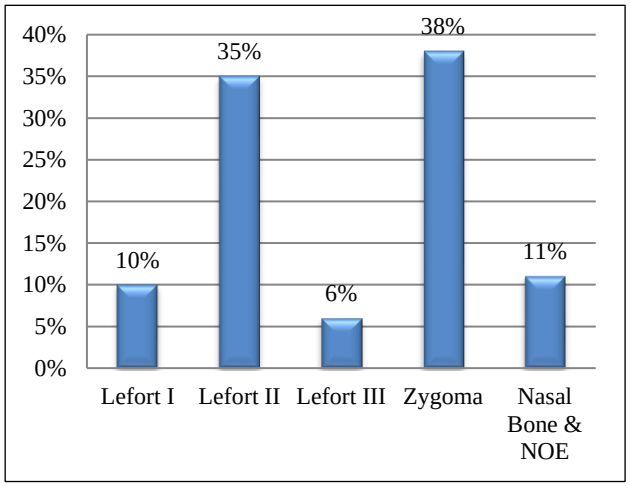

Figure 4: Distribution of midface fracture.

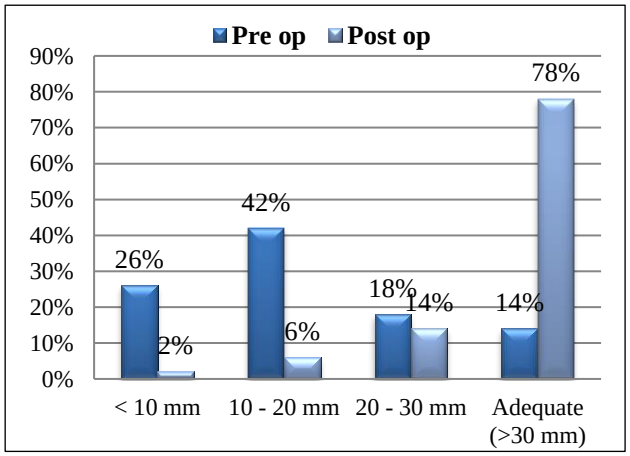

Figure 5: Distribution of pre and post operative mouth opening.

Pre-op dental occlusion was deranged in the majority (85%) of the cases. Postoperatively proper dental occlusion was achieved in 95% of cases (Figure 6). Temporomandibular stiffness (20%) was most common post-operative complications followed by malocclusion (5%).

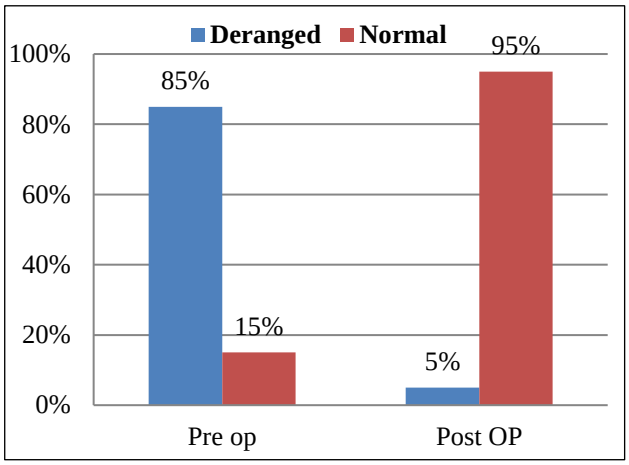

Figure 6: Distribution of dental malocclusions.

DISCUSSION

RTA is the leading cause of morbidity and mortality worldwide with one individual killed every 24 seconds. Two-wheeler accidents account for 43 % of deaths in South East Asia. (WHO). Even though the incidence of RTA has stabilized and falling in developed countries, it continues to rise rapidly in our country. The main reason for this trend is over speeding in highways, violation of Traffic rules and drunken driving. Bad road conditions also play a role.

In our study the peak incidence of Faciomaxillary injuries was observed in the 20-40 age group (50%) who are in the most active periods of their life and vulnerable to RTA. This correlates well with other studies.[6-8]

There is a marked male preponderance in our study for all age groups. Male: Female ratio is 10:1. This correlates well with other studies.[1,2,9] As males are more likely to work outdoors, drive and indulge in alcoholism they are more vulnerable to RTA and interpersonal violence.

Alcohol abuse is the most important denominator found in this study, both in the RTA and assault cases (70 %). The incidence of faciomaxillary injuries is significantly higher in these individuals as alcohol is a CNS depressant leading to blackouts, recklessness, impaired decision making and affects the body's protective reflexes.[10,11]

The use of a full-face helmet which offers protection against head injuries and the facial skeleton is low (10%).

The most common aetiological factors for faciomaxillary injuries are RTA (62%) followed by assault (18%) which is consistent with other studies.[7,9,12]

Use of mobile phones while driving, drunken driving, traffic rule violations, poor road conditions and sharing of roads with cattle and pedestrians, traffic congestion are some of the common causes for the high incidence of RTA.

As these are usually high-velocity injuries, it leads to Polytrauma and associated injuries like head injury (36%), extremities (18%), chest (10%) and others including abdominal injuries (20%). [13]

Mandibular injuries are commonest followed by zygoma, maxilla, nasal bones and frontal bones. In mandibular injuries, the sites most commonly involved are para symphyseal (30%), condyle/subcondyle (20 %), angle (18%), body (12%), ramus (10 %), symphyseal (7%) and dento alveolar (3%).[9,14]

Midface injuries form another bulk of the faciomaxillary trauma with injuries to the orbit and maxillary sinus. Zygoma (38%), Lefort I (10%), Lefort II (35%), Lefort III (6%), NOE (11%).[15]

Undisplaced/minimal displaced fractures without a cosmetic or functional deficit, and patients with the poor general condition are treated conservatively (18%). ORIF with mini-plates and screws followed postoperatively by IMF was the commonest surgical procedure done (62%).[16] Zygoma elevation (Gillies procedure) was done for (10%) of cases with stable reduction.

Outcome analysis was done using mouth opening (mm) and dental occlusion as tools for evaluating the results of surgery. Most of the patients achieved proper occlusion postoperatively (95%) and good mouth opening more than 30 mm in nearly 80% of cases. Wound infection (5%) was seen in cases who were operated late due to comorbid conditions and polytrauma, leading to the removal of mini plates and screws in 1 case. Postoperative temporomandibular Joint stiffness was noticed in 20% of cases which improved after receiving physiotherapy for 1 week. Dental malocclusion persisted in 10% of cases with severe comminuted and segmental fractures and delayed surgeries due to comorbid conditions.

CONCLUSION

Faciomaxillary injuries due to RTA and interpersonal violence can be reduced to a great extent by strict enforcement of traffic rules, curbing drunken driving and use of full-face helmets. ORIF and IMF is the standard practice with predictable and acceptable results. Conservative management has a role in undisplaced fractures and severe comorbid conditions.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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