Original Research Article

Incidence of mid facial fractures in armed forces personnel and their families: a retrospective five year study

Sandeep Mehta, Andrews Navin Kumar*, Gaurav Dua, Shander Singh Sambyal

Department of OMFS, Army Dental Corps, Kolkata, West Bengal, India

Received: 31 October 2019
Revised: 21 November 2019
Accepted: 23 November 2019

*Correspondence:
Dr. Andrews Navin Kumar,
E-mail: sandeepmehta2330@yahoo.co.in

ABSTRACT

Background: Incidences of mid facial fractures in armed forces personnel and their families is rising due to increase in motorized population and high speed road traffic. The aim of this retrospective study was to determine the incidence, etiology, diagnosis, management and complication of mid facial fractures.

Methods: A 5 year retrospective study was conducted at tertiary dental care center at Pathankot, Bathinda and Kolkata. Total of 511 cases of midfacial fractures were managed at this centre. 87% of patients were managed with open reduction and internal fixation and 13% indirect reduction and conservative management. All patients were followed up for at least 1 year.

Results: 96% patients recovered uneventfully, while 4% patients had post-operative complications such as malocclusion, paraesthesia, enophthalmos, diplopia, facial asymmetry, palpability and exposure of implants.

Conclusions: The midface is composed of wafer thin sheets of cortical bones which get fractured easily. It is very important to obtain near to facial form, function and aesthetics by reconstructing the horizontal and vertical buttresses of face.

Keywords: Nasal-orbital-ethmoid complex, Road traffic accident, Midfacial fractures

INTRODUCTION

Facial fractures are commonly encountered in patients admitted for trauma care. Early diagnosis can assist in restoring the facial form, function and achieving near to normal facial aesthetics. Common causes of facial fractures in armed forces include blunt trauma as seen in automobile accidents, assaults, falls, and sports injury.1

Primary types of facial fractures seen in trauma patients include those of the mandible, zygomatic, nasal, maxillae, and orbital bones. The epidemiology of facial fractures varies among populations with respect to type, severity, and cause. The aim of this retrospective study was to determine the incidence, etiology, diagnosis, management and complication of mid facial fractures.2

METHODS

This is a retrospective study done at tertiary dental care centers at Pathankot, Bathinda and Kolkata between January 2014 to December 2019. Total of 511 mid facial fractures patients were selected.

Inclusion criteria

In this study 5 years data was obtained from the medical records and radiographs (paranasal sinuses view, submentovertex view) and computed tomography (CT) scans (Figure 1A and B) of patients who had been managed definitively for midfacial trauma in our tertiary care centers. 72% of the patients were referred from other military hospitals and civil hospitals after primary
management for definitive management. Age, sex, etiology, facial bones involved and the treatment modalities were analyzed retrospectively.3

![Figure 1 (A and B): Radiograph (paranasal sinuses view) showing fracture of zygomatic complex (Rt) and 3D CT scan shows nasal-orbital-ethmoid complex fracture.](image)

**Exclusion criteria**

Patients with systemic conditions like hypertension, diabetes mellitus or patients with immune deficiency and autoimmune disorder were excluded.

**Procedure**

Patients were managed with (a) open reduction and internal fixation and (b) no active surgical intervention as deemed necessary by the requirement of particular case. All the patients were followed up for at least one year.

Data collected was analysed using Microsoft excel and presented in number and percentages.

**RESULTS**

Out of 511 patients with mid-facial skeleton fractures 374 were male and 137 female, with a ratio 3.7:1. The age distribution varied between 7 to 83 years, with a mean age of 28 years. The decades in which fractures were most common were, (in decreasing order of frequency), 21-30 (288 patients, 56.36%) 11-20 (79 patients, 15.46%), and 30-40 (63 patients, 12.33%).

<table>
<thead>
<tr>
<th>Aetiology</th>
<th>Number of cases</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traffic accident</td>
<td>353</td>
<td>69.08</td>
</tr>
<tr>
<td>Fall</td>
<td>68</td>
<td>13.31</td>
</tr>
<tr>
<td>Assault</td>
<td>07</td>
<td>1.37</td>
</tr>
<tr>
<td>Gunshot wound</td>
<td>13</td>
<td>2.54</td>
</tr>
<tr>
<td>Kick by animal</td>
<td>02</td>
<td>0.39</td>
</tr>
<tr>
<td>Work accident</td>
<td>18</td>
<td>3.52</td>
</tr>
<tr>
<td>Sports accident</td>
<td>49</td>
<td>9.59</td>
</tr>
</tbody>
</table>

The most common etiological factor was road traffic accidents (353 patients, 69.08%), followed by falls (68 patients, 13.31%); and sports accidents (49 patients, 9.59%) (Table 1).

The majority of fractures were zygomatic complex fractures cases (227 cases, 44.42%) least common fractures were nasal-orbital-ethmoid (NOE) complex Fractures (1.57%). Mandible–zygoma fractures were the most common type of combined injuries (48 cases, 9.39%) (Table 2).

<table>
<thead>
<tr>
<th>Facial bones and types of fracture</th>
<th>Number of cases</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isolated arch fractures</td>
<td>41</td>
<td>8.02</td>
</tr>
<tr>
<td>NOE complex</td>
<td>08</td>
<td>1.57</td>
</tr>
<tr>
<td>Maxilla plus dentoalvolar</td>
<td>151</td>
<td>29.55</td>
</tr>
<tr>
<td>Zygomatic complx</td>
<td>227</td>
<td>44.42</td>
</tr>
<tr>
<td>Orbital blow out</td>
<td>19</td>
<td>3.72</td>
</tr>
<tr>
<td>Mandible+zygoma</td>
<td>48</td>
<td>9.39</td>
</tr>
<tr>
<td>Mandible+maxilla+zygoma</td>
<td>17</td>
<td>3.33</td>
</tr>
</tbody>
</table>

**Treatment**

Four hundred and forty four (87%) patients were treated by open reduction and internal fixation with mini, low profile, micro titanium plates as dictated by the location and type of bone involved (Figure 2 A-D). Remaining thirteen percent (13%) were managed conservatively (Table 3).

![Figure 2 (A-D): Open reduction and internal fixation with titanium plates.](image)
The mid-face is composed of wafer thin sheets of cortical bones which get fractured easily. It is very important to obtain near to facial form, function and esthetics by reconstructing the horizontal and vertical buttresses of face. According to these data it seems realistic to assume that road traffic legislation enforcement and continuous public education toward the use of restraining devices should be encouraged.

**CONCLUSION**

The mid-face is composed of wafer thin sheets of cortical bones which get fractured easily. It is very important to obtain near to facial form, function and esthetics by reconstructing the horizontal and vertical buttresses of face. According to these data it seems realistic to assume that road traffic legislation enforcement and continuous public education toward the use of restraining devices should be encouraged.

**Funding:** No funding sources

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

**REFERENCES**
