MANAGEMENT OF MANDIBULAR FRACTURES
A PROSPECTIVE STUDY

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ABSTRACT
A prospective view of 126 patients with mandibular fractures attending a tertiary referral center over a six months period is presented. Various operative techniques with open and closed reduction were utilized to treat mandibular fractures in different age groups. Closed reduction was employed in 85 patients, while open reduction with wire or mini plate osteosynthesis was performed in 41 patients. Intermaxillary fixation was the most commonly used method for treating mandibular fractures. Postoperative complications were observed in a small number of patients.

Key words: Mandibular Fractures, Mini-plates, Intermaxillary Fixation.

INTRODUCTION
Mandibular fractures are one of the most common fractures of the facial skeleton1. They may occur alone, or in combination with other facial bone fractures. The management of mandibular fractures varies in various maxillofacial units worldwide depending on the presentation, surgical expertise and the facilities available in various units. Unfortunately, very few published studies are available on the management of mandibular fractures in Pakistan.

There is an increasing interest amongst maxillofacial surgeons to compare the relative advantages and disadvantages of various treatment modalities for mandibular fractures and current literature is full of comparisons2,3. The aim of our study was to document various treatment methods for mandibular fractures being utilized in our maxillofacial unit and compare traditional methods (intermaxillary fixation with or without interosseous wiring) with newer techniques (use of mini plates).

MATERIALS & METHODS
This prospective study on the patterns of mandibular fractures was conducted at the department of oral and maxillofacial surgery, de’Montmorency College of Dentistry/Punjab Dental Hospital Lahore. It is a tertiary referral center for maxillofacial injuries not only for Lahore but the whole of Punjab. This study was undertaken from July 1998 to December 1998 and 126 patients of all age groups and belonging to either sex presenting with mandibular fracture/s were included.

All members of the maxillofacial surgical unit were informed regarding this prospective study. The staff was trained to record details of all patients on a purpose-designed proforma during a half-day teaching session.

RESULTS
The most common age group was 21-30 years followed by the 11-20 years population. The elderly age group 61-80 Y showed least involvement with mandibular fractures. Regarding sex distribution, most patients, i.e., 90.5% in our study were males with a male to female ratio of 9:1.

A thorough history was taken and meticulous clinical examination was performed on all patients presenting with trauma to the lower jaw. All subjects suspected of having sustained mandibular fracture/s were advised a standard orthopantomogram (OPG) and a postero-anterior view of the mandible. A definitive diagnosis of mandibular fracture was established with the aid of clinical and radiographic findings and recorded accordingly for each case.

<table>
<thead>
<tr>
<th>Method of Treatment</th>
<th>No. of patients</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMF with Eyelet Wiring</td>
<td>51</td>
<td>40.5%</td>
</tr>
<tr>
<td>Arch Bar alone</td>
<td>17</td>
<td>13.5%</td>
</tr>
<tr>
<td>Arch Bars with Elastics</td>
<td>07</td>
<td>5.6%</td>
</tr>
<tr>
<td>Circum-mandibular Splints</td>
<td>10</td>
<td>7.8%</td>
</tr>
<tr>
<td>ORIF (intra-osseous wiring)</td>
<td>21</td>
<td>16.7%</td>
</tr>
<tr>
<td>ORIF (screws-supported wiring)</td>
<td>06</td>
<td>4.8%</td>
</tr>
<tr>
<td>ORIF (bone plating)</td>
<td>14</td>
<td>11%</td>
</tr>
</tbody>
</table>

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become increasingly popular amongst the maxillofacial function and maintenance of normal body weights. Intermaxillary fixation, rapid recovery of normal jaw movement of bony fragments ensuring that the use of rigid fixation precludes even microscopic movement of bone. Errors in fixation may result in permanent malocclusion and/or compromised facial aesthetics.

DISCUSSION

In our experience a high percentage of mandibular fractures are amenable to closed reduction and intermaxillary fixation. This is of particular advantage in a country like Pakistan where most patients cannot afford the cost of mini-plates. In the recent years the use of mini-plates has become increasingly popular amongst the maxillofacial surgeons. The use of mini-plate osteosynthesis has many advantages including shortened period of intermaxillary fixation, rapid recovery of normal jaw function and maintenance of normal body weights.

The infection rate with the use of mini-plates is less as compared to mandibular fractures treated by conventional methods. This is related to the fact that the use of rigid fixation precludes even microscopic movement of bony fragments ensuring primary bone healing. Therefore, contrary to the old belief, mini-plates can be used even in the presence of infection because they provide mechanical immobility, which is a major factor in treating infected fractures. In our limited experience, we recorded the lowest rate of infection with rigid osteosynthesis (0%) compared to the use of intraosseous wiring or intermaxillary fixation (1%). The rate of other complications like malocclusion, mal-union etc was also less in our patients where mini-plates were used to treat mandibular fractures.

However, specialized surgical expertise and experience are required for proper fixation of plates and according to certain authorities, this method should be reserved for displaced and complicated mandibular fractures. Restoration of occlusion with a high degree of accuracy is required with mini-plates and the plates must be adapted meticulously to the contours of the bone. Errors in fixation may result in permanent malocclusion and/or compromised facial aesthetics.

Lastly, we would like to reiterate that although rigid osteosynthesis is an expensive, laborious and time-consuming method, it is of great benefit to the patients ensuring early and smooth recovery of jaw function. Therefore, many patients can return to their jobs earlier making this method economically feasible in some despite the higher initial costs. Nevertheless, we need to evaluate the treatment of mandibular fractures in Pakistan on a much wider scale so as to devise better treatment protocols for our patients.

SUMMARY

Mandibular fractures constitute a major workload in maxillofacial trauma centres. Such injuries are generally easy to diagnose and after a careful examination, the clinical and radiological findings can be correlated. A satisfactory result can be confidently expected with timely management utilizing various treatment modalities for mandibular fractures should be evaluated to select the appropriate treatment option so as to minimize patient discomfort and avoid complications.

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