Fixation of pilon Fracture & Comminuted distal tibial fracture with Triangular External fixator

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Abstract

Background: patients with pilon fractures and distal comminuted fractures, These fractures give the surgeon a great challenge in methods of fixation starting from External fixator up to plating and Illizarov But our method of fixation which is Triangular External fixator achieve a great success.

Introduction

Pilon fracture is a fracture of Tibial Plafond range from high to low energy Axial Injuries. Usually the cause of trauma is falling from height. Pilon fractures have two major ways for classification which are Ruedi Allgower classification & A0/oTA Classification. Blood supply & Serve damage of Periosteal Blood Vessels has a very important role in union delay. So External fixator doesn't lead to more periosteal Blood Vessels damage. So more good union results. Pilon is a French word for pestle as away for severe that occur to the bone

Aim of Study: To Assess the results of fixation of Pilon fracture and Distal comminuted Tibial fractures with Triangular External fixator. The specific questions to be answered were:

1. The mean period of healing of these fractures to be complete and duration during which the patient can return to his normal activities
2. Is the triangular external fixator is a definitive method for fixation

Patients & Methods: the study included 20 patients admitted to the orthopaedic and trauma unit in faculty of medicine Sohag university. A written consent was taken from the patients and operated by external fixator as follows:

1. The patient positioned in a supine position and spinal anaesthesia is given to the patient
2. After sterilisation of the limb, two Schanzes applied to the tibia then one Schanz centrally threaded to the calcaneous then connecting them by rods and reduction is made by traction like this picture
Results

The study was performed in Traumatology & orthopaedic department in Sohag university, faculty of medicine. 20 patients have been operated with Triangular External Fixator.

<table>
<thead>
<tr>
<th>Fracture level</th>
<th>No. of patients</th>
<th>Cumulative percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pilon fracture</td>
<td>16</td>
<td>80</td>
</tr>
<tr>
<td>Extra articular distal tibiafr.</td>
<td>4</td>
<td>20</td>
</tr>
<tr>
<td>Total</td>
<td>20</td>
<td>100</td>
</tr>
</tbody>
</table>

The patients were aging from 16 years old to 70 years old. 13 male patients & 7 female patient. 16 patients of them have Pilon fractures & 4 of them has Extra articular distal highly comminuted distal tibial fractures. 12 of them have a simple fractures & 8 have compound fractures 1, 11, 7 of the patients have Ruedi Allgower classification types II & III, 13 of them have Ruedi Allgower Type III.

<table>
<thead>
<tr>
<th>Type of fracture</th>
<th>Number of patient</th>
<th>Cumulative percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type II</td>
<td>7</td>
<td>35</td>
</tr>
<tr>
<td>Type III</td>
<td>13</td>
<td>65</td>
</tr>
<tr>
<td>Total</td>
<td>20</td>
<td>100</td>
</tr>
</tbody>
</table>

Type of fractures according to Ruedi Allgower classification.
All patients give us a written consent for operation and a triangular External fixation Is applied like the picture.

Complications

Superficial wounds infection in two cases managed by debridment and I.V antibiotics and there was five cases presented with pin tract infection that were recovered directly after schanz pin removal. two cases show delayed union where the fracture healing take about 9 months. one cases complicated with varus deformity. sixteen cases complaining from ankle joint arthritis. one case only had a deep infection.

The patients followed up for 28 to 72 weeks, and the average time for healing was about 3 months.

The results according to olerud and molander score were

(Olerud and molander score)

<table>
<thead>
<tr>
<th>Number of patients</th>
<th>Cumulative percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excellent</td>
<td>3</td>
</tr>
<tr>
<td>Good</td>
<td>9</td>
</tr>
<tr>
<td>Fair</td>
<td>6</td>
</tr>
<tr>
<td>Poor</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>20</td>
</tr>
</tbody>
</table>

Fixation of these fractures by triangular external fixator is the method of choice for most of surgeons.
Discussion

In this study, twenty patients with pilon fracture and distal comminuted tibia fractures were operated with Triangular External Fixator, male patient more affected than female 2:1. External fixator is the treatment choice for these fractures results of the present study appear to be more related to original injury than timing of operation or type of definitive fixation, the patient with more severe fracture pattern and soft tissue Injury had the worst functional results.

Conclusion

Triangular External Fixator is the best choice for treatment of pilon fracture of comminuted distal tibial fractures due to least soft tissue dissection.

References:


