Immediate Weight Bearing as Tolerated is Safe Following Intramedullary Fixation of Extra-Articular Metaphyseal Proximal Tibia Fractures (OTA/AO 41-A)

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Disclosures

- No relevant financial disclosures
Extra-Articular Proximal Tibia Fractures
Background

- Extra-articular proximal tibia fractures are relatively rare (11% of tibia fractures)
- Surgical Management is challenging
  - Capacious Metaphyseal Bone
  - Deforming Forces
- Historically High Rates of Malalignment
Background

- As Intramedullary Nailing techniques and implant designs have improved, this technique has become more popular
- Limited Soft Tissue Dissection
- Load-Sharing Device
- Malalignment remains a concern
Background

Many surgeons continue to restrict weight bearing following Intramedullary fixation of proximal tibia fractures.
Purpose

The purpose of this study was to evaluate whether immediate weight bearing following intramedullary fixation of proximal tibia fractures was associated with alteration in alignment at time of union.

We hypothesized that immediate weight bearing as tolerated will not result in high rates of malalignment.
Methods

- Retrospective Review
- Two Trauma Centers
- January 2005 to December 2019
- OTA/AO 41A
- 59 Patients Identified
  - 11 excluded – Ipsilateral Lower Extremity Injuries
  - 10 excluded – Inadequate Follow Up
  - 1 excluded – baseline nonambulatory function
- 37 patients included for final analysis
Methods

- Patient characteristics analyzed
  - Charlson Comorbidity Index
  - Mechanism
  - BMI
  - OTA/AO Classification
  - Open/Closed Fracture
  - Concurrent Injuries
  - Fixation Construct
  - Complications
Radiographic Analysis

- Initial and Final Medial Proximal Tibia Angle (MPTA) and Posterior Proximal Tibia Angle (PPTA)
Radiographic Analysis

- **“Excellent”:** Both measurements within normal range
- **“Acceptable”:** Both within 5° of normal
- **“Poor”:** Either Measurement >5° of normal
Results

- Average Age: 46 years
- 70% Male
- Mean Follow Up: 14.7 months
- 16% Open Fractures
- 49% OTA/AO 41-A2, 51% OTA/AO 41-A3
Results

- Proximal Interlocking Screws
  - 8% - Two
  - 46% - Three
  - 46% - Four

- Ten patients (27%) – Blocking Screws

- 11% - Adjunctive Plate Fixation
Results

- Mean Initial MPTA: 87.9° +/- 2°
- Mean Initial PPTA: 79.1° +/- 3°
- Mean Final MPTA: 87.3° +/- 2.3°
- Mean Final PPTA: 79.2° +/- 2.9°
- Average Change in Coronal Alignment: 1.22 +/- 1.28° of valgus
- Average Change in Sagittal Alignment: 1.03 +/- 1.05° of extension
Results

Initial versus Final Alignment Categories

<table>
<thead>
<tr>
<th>Alignment Category</th>
<th>Initial</th>
<th>Final</th>
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<tbody>
<tr>
<td>Poor</td>
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<td>2</td>
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<tr>
<td>Acceptable</td>
<td>10</td>
<td>15</td>
</tr>
<tr>
<td>Excellent</td>
<td>25</td>
<td>20</td>
</tr>
</tbody>
</table>

Numbers of Subjects:
- **Initial**
  - Poor: 2
  - Acceptable: 10
  - Excellent: 25
- **Final**
  - Poor: 2
  - Acceptable: 15
  - Excellent: 20
Results

- Five patients (13.5%) – Unplanned Secondary Surgical Procedure
  - Two Patients: Soft Tissue Coverage
  - Two Patients: Surgical Debridement of Infection
  - One Patient: Debridement and Exchange Nailing for Infected Nonunion

- No patients demonstrated implant bending, revision for malalignment, failure of fixation, or need for revision internal fixation
Conclusion

- Immediate weight bearing following intramedullary nail fixation of extra-articular proximal tibia fractures led to minimal change in alignment.

- Immediate weight bearing appears to be safe for most patients.


References


