An Epidemiological Study of Diaphyseal Tibial Fractures
The Royal Victoria Hospital
Experience

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Aim

- To identify reasons for re-admission and highlight any possible trends that would alter management.
- Outline the demographics and mechanisms of injury compared to published data.
- Compare management of tibial shaft fractures in RVH against published data.
Retrospective Look

- FORD
  - Fracture Outcome Research Database
- 2002-2009
- All tibial shaft fractures admitted to RVH
- Mechanism of Injury
- Compound Injuries
- Treatment Modality
- Reasons for re-admission
Background

- most commonly fractured long bone
- 2/1000 individuals
- Commonly compound
- High energy and low energy injuries
- Several valid treatment modalities
- Problems associated with soft tissue coverage
Data Collection

- 2002-2009
- FORD Database
- All individuals coded as having a tibial shaft fracture
- Demographics recorded proforma
- Mechanism of injury FORD database
- Significant Complications
  - Identified patients through the database who required readmission.
  - Excluded: notes unavailable, incorrect coding
  - Charts 53 patients: charts explored for reasons for readmission
- Primary Treatment Modality
Demographics

- 1043 coded Diaphyseal Tibial fractures
- 796 male: 247 female
- Average age male 34.2
- Female 49.5
- Correlates with published data
- 109 compound Injuries
<table>
<thead>
<tr>
<th>Mechanism of Injury</th>
<th>Numbers</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>RTA (total)</td>
<td>289</td>
<td>27.7</td>
</tr>
<tr>
<td>Pedestrian</td>
<td>107</td>
<td>10.3</td>
</tr>
<tr>
<td>Motorcycle</td>
<td>76</td>
<td>7.3</td>
</tr>
<tr>
<td>Driver</td>
<td>73</td>
<td>7.0</td>
</tr>
<tr>
<td>Passenger</td>
<td>23</td>
<td>2.2</td>
</tr>
<tr>
<td>Low Energy Fall</td>
<td>253</td>
<td>24.3</td>
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<tr>
<td>High Energy Fall</td>
<td>58</td>
<td>5.6</td>
</tr>
<tr>
<td>Sports Injury</td>
<td>224</td>
<td>21.5</td>
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<tr>
<td>Football</td>
<td>191</td>
<td>20.4</td>
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<tr>
<td>Assault</td>
<td>44</td>
<td>4.2</td>
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</table>
Mechanism of Injury

Increase in low energy falls compared re: Edinburgh epidemiological study.
There were 109 compound injuries, 16 of which required re-admission for subsequent operative procedures. The nature of the compound injuries requiring re-admission are outlined below.
Reason for Re-Admission

- All complication rates were less than 1%.
- 15% re-admission rate for compound injuries. Primarily for deep infection.

The infection rate for closed tibial shaft treated with intra-medullary nailing is quoted at approximately 1% [2]. Compound injuries have a much higher infection rate quoted at >15% for Gustillo and Anderson 3a. Rate of aseptic non-union for closed fractures is around 3%. (American Academy)
Preferred Treatment Option

![Bar chart showing treatment count]

- Application
- Application of
- Miscellaneous
- Each
- None
Conclusion

- Large number of patients
- Demographics very similar to other westernised nations (without high numbers of gunshots)
- Low significant complication rate
  - ? Managed in other hospitals
  - Superior to published evidence
- Increase in the percentage of low energy injuries
- ? Significance of lower complication rate with use of Ilizarov frames.
  - ?excludes diabetics/alcoholics
  - Pin site infections under estimated
- Role of less invasive precontoured tibial plates
  - Patient selection
- Treatment options similar to the Northern American experience.