Trends of Concurrent Ankle Arthroscopy at the Time of Operative Treatment of Ankle Fracture: A National Database Review

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Disclosures

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Introduction

Arthroscopic visualization and increasingly sophisticated imaging have demonstrated that up to 79% of ankle fractures will have some form of chondral or osteochondral injury, which being a catalyst for post-traumatic osteoarthritis (PTOA) of the ankle joint.\textsuperscript{1-8}

In order to prevent progressive joint destruction, timely diagnosis and treatment of chondral injury and defects is indicated.

- Standard radiographs may miss up to 50% of clinical injuries\textsuperscript{9}
- MRI or other sophisticated imaging techniques are costly and may not always be available.
- Arthroscopy has been advocated at the time of ankle fracture fixation as a diagnostic modality and potential therapeutic intervention if cartilage repair is required.\textsuperscript{1, 6, 10}
Purpose

To identify trends of microfracture performed concurrently and subsequently to open reduction and internal fixation (ORIF) of ankle fractures in the United States.
Methods

The current procedural terminology (CPT) billing codes were used to search the PearlDiver Patient Record Database (2005-2011)

- PearlDiver is Health Insurance Portability and Accountability Act compliant national database compiled from a collection of the Medicare MEDPAR dataset (2005-2011) and the United Healthcare Orthopedic Dataset (UHC) (2007-2011)

- Demographic factors were identified for all procedures
- Evaluating cost aspect using the Medicare dataset
- Annual trends were expressed only between 2007-2011
Results

<table>
<thead>
<tr>
<th>Patients (n)</th>
<th>ORIF &amp; Arthroscopy simultaneously</th>
<th>ORIF or closed fracture treatment &amp; subsequent Arthroscopy</th>
</tr>
</thead>
<tbody>
<tr>
<td>ORIF</td>
<td>32,307</td>
<td>-</td>
</tr>
<tr>
<td>ORIF or closed reduction</td>
<td>-</td>
<td>85,203</td>
</tr>
<tr>
<td>Arthroscopy n (%)*</td>
<td>313 (1%)</td>
<td>566 (0.7%)</td>
</tr>
<tr>
<td>Age group**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;65 yr</td>
<td>81%</td>
<td>79%</td>
</tr>
<tr>
<td>&gt;65 yr</td>
<td>19%</td>
<td>21%</td>
</tr>
<tr>
<td>Sex**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>47%</td>
<td>29%</td>
</tr>
<tr>
<td>Female</td>
<td>53%</td>
<td>71%</td>
</tr>
<tr>
<td>Region**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Midwest</td>
<td>29%</td>
<td>24%</td>
</tr>
<tr>
<td>Northeast</td>
<td>5%</td>
<td>15%</td>
</tr>
<tr>
<td>South</td>
<td>44%</td>
<td>42%</td>
</tr>
<tr>
<td>West</td>
<td>22%</td>
<td>19%</td>
</tr>
</tbody>
</table>

* The values are given as number of patients receiving arthroscopic treatment (percentage of population)
** The values are given as the percentage of patients
Results

- The prevalence of concomitant arthroscopic treatment increased significantly by 177% from 2007 to 2011 (p<0.0001).
- The prevalence of arthroscopy after ankle fracture decreased significantly by 45% from 2007 to 2011 (p<0.0001)
# Results

<table>
<thead>
<tr>
<th></th>
<th>ORIF &amp; Arthroscopy simultaneously</th>
<th>ORIF or closed fracture treatment &amp; subsequent Arthroscopy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Costs (USD)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physician Charge</td>
<td>$4,253.00</td>
<td>$4,964.00</td>
</tr>
<tr>
<td>Reimbursement</td>
<td>$818.00</td>
<td>$1,069.00</td>
</tr>
</tbody>
</table>
Discussion

- **Key finding:** The prevalence of arthroscopy after ankle fracture decreased significantly by 45% in a 5-year period between 2007 and 2011, whereas the prevalence of concurrent arthroscopic treatment increased significantly by 177%.

- May be a result of earlier detection and treatment of cartilaginous injuries in acute ankle fractures, since 22.4% of all patients who underwent arthroscopy during operative ankle fracture treatment received concurrent microfracture treatment.
Discussion

- Numerous surgeons have underscored the importance of articular congruity and repair following ankle trauma to optimize radiographic outcomes.\textsuperscript{11-14} 

- Patients with chondral lesion at time of ORIF of ankle fracture had significantly poorer results than patients with ankle fracture not associated OCLs.\textsuperscript{3} 

- Many authors now recommend arthroscopy at the time of ankle fracture ORIF.\textsuperscript{1, 6, 7, 10, 12, 15, 16} 

- The overall cost (including the costs of procedure and all other hospital related charges) would be substantially higher if two operations are performed compared to a single procedure.
Conclusion

Despite good evidence in favor of arthroscopy at the time of ankle fracture treatment only a small proportion of surgeons in the United States perform these procedures concurrently.

Further cost analysis studies are necessary to establish whether early intervention with arthroscopy truly does lead to lower health care costs.
References

Thank you