Staple Fixation of Lisfranc Injuries: A Description of a New Technique and Early Clinical Results

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Disclosures

Christopher O. Bayne, M.D.
My disclosure is in the Final AOFAS Program Book. I have no potential conflicts with this presentation.

Robert Gray, M.D.
My disclosure is in the Final AOFAS Program Book. I have no potential conflicts with this presentation.

George B. Holmes, Jr. MD:
My disclosure is in the Final AOFAS Program Book. I have a potential conflict with this presentation due to: I have received royalties and consulting fees with respect to the Mini Tightrope(Arthrex).
Introduction

Lisfranc Injuries

Treatment goals

• Anatomic reduction of tarsometatarsal joint,
• Stable fixation to allow for ligamentous healing
• Preservation of articular cartilage of Lisfranc joint
• Maintenance of physiologic Lisfranc joint motion
• Fixation that does not irritate adjacent soft tissues and nerves
• Fixation that resists failure and breakage
Study Design

Retrospective case series of 8 patients with Lisfranc injuries treated operatively utilizing pneumatic staple fixation between 2004 and 2009
Materials and Methods

- 12 consecutive patients with Lisfranc injury (between 2004 and 2009)
- Operative treatment utilizing pneumatic staple fixation
- SMFA and SF-36 questionnaires administered via telephone interview (at minimum 24 mos fu)
- Literature search - all previous studies examining SMFA and SF36 results after operative fixation of Lisfranc injuries identified.
- Questionnaire results from study compared to results found in the literature
Results

8 patients available for interview at follow-up.
• 4 patients treated with staple fixation alone
• 2 patients treated with combination of staples and mini-suture button
• 1 patient treated with combination of screws and staples
• 1 patient treated with combination of screw, K-wire, staple, and mini suture button
Results

Literature search:

• 3 studies utilized the SF-36 questionnaire¹⁻³
• 1 study utilized the SMFA questionnaire¹

(To evaluate functional health and well being in post-operative Lisfranc patients)
Results

- Patients in staple fixation group scored better in all categories on both the SMFA and SF36 questionnaires.

<table>
<thead>
<tr>
<th>Group</th>
<th>SMFA (mean score)</th>
<th>SF-36 (mean score)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staple Fixation</td>
<td>11.8</td>
<td>73.8</td>
</tr>
<tr>
<td>Literature</td>
<td>17.3</td>
<td>48.6</td>
</tr>
</tbody>
</table>
Better scores may be due to properties of staple fixation:

- May allow for enough rigidity for ligamentous healing
  - Without violating articular surfaces
  - Without limiting all motion

- Staples are low profile
  - Less symptomatic hardware
  - May decrease need for later removal compared to plates
Conclusion

- This study presents preliminary results of post-operative functional health and well-being following technique of staple fixation of Lisfranc injuries.

- Despite the small number of cases, we believe that the functional outcomes are encouraging and warrant further investigation.

REFERENCES


