Short-term outcome of Lisfranc injuries treated with single dorsal plate fixation

Sangho Chun, M.D.¹
Kyoung Min Lee, M.D., Ph.D.¹
Moon Seok Park, M.D., Ph.D.¹
Ki Hyuk Sung, M.D.¹
Seungbum Koo, Ph.D.²
Sung Jin Kim, M.D.¹
Hyun Choi, M.D.¹
Sangyeop Shin, M.D.¹
Seung Yeol Lee, M.D., Ph.D.³

¹Department of Orthopaedic Surgery, Seoul National University Bundang Hospital, Gyeonggi,
²School of Mechanical Engineering, Chung-Ang University, Seoul,
³Department of Orthopaedic Surgery, Ewha Womans University Mokdong Hospital, Seoul, Korea.
Disclosure

All the authors have nothing to declare.

Sangho Chun, M.D.
Kyoung Min Lee, M.D., Ph.D.
Moon Seok Park, M.D., Ph.D.
Ki Hyuk Sung, M.D.
Seungbum Koo, Ph.D.
Sung Jin Kim, M.D.
Hyun Choi, M.D.
Sangyeop Shin, M.D.
Seung Yeol Lee, M.D., Ph.D.

Our disclosures are in the Final AOFAS Mobile App.
We have no potential conflicts with this presentation.
Lisfranc injury

- Uncommon (0.2% of all fractures)
- **Treatment principle**
  - Accurate reduction, rigid stabilization
  - Dorsal plate
    - Avoiding iatrogenic injury of articular cartilage
    - Relatively large exposure area

**Purpose**

- We performed the present study to assess whether *single dorsal plating* can be used as an alternative treatment for a Lisfranc injury.
Materials and Methods

• 21 patients
• August 2013 to May 2016, Retrospective

- Inclusion criteria
  - Treated with open reduction and internal fixation using single dorsal plate
  - Followed up for more than 1 year

- Exclusion criteria
  - Open fracture
  - Polytraumatic patient
  - Could not undergo operation
Surgical technique

(A) An approximately 5-cm dorsomedial incision is made between the first and second tarsometatarsal joints.

(B) Reduction is performed using a reduction clamp.

(C) The plate is placed at a suitable location using temporary fixation and a Kirschner wire.

(D) The 2.7-mm locking screws are placed in each hole.
Postoperative management

- Short leg cast for 3wks without weight bearing
- Progressively advanced to full weight bearing with postoperative shoe
- Followed up periodically
- Plate was removed post op 3months

Assessment
  - Post op 1year
    - Weight-bearing foot x-ray(AP,Lat,Obl)
    - AOFAS ankle-hindfoot scale score
# Results

<table>
<thead>
<tr>
<th>Patients’ demographics</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of patients (Male/Female)</td>
<td>18 (12 / 6)</td>
</tr>
<tr>
<td>Mean age at the time of surgery (range)</td>
<td>48.7 (27-76)</td>
</tr>
<tr>
<td>Laterality (Right/Left)</td>
<td>10 / 8</td>
</tr>
<tr>
<td>Injury mechanism (Direct/Indirect)</td>
<td>4 / 14</td>
</tr>
<tr>
<td>Myerson classification</td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>1</td>
</tr>
<tr>
<td>B1</td>
<td>3</td>
</tr>
<tr>
<td>B2</td>
<td>12</td>
</tr>
<tr>
<td>C1</td>
<td>2</td>
</tr>
<tr>
<td>Mean time to the surgery in days (range)</td>
<td>2.9 (1 to 9)</td>
</tr>
</tbody>
</table>
Results

- Average AOFAS mid foot score for pain 35, total score 80.8
- Excellent (score ≥90) – 6 patients (33.3%)
- Good (90 > score ≥75) – 8 patients (44.4%)
- Fair (75 > score ≥50) – 4 patients (22.2%)
- No loss of reduction or arthritic change
Results

(A) Preoperative anteroposterior radiograph of the right foot showing injury to the Lisfranc joint. (B) Postoperative anteroposterior radiograph of the left foot showing a well reduced injury to the Lisfranc joint with a dorsal plate. (C) A weight-bearing foot radiograph 3 months later showing good alignment. (D) A weight-bearing foot radiograph 1 year postoperatively showing no loss of reduction or arthritic change.
Results

- Screw breakage: 3 cases (postop 5mons)
  - Injury ultimately healed anatomically
- Tingling sensation: 5 cases
  - Seemed to be neuropraxia, resolved spontaneously over time
- No wound healing problems
- No osteomyelitis
Conclusion

• Single dorsal plating can be an alternative treatment method for Lisfranc injury, as it provides a good short-term outcome without causing further joint injury.