Differential Rates of Syndesmotic Fixation in Operatively Treated Ankle Fractures by Subspecialty Training: A Multi-Center Retrospective Review

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NO CONFLICTS TO DISCLOSE

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Our disclosures are in the Final AOFAS mobile app. We have no potential conflicts with this presentation.
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Introduction/Purpose

- Ankle fractures are a common orthopedic injury in the United States with annual incidence up to 187 per 100,000 persons. Approximately 23% of ankle fractures also involve injury to the syndesmotic ligaments.
- Intra-operative assessment and detection of syndesmotic instability represents a critical aspect of ankle fracture surgery, and missed syndesmotic injury may necessitate revision surgery (see following slide).
- Anatomical reduction and restoration of the distal tibiofibular articulation is important to improve prognosis and decrease risk of developing post-traumatic osteoarthritis in surgically managed ankle fractures.
- Recent studies have demonstrated that both Weber B and Weber C distal fibula ankle fractures can have concomitant syndesmotic injury necessitating trans-syndesmotic fixation.
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Intra-operative x-ray of patient with Weber B ankle fracture fixation treated by orthopedic generalist

Intra-operative x-ray of **same** patient one month later undergoing revision surgery with syndesmotic fixation after being referred to orthopedic traumatologist
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- Study
  - Retrospective review of surgically treated ankle fracture cases
  - Assess whether there were differences in the rates of intra-operative detection and surgical management of syndesmotic injuries based upon surgeon fellowship training and subspecialty experience
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Methods

- Multi-center retrospective cohort study of 219 surgically treated ankle fractures over a two year period

Case Selection

- Patient selection criteria based on CPT codes
- Exclusion criteria included open trauma, pilon fracture, history of prior ankle fracture, or pediatric patients

Imaging

- Preoperative radiographs reviewed for Danis-Weber classification
- Post-operative radiographs and operative reports reviewed to confirm surgeon detection of syndesmotic injury and type of trans-syndesmotic fixation utilized

Stratification by Specialty

- Surgeons divided into three groups according to fellowship training: foot and ankle (Group 1: two surgeons), trauma (Group 2: five surgeons), and general / other (Group 3: nine surgeons including fellowships in sports, hand, and spine)

- Patient demographics and medical risk factors were recorded
Results

- 16.3% of the 153 Weber B cases were treated with syndesmotic fixation: 24% of cases in Group 1, 17% of cases in Group 2, and 0% of cases in Group 3 had syndesmotic fixation. Comparing syndesmotic fixation in Groups 1 versus 3 resulted in p-value of <0.0655 approaching statistical significance.

- 71.9% of the 64 Weber C cases were treated with syndesmotic fixation: 91% of cases in Group 1, 69% of cases in Group 2, and 50% of cases in Group 3 had syndesmotic fixation. These differences were not statistically significant (p-value of <0.1919).
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**Results**

- No statistically significant differences in demographics and medical risk factors among patients in the three groups.
- Foot & Ankle surgeons (Group 1) had the highest documented rate for intra-operative testing of syndesmotic stability and the highest rates of syndesmotic fixation for ankle fractures.
- Two screws was the preferred means for syndesmotic fixation by all orthopedic subspecialty groups.

![Comparing Surgeon Training with Preference for Fixation](image-url)
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- Conclusion
  - Increased association of syndesmotic injury requiring fixation with Weber C compared to Weber B ankle fractures, similar to literature reports.
  - Data showed no statistically significant difference among the three subspecialty groups, higher rates of syndesmotic injuries were intra-operatively detected and surgically treated by foot and ankle as well as trauma fellowship trained surgeons compared with orthopedic generalists or those with other fellowship background.
  - Accordingly, fellowship training in foot and ankle and heightened experience in this subspecialty may facilitate recognition and treatment of syndesmotic injuries accompanying both Weber B and Weber C ankle fractures.
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References


