What is the Role of Deltoid Ligament Repair in Ankle Fracture? A Systematic Review

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The deltoid ligament is a primary stabilizer of valgus forces against the ankle.

Consists of:

- Anterior tibiotalar ligament
- Tibiocalcaneal ligament
- Posterior tibiotalar ligament
- Tibionavicular ligament

Introduction – Ankle Fractures

- Ankle fractures are the fourth most common bone fracture requiring surgical management\(^1\).

- Over 40% of ankle fractures may involve deltoid ligament injury\(^2\).

- Repair of deltoid ligament in ankle fracture is controversial.
Objective

- To determine the role of deltoid ligament repair in ankle fractures.

- Outcomes of interest:
  - Pain
  - Function and Range of Motion
  - Medial Clear Space (MCS)
  - Syndesmotic malreduction rates
  - Complication rates.
Methods

- Systematic review following Cochrane Handbook for Systematic Reviews of Interventions.
- Database search of Medline, Pubmed, Embase.
- Title screening, data abstraction and quality assessment performed independently by two reviewers.
  - Quality assessment with MINORs criteria.
Inclusion/Exclusion Criteria

- **Inclusion criteria:**
  - Ankle fractures involving deltoid ligament rupture and repair

- **Exclusion criteria:**
  - Polytrauma
  - Patients < 18
Screening Results

- **1268** studies identified after duplicate removal.
- **164** studies remaining after title screening.
- **46** studies remaining after abstract screening.
- **8** studies included after full text screening.
In Weber B fractures, DL repair reduced the need for syndesmotic fixation and decreased reoperation rate for hardware removal.

DL repair had lower syndesmotic malreduction rates for Weber B and C fractures compared to trans-syndesmotic screw fixation.

Operation length 20 minutes longer for DL repair groups.

No significant difference in MCS, post-op pain, functional outcomes between DL repair vs non-repair groups.
Syndesmotic malreduction in non-repair groups is likely related to well-established complications of trans-syndesmotic screws.

- Suture button fixation may show lower syndesmotic malreduction rates.
Conclusions

- Deltoid ligament repair reduces the need for syndesmotic fixation in Weber B fractures.
- Deltoid ligament repair has lower syndesmotic malreduction rates compared to transsyndesmotic screw fixation.
- Other outcome measures are not significantly different.

- Deltoid ligament repair should be considered for ankle fracture patients especially in Weber B fracture with syndesmotic instability.
References


