Effectiveness of arthroscopically assisted surgery for ankle fractures: a meta-analysis

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Disclosure

The authors have no disclosures.
Purpose

To compile a meta-analysis that investigates the effectiveness and postoperative functional scores of arthroscopically assisted ORIF for ankle fractures compared with the conventional ORIF without arthroscopy.
Materials and Methods

IRB approved retrospective study

Inclusion Criteria

- Human studies with comparative design (arthroscopically assisted ORIF vs conventional ORIF), those investigating arthroscopic surgeries concurrently performed with ORIF for ankle fractures, and articles written in English.
Materials and Methods

Exclusion Criteria

1) Studies investigating pilon fractures or talar fractures
2) Those where arthroscopy was used only for the detection of concurrent injuries with ankle fractures (diagnostic studies)
3) Those investigating pediatric ankle fractures
4) Case reports or systematic reviews
5) Those without surgical outcomes as quantitative clinical scores
6) Delayed arthroscopic procedure performed for sequela of ankle fractures
Materials and Methods

Data analysis

1) All effect sizes (Cohen’s d) were multiplied by a correction factor depending on the sample size to reduce bias, which produced Hedges’ g.

2) Publication bias was tested using a funnel plot and the Egger’s test.
Results

308 articles found in initial search

Excluded after screening of titles and abstracts and identification of duplicates (n=269)

39 articles eligible for further review

An editorial, technical notes, systematic reviews were excluded (n=17)

22 articles for full text review

Diagnostic arthroscopic procedure were excluded (n=10)

12 remaining articles

* Delayed arthroscopic surgery for sequelae of ankle fracture (n=4)
* A study without comparative design (n=1)
* Studies without quantitative functional outcome scores (n=3)

Two retrospective studies and two randomized controlled trials were included in the meta-analysis

4 studies included
Results

- This meta-analysis included a total of 188 patients.
- Mean number of subjects in each study ranged from 19 to 72.
- Mean age: 29 ~ 42 years
- Mean follow up: 21 ~ 67 months
**Results**

Arthroscopically assisted ORIF showed better outcomes than the conventional in both subgroups in terms of the effect size.
Results

- A funnel plot showed the asymmetric distribution of the dots was not evident.
- Egger’s test also suggested that there was no publication bias ($p=0.534$)
Conclusions

- **Arthroscopic assisted ORIF** for ankle fractures
  - More beneficial with respect to functional outcomes when compared to conventional ORIF
  - Very reasonable approach in concomitant intra-articular injuries
  - Requires longer surgical time and carries possible additional complication rates (like compartment syndrome at acute injury)
Conclusions

- No significant difference in clinical outcome between the arthroscopic ORIF and the conventional ORIF.

- Arthroscopic assisted ORIF for ankle fractures is more effective with minimal additional risk in terms of postoperative functional scores.

- Cost-effectiveness of this procedure and possible additional complication rates need to be further elucidated in future studies and weighed against proposed benefits.