Nonoperative Versus Operative Treatment of Diaphyseal Humerus Fractures: A Systematic Review

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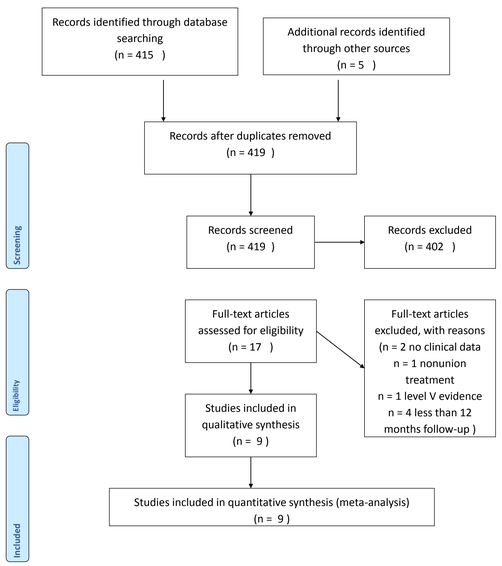
Objectives

- The purpose of this systematic review was to determine if there is a significant difference in clinical outcome scores and union rates between operative and non-operative treatment of diaphyseal humerus fractures.
- The study hypothesis is that clinical outcomes will be better within the operative group for those that underwent open reduction internal fixation over those who underwent intramedullary nailing, and union rates between the three states will be similar.

Methods

- This review was performed using PRISMA guidelines and registered with PROSPERO
- Study inclusion criteria:
  - English language
  - Minimum of one-year follow-up
  - Skeletally mature individuals
- Exclusion criteria:
  - Skeletally immature patients
  - Fractures not involving the humeral shaft
  - Less than one year follow-up
  - Level V evidence.



Results

Time to Union	28.9 weeks (9.8-60 weeks)
IMN	11.4 weeks (9.8- 13.6 weeks)
ORIF	12.3 weeks (10.4-15.2 weeks)
Unknown Fixation	45.5 weeks (10.4- 60 weeks)
Number of Nonunions	22
Number Nonunions IMN	10
Number Nonunions ORIF	5
Number Nonunions Nonop	5
Number of Malunions	6
Number Malunions IMN	1
Number Malunions ORIF	2
Number Malunions Nonop	3
Number of Delayed Unions	9
Number Delayed Unions IMN	7
Number Delayed Unions ORIF	1
Number Delayed Unions Nonop	1

- There were less complications in the operatively treated group (p = 0.019).
- There was no difference in the rate of complication between intramedullary nailing and open reduction internal fixation (p = 0.346) or between intramedullary nailing and non-operative treatment (p = 0.086).
- There was a significant difference between open reduction internal fixation and non-operative treatment (p = 0.0057).
- The overall ASES was 68.1. The mean ASES for ORIF was 69.4 and the mean ASES for IMN was 66.8.
- The overall mean Constant score was 81.8. The mean Constant score for the ORIF group was 87.9 while the mean Constant score for the IMN group was 77.

Conclusions

- There was a higher rate of non-union in the non-operatively treated group while there was not difference in union rate between intramedullary nailing and open reduction internal fixation within the operative group.
- There is little standardized data to compare the functional outcomes of patients treated non-operatively to those treated operatively.
- This review found that there needs to be more research performed in the area of functional outcomes for these fractures

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