Operative Versus Non-Operative Treatment of Jones Fractures: A Decision Analysis

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Disclosures

Our disclosures are in the final AOFAS Program Book. We have no potential conflicts with this presentation.
Introduction

Optimal treatment of Jones fractures remains controversial

- **Operative:** intramedullary (IM) screw fixation
- **Non-operative:** crutches, cast and no weight bearing
Introduction

- Principal advantage non-operative treatment: patient avoids risks, discomfort of surgery

- Principal advantages of operative treatment:
  - Maximizes the chance of fracture union
  - Minimizes risk of refracture
  - May accelerate functional recovery
Decision Analysis

- Quantitative analysis of decision-making involving:
  - Creation of decision tree
  - Determination of outcome probabilities and utilities
  - Fold-back analysis
  - Sensitivity analysis

- Enables clinician and patient to optimize decision-making based on evidence and patient preferences
Methods

- **Systematic review of literature** to determine probabilities of occurrences of various outcomes
- **Patient preferences** determined by questionnaire administered to 32 healthy adult subjects without history of fracture
- **Fold-back and sensitivity analyses** performed to determine optimal management strategy
- **Expected values** calculated for each end-point based on outcome utility and associated probability; higher value is more optimal
Methods

[Diagram showing outcomes of non-operative and operative treatment for Jones Fracture, with probabilities and outcomes of healed, nonunion treated with surgery, and complications.]
Results

- Operative treatment: 7.88
- Non-operative treatment: 7.74

Sensitivity analyses:
- Non-operative treatment preferred when:
  - Uncomplicated operative treatment below 8.04 or non-operative treatment above 8.49
  - Likelihood of healing with non-op > 82%
  - Likelihood of healing with surgery < 92%
Discussion

- IM screw fixation preferred treatment strategy

- Model sensitive to small changes in several determinants

- Non-operative treatment may optimize outcome:
  - Healing likelihood is high
  - Pt is averse to surgery
  - Pt understands non-union may require future surgery
Conclusions

1. In this model IM fixation preferred method for treatment of Jones fracture

2. Model very sensitive to small changes in several determinants of decision making

3. Shared decision-making between patient and physician is essential to optimize outcome