GRAVITY REDUCTION VIEW: A NOVEL RADIOGRAPHIC TECHNIQUE FOR THE EVALUATION AND MANAGEMENT OF WEBER B FIBULA FRACTURES

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Disclosures

NO CONFLICT TO DISCLOSE

Gravity Reduction View: A Novel Radiographic Technique for the Evaluation and Management of Weber B Fibula Fractures

I have no potential conflicts with this presentation
Background

- Controversy exists surrounding the utility of radiographic stress views to assess the stability of ankle fractures.
- Recent literature suggests that the gravity stress view may not provide significant benefit in surgical decision-making.
  - Egol JBJS 2004
  - Sanders JOT 2012
- DeAngelis FAI 2007: In normal adult ankle, **superior clear space (SCS) > or equal to medial clear space (MCS)** in non-injured ankles.
A New Radiographic View: The Gravity Reduction View

• We propose a novel radiographic stress view (Gravity reduction view (GRV)) to predict ankle stability in the mortise.

• This view places the lateral side up and allows gravity to potentially reduce the medial clear space to an anatomic position.

• We propose an algorithm for treatment based on the findings of the GRV.
Purpose

• To determine whether the use of a novel radiographic stress view accurately predicts mortise stability in ankle fractures

• Hypothesis: The Gravity Reduction View (GRV) assesses mortise stability by determining whether the static mortise is anatomically reduced
Methods

- 23 patients with Weber B distal fibula fractures
- Static mortise view: SCS and MCS were measured
  - Gravity Stress View (GSV): MCS was measured only
  - Gravity Reduction View (GRV): MCS was measured only
- MCS on GRV compared with MCS on static views
• Our proposed treatment algorithm was then based upon the measurement of the MCS on the GRV as compared to the static view.

• We defined anatomic MCS as a measurement that is less than or equal to the measured SCS.

Methods Cont.
Patient with isolated Weber B fracture undergoes GRV

**DECREASE in MCS from static view**
- Operative Treatment

**Normal MCS on GRV + normal MCS on static view (regardless of findings on GSV)**
- Nonoperative Treatment: repeat evaluation in 1-2 weeks

**Wide MCS on GRV + wide MCS on static view (regardless of findings on GSV)**
- Operative Treatment (with likely medial arthrotomy)

**Normal MCS on weightbearing xray -> Nonoperative Treatment**

**Wide MCS on weightbearing xray -> Operative Treatment**
Results

- 23 patients with Weber B distal fibula fractures were managed according to this treatment algorithm.
- The mean age was 49.1 years old (range: 18-74).
- 15 underwent operative treatment.
- 10 patients were initially treated non-operatively--→→2 patients demonstrated late displacement and were treated surgically.
• Using this algorithm, all patients had a final MCS that was less than the SCS.

• Final mean MCS for patients treated operatively or non-operatively was $2.85\text{ mm}$ vs. mean SCS of $3.34\text{ mm}$

In $23/23$ cases, final x-ray MCS < SCS
Conclusions

• The Gravity Reduction View assesses mortise stability by determining whether the medial clear space decreases with gravity.

• This may represent a valuable tool as an alternative or adjunct to gravity stress views.

• Clinical outcomes and longer term follow-up needed to understand the potential utility of this radiographic view.
Thank You