The effect of different methods of stability assessment on fixation rate and complications in supination external rotation (SER) 2/4 ankle fractures.

Edward J.C. Dawe

R.Shafafy, J.Quayle, N.Gouguilias, A.Wee, A.Sakellariou.

Frimley Park Hospital, United Kingdom
Disclosures

The effect of different methods of stability assessment on fixation rate and complications in supination external rotation (SER) 2/4 ankle fractures.

E.J.C. Dawe, R. Shafafy, J. Quayle, N. Gougoulias, A. Wee, A. Sakellariou.

My disclosure is in the final AOFAS Mobile App.
I have no potential conflicts with this presentation.
Stability in SER 2/4 fractures

• The ankle is stable when the deep deltoid ligament is intact (Richter et al)

• Stable fractures will reduce on weightbearing and may be treated non-operatively (Tochigi et al)

• Unstable fractures are usually treated operatively whilst stable fractures are not.

• Medial tenderness is a poor predictor of stability (De-angelis et al)
Assessing stability

Three different methods used over 5 years

1. Non-weight bearing repeat radiographs - Examination Under Anaesthesia for patients with medial tenderness

2. Gravity stress views

3. Weight bearing radiographs (taken 5-7 days after injury)
Aims

To compare 3 different assessment protocols.

- Medial tenderness assessment (Plain or EUA)
- Gravity Stress view (Gravity Stress)
- Weight bearing stress view (WB)

- % Treated operatively
- % Further surgery
- % Complications
Patients and Methods

- 1500 patients with ankle fractures treated over five years.

- Radiographic review of initial radiographs (ED, RS, JQ) to identify SER 2/4 injuries.

- Review of clinic letters, discharge summaries and theatre records.

- Stress view protocol at preference of weekly Trauma Surgeon

- Validation of questions required to determine the need for a stress view and recognise the SER2/4 injury was carried out by 3 authors over 100 ankle injuries on two separate occasions.
Results

Study sample

- 310 SER 2/4 fractures
- Mean follow-up 2 years 6 months (Min 1 year)
- Mean age 52 years (SD 18 years)
- Male : Female 1:1

Validation Results

- Is this a Weber B fracture?
  Inter-observer $\kappa = 0.90$
  Intra-observer $\kappa = 0.97$
- Is there talar shift?
  Inter-observer $\kappa = 0.93$
  Intra-observer $\kappa = 0.97$
- Are stress radiographs required?
  Inter-observer $\kappa = 0.83$
  Intra-observer $\kappa = 0.95$
Patient group size

Gravity Stress: 67
Medial Tenderness: 189
WB: 56
Results - complications

% ORIF

Complications

Additional Surgeries

Gravity Stress
Plain or EUA
WB

P=0.0001 $\chi^2$

Gravity Stress
Plain or EUA
WB

P=0.0001 $\chi^2$

Gravity Stress
Plain or EUA
WB

P=0.0007 $\chi^2$
Conclusions

- This study finds a high rate of surgery, complications and additional surgeries were found in patients assessed using gravity stress views.

- Gravity stress views may overestimate instability as eversion stress does not necessarily reproduce the joint stabilising action of the deep deltoid on axial loading (Tochigi et al)

- The short follow-up of this study (Minimum 1 year) does not allow us to determine whether choice of stability assessment affects longer term outcomes such as the development of arthritis.

- We recommend weight bearing radiographs for assessing stability in this type of injury.
References


