Supination adduction ankle fractures are associated with complications and poor outcomes

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Background

- Ankle fractures from supination adduction mechanism are uncommon and have been infrequently described.
- Damage to the medial tibia plafond may be associated with these injuries and could portend poor function.

Purpose & Hypothesis

- The purpose of this study was to compare complications and functional outcomes between supination adduction injuries (SAD) and torsional ankle injuries (TAI).
- We hypothesized that complications and outcomes would be worse with SAD.

Methods

- 1,545 consecutive adult patients treated for an ankle (OTA 44) or partial tibial plafond (OTA 43B) injury at a single Level 1 Trauma Center over 16 years were reviewed to identify SAD.
- Injury characteristics, complications, and patient reported outcomes were collected.
- The most recent 200 consecutive patients treated for TAI (OTA 44, not SAD) served as controls.

Results

- 64 patients (4.0%) had SAD
- SAD patients were younger (48 vs 43 yrs, $p=0.04$)
- SAD injuries were more often due to motorized collision, (62 vs 18%, $p<0.001$).

Mechanism: SAD

Mechanism: TAI

- **SAD: more additional injuries:**
 - Hindfoot injury (23% vs 5%)
 - Other orthopaedic injury (66% vs 25%)
 - Non-orthopaedic injury (41% vs 9%, all $p<0.001$)
- **SAD: more post-traumatic arthritis** (PTA: 79% vs. 41%, $p<0.01$)
- **SAD: more unplanned secondary procedures** (20% vs 4%, $p<0.001$), including ankle arthrodesis (4.7% vs 0%) and implant removal (13% vs 1%, $p<0.001$)

Results

- FFI disability, activity, and total scores were higher (worse) after SAD injuries (all $p<0.1$), as were SMFA ADL, mobility, and dysfunction scores (all $p<0.1$).

Conclusions

- Supination adduction injuries occurred in 4%, generally younger patients, and higher energy mechanisms associated with polytrauma.
- SAD patients had more PTA (79%) and secondary procedures (20%), warranting counseling to patients about long-term sequelae.
- Extremity specific and general functional outcomes are worse after SAD injuries.