



# Research Week 2020

## Acetabular Fracture Pattern is Altered by Pre-injury Sacroiliac Joint Autofusion

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### Keywords

Acetabulum, sacroiliac joint autofusion, fracture pattern, high anterior column

### Abstract

#### Purpose

Acetabular fractures are complex injuries where force vector influences the resulting fracture pattern. There is an undescribed but anecdotally observed connection between preexisting autofused sacroiliac joints (aSIJ) and high anterior column (HAC) injuries. This study sought to characterize acetabular fracture patterns in patients with and without aSIJ.

#### Methods

All adult patients who received unilateral acetabular fixation at our Level 1 academic trauma facility (2008-18) were reviewed. Injury radiographs and CT scans were examined by a fellowship trained traumatologist to classify fracture patterns and identify preexisting aSIJ. Fracture types were subgrouped based on whether they had a HAC injury (includes: anterior column (AC), anterior column posterior hemitransverse (ACPH), or associated both column (ABC)). We performed a logistic regression to determine the association between aSIJ and HAC, adjusting for confounders using a forward stepwise regression model.

#### Results

61 of 371 patients (16%) had an aSIJ; this group was older (64 v 47yrs,  $p < 0.01$ ), male (95% v 71%,  $p < 0.01$ ), and had lower energy mechanisms (21% v 8%,  $p = 0.01$ ) and fewer smokers (19% v 45%,  $p < 0.01$ ). The most common fractures with aSIJ were AC (35%) and ABC (29%). aSIJ was associated with greater odds of a HAC injury (OR=4.97,  $p < 0.0001$ ). After adjusting for age, mechanism, injury severity, tobacco use, and sex, aSIJ remained associated with HAC fracture types (OR=2.74,  $p = 0.03$ ).

#### Conclusion

SIJ autofusion appears to affect the mode of failure in acetabular injuries; the rigid posterior ring may precipitate a HAC injury (ABC, AC, or ACPH). Surgeons should be aware of this phenomenon when classifying fractures and during preoperative planning.

