Residual Ipsilateral Sacroiliac Joint Diastasis Impairs Quality of Articular Reduction in Transverse Acetabular Fractures

Nihar S. Shah, MD; Henry A. Kuechly; H. Claude Sagi, MD; ***Cameron M. Allan Crasto, MD***

Purpose: Failure to recognize an ipsilateral sacroiliac (SI) joint injury leads to difficulty mobilizing the superior iliac segment, impacting the ability to reduce transverse fractures—particularly in the setting of an intact pubic symphysis. This study's purpose was to determine the incidence of ipsilateral SI joint injuries and impact on reduction quality when treating transverse acetabular fractures.

Methods: Skeletally mature patients with transverse (T), transverse-posterior wall (TPW), and T-type (TT) acetabulum fractures under the age of 65 were included. Patients with concomitant pelvic ring injury were excluded. Pre- and postoperative CT imaging was used to evaluate the ipsilateral SI joint and reduction quality of the transverse portion of the acetabulum fracture.

Results: A total of 209 patients met inclusion criteria. 63% (n = 162) were TPW, 22% (n = 47) were T, and 15% (n = 28) were TT fracture patterns. Ipsilateral SI joint injuries were found in 17% of patients (n = 35). There were no significant differences in demographics, fracture type, or ISS between groups. The average SI joint diastasis was 6.5 mm with 31% of the patients (n=11) having their SI joint reduced and stabilized. SI joint diastasis was significantly greater in patients with articular malreduction (7.4 mm vs 3.8 mm, $P<0.001$). In patients with SI joint diastasis greater than 6 mm, malreduction of the acetabular articular surface was present in 100% of patients who did not have the SI joint reduced and stabilized, compared to 22% in those patients where the SI joint was reduced and stabilized (12/12 vs 2/9, $P<0.001$). Both patients with acetabular malreduction and a stabilized SI joint had 7 mm of residual SI joint diastasis, indicating malreduction of the SI joint.

Conclusion: SI joint diastasis was found in 17% of patients with transverse acetabulum fractures without combined pelvic ring injury. Ipsilateral residual SI joint diastasis is associated with inability to adequately reduce the fracture at the acetabular articular surface. Based on these results, we recommend anatomic reduction and stabilization of the ipsilateral SI joint in patients with transverse and transverse family acetabular fractures when there is diastasis.