

## **Thrombin Hemostatic Matrix Reduces Heterotopic Ossification in Acetabular Fractures Fixed Via the Kocher-Langenbeck Approach**

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**Purpose:** Heterotopic ossification (HO) is a common complication after acetabular fracture surgery, especially with a posterior Kocher-Langenbeck approach. Currently radiation therapy (RT) is the only proven method of prevention of HO. The purpose of this study was to study the protective effect thrombin hemostatic matrix has on HO formation.

**Methods:** All acetabular fractures fixed through a Kocher-Langenbeck approach between 2013 and 2018 at 2 Level-I academic trauma centers were identified. Medical and operative records were reviewed for demographics, history of traumatic brain injury, HO medication prophylaxis, radiation prophylaxis, thrombin hemostatic matrix (THM) (Surgiflo, Ethicon, Bridgewater, NJ), administration, and length of follow-up. Radiographs were reviewed for evidence of dislocation, fracture, Letournel and OTA classifications, evidence of HO, and Brooker grade if applicable. Those who received HO prophylaxis (eg, nonsteroidal anti-inflammatory drugs [NSAIDs], radiation therapy) were excluded. Those meeting inclusion criteria were divided into 2 groups: THM administration (intervention) and no THM. Continuous variables were compared using t tests and categorical variables with  $\chi^2$  or Fisher's exact tests. Risk ratios (RRs) for the association between HO occurrence and THM administration were calculated.

**Results:** 328 acetabular fractures met inclusion criteria (126 intervention, 202 control) in patients with a mean age of  $38.7 \pm 15.9$  years; 62.2% were male, and 42.1% were African-American. Traumatic brain injury and posterior dislocation rates were equivalent between groups ( $P = 0.505, 0.754$ , respectively). Overall, the difference in frequencies of HO in the intervention (21.4%) and control (42.6%) groups was statistically significant ( $P < 0.001$ ), as was the difference in frequencies of clinically significant HO (Brooker grade 3/4): 3.2% in the intervention group and 17.3% in the control group ( $P < 0.001$ ). Patients who received THM had a 50% reduced risk of HO (95% confidence interval [CI] 0.35, 0.73) compared to those who did not; adjustment for age, gender, ethnicity, and traumatic brain injury did not meaningfully change the association (RR 0.46; 95% CI 0.29, 0.73;  $P < 0.001$ ).

**Conclusion:** The use of an injectable thrombin product (THM) at closure of a Kocher-Langenbeck approach may reduce the risk of HO formation by as much as 50% after an acetabular fracture.