Preoperative Blood Loss of Isolated Acetabular Fractures

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Purpose: The preoperative impact of isolated acetabular fractures is often overshadowed by their associated injuries, and as such, there is a paucity of literature on the quantity of blood loss in the preoperative setting for isolated acetabular fractures.

Methods: This was a retrospective study at 2 large, academic, Level I trauma centers of patients with isolated acetabular fractures from 2010 to 2018. Exclusion criteria included nonoperative management, surgical intervention greater than 3 days from injury, intra-abdominal injury requiring exploratory laparotomy or angiographic embolization, thoracic injuries requiring surgical treatment, long bone fractures, pelvic ring injuries, and sacral fractures. Patient body mass index (BMI), gender, mechanism of injury, preoperative hemoglobin, and preoperative transfusions were collected. Preoperative blood volume and preoperative blood loss were calculated with Nadler's formula and a hemoglobin balance equation. Preoperative blood loss and preoperative transfusions were analyzed based on fracture pattern and patient variables.

Results: The sample consisted of 438 males and 170 females. There were 28 transverse, 235 posterior wall, 5 posterior column, 19 anterior column, 37 both-column, 155 transverse with posterior wall, 21 T-type, 38 anterior column posterior hemitransverse, 61 posterior column with posterior wall, 5 both-column with posterior wall, 1 posterior column anterior hemitransverse, and 3 T-type with posterior wall acetabular fractures. The mean preoperative blood loss for each fracture pattern was posterior column with anterior hemitransverse 703.9 mL, posterior wall 1021 mL, posterior column with posterior wall 1075.6 mL, posterior column 1117.5 mL, anterior column 1131 mL, transverse with posterior wall 1201 mL, transverse 1214.5 mL, anterior column with posterior hemitransverse 1317.7 mL, T-type 1340.8 mL, both-column 1401.9 mL, both-column with posterior wall 1847.6 mL, and T-type with posterior wall 1832.4 mL. There was a significant difference in the means of preoperative blood loss among acetabular fracture patterns. Time from injury to surgery and preoperative blood loss had a statistically significant positive linear correlation. Preoperative transfusion demonstrated a significant association with acetabular fracture pattern, preoperative hemoglobin value, preoperative blood loss, and time from injury to surgery. There were no associations of BMI, preoperative blood volume, gender, or mechanism of injury with preoperative blood loss or preoperative transfusion.

Conclusion: Isolated acetabular fractures may lose greater than 1 L of blood in the preoperative setting with patient gender, mechanism of injury, and BMI having little bearing on volume lost or preoperative transfusions. These data reinforce the benefit of early appropriate care for acetabular fractures and should spark surgeons to seek to mitigate preoperative blood loss.