

Early Treatment of Associated Pattern Acetabular Fractures Via an Anterior Approach Does Not Increase Blood Loss or Need for Transfusion

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Background/Purpose: Despite strong support for early total care in adequately resuscitated patients with long bone fractures, there remain limited data to suggest appropriate timing for surgical fixation of associated pattern acetabular fractures due to concern for excessive procedure-related blood loss. Fracture patterns involving displacement of acetabular columns are associated with considerable blood loss, particularly from exposed cancellous surfaces, which can be difficult to control intraoperatively. Delay to surgery has been hypothesized to limit this low-pressure bony bleeding. The purpose of this study is to determine relationship of the timing of surgery on blood loss and transfusion requirements for associated pattern acetabular fractures stabilized through an anterior surgical approach.

Methods: A retrospective review of our Level I trauma center records from 2006 to 2012 identified 130 patients with associated pattern acetabular fractures classified by the system of Letournel as: associated both-column (ABC), anterior column posterior hemi-transverse (ACPHT), or T-type fractures treated operatively via ilioinguinal or modified ilioinguinal approach. Data points collected include patient demographics (sex, age), body mass index (BMI), past medical history (PMH), and time from emergency department (ED) admission to surgery. Our outcome measures were estimated blood loss (EBL), preoperative and postoperative hematocrit levels, intraoperative red blood cell (RBC) unit transfusions, 1-week postoperative RBC unit transfusions as a function of the timing of surgery, and total RBC unit transfusions. χ^2 and Fisher's exact test were used for categorical and dichotomous variables. Outcome variables were analyzed with the unpaired *t*-test, Mann-Whitney U, Kruskal-Wallis, and Spearman correlation tests.

Results: No difference in EBL was observed for those patients undergoing surgery in less than 24 hours ($n = 11$), less than 48 hours ($n=34$), or less than 72 hours ($n = 57$) when compared to later ($P = 0.54, 0.45, \text{ and } 0.82$, respectively). When analyzing time to surgery as a continuous variable, there was no correlation with: EBL (Spearman's $\rho = 0.013, P = 0.89$), total RBC unit transfusion (Spearman's $\rho = 0.07, P = 0.40$), postoperative hematocrit (Spearman's $\rho = 0.09, P = 0.30$), and only a small correlation with intraoperative RBC unit transfusion (Spearman's $\rho = 0.19, P = 0.02$). The average EBL was 1440 (± 762) cc. The average intraoperative RBC transfusion was 2.8 (± 2.4) units. The average total volume transfused RBC was 4.4 (± 3.3) units. A post hoc power analysis demonstrated that our sample could detect a difference in EBL of 360 mL.

Conclusion: Our results indicate no relationship between estimated blood loss or total transfusion requirements and timing of operative intervention for associated pattern acetabular fractures treated via an anterior approach. Associated patterns may be treated without delay in patients otherwise able to tolerate the procedure without increasing the risk of excessive blood loss or increasing the utilization of RBC transfusion.

- The FDA has not cleared this drug and/or medical device for the use described in this presentation (i.e., the drug or medical device is being discussed for an "off label" use). For full information, refer to page 600.