Blood loss in geriatric hip fracture – natural history and outcomes of transfusion

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Purpose: Blood loss related to hip fracture can be substantial, often leading to severe anemia and functional impairment in the geriatric patient. The purpose of our study was to better characterize the expected course for geriatric patients following hip fracture and hip fracture fixation in terms of blood loss and resultant decline in hemoglobin (hb)/hematocrit (hct), with particular attention paid to patient characteristics and anticoagulation status. Additionally, we aimed to determine the influence of allogenic blood transfusion after hip fracture on length of hospital stay, 30-day readmission rate, and mortality at 1 year.

Methods: We performed an IRB-approved retrospective review the medical records of all patients aged 65 years and older who suffered a pertrochanteric femur fracture (OTA class 31A) and were treated with primary fixation using a short (<280mm) cephalomedullary device at our level 1 trauma center over the period 12/2005 to 12/2012. Demographic and clinical information regarding the patient and subsequent hospital course was recorded with particular attention paid to blood parameters. Patients receiving and not receiving an allogenic blood transfusion were compared according to clinical characteristics, mortality, length of stay, and 30-day readmission rate. Age, gender, ASA, BMI, use of preoperative anticoagulant medications, admission laboratory values, and managing service (medicine vs. surgery) were used as possible confounders in multivariate regression analysis.

Results: 288 patients were identified as meeting our inclusion and exclusion criteria. There were 204 women and 84 men. Mean patient age was 84 years (range: 65-100). Mean ASA score was 3.1 and average time to surgery was 1.25 days (range 3 0-6 days). Overall, 198 patients (69%) were anemic on presentation. This included 63 men (75%) and 135 women (47%). There was a 60% rate of use an anticoagulant medication prior to presentation, with Aspirin being the most prevalent medication used. The mean hemoglobin drop following hip fracture and subsequent fixation was 2.3 g/dL, with a nadir reached on average by postoperative day 2.

A total of 603 units of allogenic blood were transfused in 226 patients. Among those transfused, the median number of units given was 2 (interquartile range: 2-3 units; range 1-21 units). Predictors for the need for transfusion included: female gender and a lower admission hematocrit. In multivariate regression analysis, allogenic blood transfusion was a significant risk factor for longer length of stay, but not for mortality, readmission, or cardiac complication.

Male gender and higher ASA level were independent risk factors for mortality at 1 year, but not at 6 months. Admission to a medical service was associated with increased mortality at both 6 months and 1 year timepoints.

Conclusion: Hip fracture in geriatric patients is associated with a significant decline in blood count, with values reaching a nadir approximately 2 days after surgery. Blood values tended to increase from that point, regardless of transfusion. Transfusion was not associated with an increased rate of cardiovascular complications, readmission, 6-month or 1-year mortality, but was an independent risk factor for increased length of stay.