“Relationship Between Visually Estimated Blood Loss and Change in Hemoglobin and Hematocrit in Total Knee Reconstruction”

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Background: Perioperative blood loss is commonly recorded for orthopedic surgical procedures. The most commonly used method of assessment is visually estimated blood loss. These observed blood loss measurements are often used perioperatively for patient management. These may also become a component of recorded outcomes used by government and insurance agencies. However, these methods are subjective, and can lead to inaccurate evaluations of blood loss. This may negatively affect patients by the inappropriate use of blood transfusions. In addition, these inexact records may reflect poorly on surgeon quality scores and subsequent success in practice. The purpose of this study was to determine if perioperative changes in hemoglobin and hematocrit correlated with intra-operative visually estimated blood loss during total knee arthroplasty.

Methods: A retrospective review of 138 patients, over a 4 year period (2007-2011), who underwent primary or revision total knee arthroplasty by a single surgeon. The perioperative change in hemoglobin (hb) and hematocrit (hct) were determined and compared to the recorded estimated blood loss. A statistical correlation was then performed to determine if estimated blood loss was accurately reflected by the change in laboratory measured hemoglobin and hematocrit.

Results: 138 patients, with an average age of 65 years (29-89) met our inclusion criteria including 51 males and 87 females. Average pre-op hb and hct were 13.4 g/dL and 39.7%, respectively. Post op average hb and hct were 12.3 g/dL and 36.3%, with an average pre to post-operative change of 1.1 g/dL and 3.4% respectively. Average blood loss was 135.5mL. No statistically significant correlation was noted between the changes in both hb and hct and the visually estimated blood loss.

Conclusions: The lack of correlation between perioperative changes in hemoglobin and hematocrit with visually estimated blood loss reinforce the inadequacy of this method of determining perioperative blood loss. Consequently, this speculative value should not be weighed heavily when determining post-operative patient care. In addition, one should caution in using these results when evaluating surgeon performance, or prognostic success.