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How to avoid systematic postoperative blood test after total hip arthroplasty: A new risk scoring system compared to Wu's score
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Abstract
Background: Routine laboratory studies are often performed following total hip arthroplasty (THA). However, lately, their necessity has been challenged and risk factors for postoperative transfusion are still debated. Recently, a risk scoring system to single out patients that should have a postoperative blood test has been published by Wu et al. The purposes of this retrospective study were: (1) to validate this recently published risk scoring system to identify patients who should have a postoperative laboratory test; (2) to single out risk factors of postoperative transfusion; (3) to determine if another score can more accurately predict the need for postoperative transfusion. Hypothesis: Wu et al.'s risk scoring system can accurately identify patients who should have a postoperative blood test. Methods: In all, 1693 patients who underwent primary THAs between June 2015 and October 2020 were screened for potential eligibility to include 1000 patient for analysis. Preoperative and postoperative blood tests were done for every patient. Clinical information and laboratory results were retrospectively collected and analyzed. A descriptive analysis followed by univariate and multivariate analysis were sequentially performed. A multiple logistic regression model was employed to determine a formula predicting the transfusion risk called THABUS for Total Hip Arthroplasty Blood test Usefulness Score. The risk scoring system for complete blood count published by Wu et al. in may 2020 was performed for every patient and compared to the THABUS predictive model. Results: The transfusion rate was 2.3% (23/1000). The risk-scoring system published by Wu and al. showed that a laboratory test was necessary for 60.6% (606/1000) however 13% (3/23) of the patients who needed a blood transfusion were missed by the risk-scoring system, giving it a sensitivity of 86.95% and a specificity of 40%. Increasing age, arterial hypertension, female gender, low preoperative hemoglobin, ASA score ≥ 2 and diagnosis of osteonecrosis of the femoral head were significantly associated with postoperative transfusion. The THABUS formula can predict the risk for transfusion with a sensibility of 96.65% and a specificity of 75.54%. In our cohort of 1000 patients, following the THABUS formula would have led to 261 postoperative blood test and cost savings of 32,132 $. Only one patient (4.3%) was missed by our new score. The THABUS formula is significantly better than Wu et al.'s complete blood count score in identifying both patient that will need a transfusion ($p < 0.01$) and those who shouldn't have a postoperative blood test ($p < 0.001$). Medical intervention because of creatinine or electrolytes abnormality was needed in 0.3% (3/1000) of patients. Discussion: In this study Wu et al.'s recently published complete blood count risk-scoring system was not validated. However, in the studied population the THABUS formula can accurately target patients who might need a transfusion. The use of the THABUS formula could reduce hospitalization costs without compromising the patients' safety. Level of evidence: III, case-control study. © 2023 Elsevier Masson SAS

Author Keywords
Anemia; Blood test; Laboratory test; Total hip arthroplasty; Transfusion

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