

Preoperative Hemoglobin Level is Independently Associated with Increased Healthcare Utilization After Elective Spinal Fusion (3 Levels) in Elderly Male Spine Deformity Patients

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Introduction

Recently, hospitals and health systems are investing considerable resources into the pre-operative identification of at-risk patients. The aim of this study is to determine if a low pre-operative hemoglobin for adult males is risk factor increased healthcare resource utilization.

Methods

The medical records of 204 elderly (=60 years old) deformity patients undergoing elective spinal fusion at a major academic institution from 2005 to 2015 were reviewed. Low Hemoglobin was designated as a hemoglobin level <13.5 g/dl. We identified 83 (40.7%) male-patients with a pre-operative low-hemoglobin and 121 (59.3%) with normal levels (Low: n=83; Normal: n=121). Patient demographics, comorbidities, and 30-day post-operative complication and readmission rates were collected for each patient. The primary outcome investigated in this study was complication rates and length of hospital stay.

Results

204 adult male patients (Low Hgb: n=83; Normal Hgb: n=121) were included in this study. There were significant differences in the hemoglobin (Low Hgb: 12.3 ± 0.9 g/dL vs. Normal Hgb: 14.9 ± 1.0 g/dL, $p < 0.0001$) and hematocrit (Low Hgb: 0.372 ± 0.029 vs. Normal Hgb: 0.439 ± 0.028 , $p < 0.0001$). There were no significant differences in intra-operative variables and complication rates. There was a significant difference in the incidence of postoperative delirium with the low hemoglobin group have a three-fold increase in comparison to the normal hemoglobin group, (Low Hgb: 21.7% vs. Normal Hgb: 5.8%, $p = 0.0007$). There was a significant difference in the length of stay in the hospital between both groups, with the low hemoglobin group having an increased hospital stay when compared to the normal hemoglobin cohort (Low Hgb: 8.1 ± 5.9 days vs. Normal Hgb: 4.8 ± 2.5 days, $p < 0.0001$).

Conclusions

Our study demonstrates demonstrate that male adult patients with a low hemoglobin (hemoglobin level <13.5 g/dl.) have an increased length of stay in the hospital and higher rates of delirium post-operatively.

Learning Objectives

By the conclusion of this session, participants should be able to: 1) Describe the importance of pre-operative hemoglobin on outcomes after surgery, 2) Discuss, in small groups, ways to reduce health care resources in in patients with low hemoglobin, 3) Identify an effective threshold to operate on patients with low hemoglobin levels.

References