

Is There a Threshold Value of Hemoglobin A1c that Predicts Risk of Infection following Primary Total Hip Arthroplasty?

Notes

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Introduction: Despite substantial research on the use of glycemic markers to predict infection in patients with diabetes mellitus (DM), there remains little evidence to support a perioperative HbA1c level that could serve as a threshold for a significantly increased risk of deep postoperative infection following THA.

Methods: A national administrative database was queried for patients who underwent primary THA. Patients with DM who had an HbA1c level within 3 months of surgery were identified, and were then stratified based on their HbA1c level in 0.5 mg/dL increments. Patients were grouped into thirteen mutually exclusive groups based on their HbA1c by increments of 0.5 mg/dL, starting with patients with a level between 0.00 and 5.49 mg/dL up to those patients with a level of 11.5 mg/dL or greater. The incidence of deep infection requiring operative intervention within 1 year for each HbA1c group was then identified. A receiver operating characteristic (ROC) analysis was performed to determine a threshold value of the HbA1c.

Results: 7,736 patients who underwent THA with diabetes and a perioperative HbA1c recorded in the database were included in the study. The rate of infection ranged from a low of 0.7% up to 5.9% (P < 0.0001). The inflection point of the ROC curve corresponded to an HbA1c level between 7.0 and 7.5 mg/dL (p = 0.001, specificity = 69%, sensitivity = 47%).

Conclusions: The risk of deep postoperative infection requiring surgical intervention following THA in patients with DM increases as the perioperative HbA1c increases. ROC analysis determined that a perioperative HbA1c above 7.5 mg/dL could serve as a threshold for a significantly increased risk of deep postoperative infection following THA.