

Perioperative Hyperglycemia and Postoperative Infection after Lower Limb Arthroplasty

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Abstract

Background:

One of the most serious complications after major orthopedic surgery is deep wound or periprosthetic joint infection. Various risk factors for infection after hip and knee replacement surgery have been reported, including patients' comorbidities and surgical technique factors. We investigated whether hyperglycemia and diabetes mellitus (DM) are associated with infection that requires surgical intervention after total hip and knee arthroplasty.

Methods:

We reviewed our computerized database for elective primary total hip and knee arthroplasty from 2000 to 2008. Demographic information, past medical history of patients, perioperative biochemistry, and postoperative complications were reviewed.

Patients were divided into two groups: infected group (101 patients who had surgical intervention for infection at our institution within 2 years after primary surgery) and noninfected group (1847 patients with no intervention with a minimum of one year follow-up). The data were analyzed using *t*, chi-squared, and Fisher's exact tests.

Results:

There were significantly more diabetes patients in the infected group compared with the noninfected group (22% versus 9%, $p < .001$). Infected patients had significantly higher perioperative blood glucose (BG) values: preoperative BG (112 ± 36 versus 105 ± 31 mg/dl, $p = .043$) and postoperative day (POD) 1 BG (154 ± 37 versus 138 ± 31 mg/dl, $p < .001$). Postoperative morning hyperglycemia (BG >200 mg/dl) increased the risk for the infection more than two-fold. Non-DM patients were three times more likely to develop the infection if their morning BG was >140 mg/dl on POD 1, $p = .001$. Male gender, higher body mass index, knee arthroplasty, longer operative time and hospital stay, higher comorbidity index, history of myocardial infarction, congestive heart failure, and renal insufficiency were also associated with the infection.

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Abbreviations: (ASAPS) American Society of Anesthesiologists physical status, (BG) blood glucose, (BMI) body mass index, (BUN) blood urea nitrogen, (DM) diabetes mellitus, (I&D) irrigation and debridement, (INR) international standardized ratio, (MI) myocardial infarction, (PJI) periprosthetic joint infection, (POD) postoperative day

Keywords: blood glucose, diabetes mellitus, hip and knee arthroplasty, infection, orthopedic surgery

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Abstract cont.**Conclusions:**

Diabetes mellitus and morning postoperative hyperglycemia were predictors for postoperative infection following total joint arthroplasty. Even patients without a diagnosis of DM who developed postoperative hyperglycemia had a significantly increased risk for the infection.

J Diabetes Sci Technol 2011;5(2):412-418