

HbA_{1c}, Joint Replacement Complications Linked

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SAN FRANCISCO — Complications after total knee or hip arthroplasty in patients with diabetes were significantly more common in those with higher hemoglobin A_{1c} levels, a retrospective study of 119 patients found.

The overall rate of medical and surgical complications was more than 50% in patients with a hemoglobin A_{1c} (HbA_{1c}) level greater than 7%, and less than 40% in those with an HbA_{1c} level below 7%, study investigators reported.

“We believe that the HbA_{1c} test should be a routine preoperative test ordered for diabetes patients prior to total joint arthroplasty,” Dr. Yossef C. Blum said during a poster session at the annual meeting of the American Academy of Orthopaedic Surgeons. “Patients with significantly elevated HbA_{1c} levels should have their glycemic control better optimized prior to undergoing total hip arthroplasty or total knee arthroplasty, as well as in the perioperative period.”

In a review of inpatient and outpatient charts of total knee or hip arthroplasty performed by a single surgeon at one institution from 2000 to 2007, Dr. Blum and his associates found 199 patients whose HbA_{1c} level had been measured in the year before surgery or within 3 months after the surgery. Patients were excluded from the study if they had conditions other than diabetes that led to an immunosuppressed state, such as HIV or rheumatoid arthritis.

Patients did not have to have a diagnosis of diabetes to be included in the study—just an HbA_{1c} measurement—because up to a third of people with diabetes do not have a formal diagnosis, he and his associates reported.

In all, 73% of the patients underwent total knee arthroplasty and 27% had total hip arthroplasty. Patients had a mean age of 68 years. The cohort was 76% male, 34% white, 34% black, 23% Hispanic, and 9% other races/ethnicities. Their mean body mass index was 34 kg/m², and their mean HbA_{1c} level was 6.6% (range 4.9%-12.3%).

The investigators performed a multivariate analysis looking for associations between HbA_{1c} levels and outcomes within 3 months of the surgery, said Dr. Blum of Montefiore Medical Center, New York.

Higher HbA_{1c} levels were significantly associated with an increased risk for any complications, surgical site complications, and wound complications after total knee or hip arthroplasty, Dr. Blum and his associates reported.

Only four surgical site infections occurred—too few to demonstrate a specific association between HbA_{1c} levels and wound infection—but “it is notable that three of four infections occurred in patients with an HbA_{1c} [level] above 7.5%,” he said.

Although too few medical complications occurred to demonstrate a significant association with HbA_{1c} levels, an association might be seen in a larger study, he added. The current study found no association between HbA_{1c} level and the risk of non-surgical-site infections, urinary re-

tention, or discharge after surgery to an inpatient facility.

Overall, 43% of the patients developed medical or surgical complications.

“Future studies with increased numbers of patients may help determine a cutoff HbA_{1c} level above which total hip arthroplasty or total knee arthroplasty can be considered too high risk,” Dr. Blum said.

Recommendations from the American Diabetes Association set a treatment goal of an HbA_{1c} level below 7%.

A 2003 review by other investigators of 290 diabetes patients who underwent non-cardiac surgeries found that those with an HbA_{1c} level above 7% had a statistically significant increased risk for postoperative complications, Dr. Blum said.

There have been few studies in the past 2 decades on the results of total knee arthroplasty in diabetes patients, and even fewer studies on the results of total hip arthroplasty in diabetes patients, Dr. Blum noted. Some reports suggest a risk of 1%-

7% for deep infection in diabetes patients after total knee arthroplasty, and overall wound complication rates of 1%-12%.

A 1983 study of outcomes after total hip arthroplasty in diabetes patients reported superficial infections in 10% of the patients and deep infections in 7%.

Other studies suggest that diabetes patients may be more prone to perioperative complications including urinary tract infections, pneumonia, sepsis, cardiac problems, and postoperative neuropathy.



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