Paper #37

Fewer Complications following Revision Hip and Knee Arthroplasty in Patients with Normal Vitamin D Levels

Sophia Traven, MD, Alexander Chiaramonti, MD, William Barfield, PhD, Patricia Kirkland, BS, Harry Demos, MD, Jacob Drew, MD

Introduction: Surgeons and hospitals increasingly face penalty for postoperative complications and readmission following total joint arthroplasty (TJA), therefore preoperative optimization of modifiable risk factors is paramount. Recent literature associates low vitamin D with risk of periprosthetic joint infection (PJI). Normal preoperative vitamin D is hypothesized to be associated with lower rates of 30-day readmission, infection, and 90-day complications following revision TJA.

Methods: An IRB-approved retrospective review of 126 revision TJA patients between 2010-14 was performed. Independent variables included age, Charlson comorbidity index (CCI), BMI, smoking status, and vitamin D level. Primary outcomes were 30-day readmission and 90-day complications. Analysis was via ordinal regression; p≤0.05.

Results: Patients with normal vitamin D (>30 ng/mL, n=57) were similar to the deficient group (n=69) with respect to age, gender, CCI, BMI, and smoking status (p>0.05). Patients undergoing surgery for PJI were more likely to have low preoperative vitamin D versus those undergoing revision surgery for aseptic indications (p=0.016). When controlling for PJI, patients with low vitamin D were more likely to have a complication (p<0.01) or unplanned reoperation within 90 days (p<0.01), and were more likely to have multiple postoperative complications (p<0.01) than those with normal vitamin D. Independent of infection as a preoperative condition, the rate of infectious complications was significantly greater among those with low vitamin D (p<0.01), as was the rate of surgical site infection (p<0.01). Normal vitamin D was not associated with decreased likelihood of 30-day readmission (p=0.58).

Conclusions: Revision TJA patients with normal vitamin D experienced a significantly lower rate of 90-day postoperative complications and infection, though the rate of 30-day readmission was similar to those with low vitamin D. Preoperative vitamin D level should be considered as a modifiable risk factor for complications following revision arthroplasty.

