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Predictors of Acute Kidney Injury in Patients Undergoing Total Knee Replacement Surgery

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Background: Very few studies have focused on patient characteristics that affect acute kidney injury (AKI) after total knee arthroplasty (TKR). The primary goal of this retrospective cohort study was to identify patient characteristics associated with AKI.

Methods: Between January 2008 and December 2009, a total of 659 patients (442 female) with a mean age of 67.1 (39–99) years underwent TKR surgery at Mercy Hospital Knee and Hip Institute. Retrospective chart review was done to identify patient characteristics associated with AKI after TKR. Logistic regression was used to evaluate AKI. The significance level was set at $P < .05$

Results: AKI occurred in 20.8% of patients. AKI risk increased with age ($P < .001$), diabetes, and angiotensin-converting enzyme inhibitor (ACEI) use (OR 1.6, 95% CI 1.0–2.5; OR 1.5, 95% CI 1.0–2.3, respectively.) However, the effects of diabetes and ACEI use were not independent; when both were included in the regression model, neither was statistically significant, and both odds ratios were smaller.

Conclusion: When examined separately, both diabetes and preoperative ACEI use increased the risk of AKI. However these factors were correlated, and were not independent predictors of significantly increased risk. Patients with diabetes tend to develop more AKI; hence, preoperative evaluations of diabetic patients should include a careful evaluation to prevent postoperative AKI.

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