

### 12 Best Papers

#### [O116] POST-OPERATIVE BLOOD GLUCOSE LEVELS PREDICTS PJI AFTER PRIMARY TOTAL JOINT ARTHROPLASTY

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**Aim:** Perioperative hyperglycemia has many etiologies including medication, impaired glucose tolerance, uncontrolled diabetes mellitus (DM), or stress, the latter of which is common to post-surgical patients. This acute hyperglycemia may impair the ability of the host to combat infection.<sup>1</sup> Our study aims to investigate if post-operative day 1 (POD1) blood glucose level is associated with complications, including periprosthetic joint infection (PJI), after total joint arthroplasty (TJA) and to determine a threshold for glycemic control that surgeons should strive for during a patient's hospital stay.

**Method:** A single-institution retrospective review was conducted on 24,857 primary TJAs performed from 2001-2015. Demographics, Elixhauser comorbidities, laboratory values, complications and readmissions were collected. POD1 morning blood glucose levels were utilized and correlated with PJI, as defined by the Musculoskeletal Infection Society criteria. The Wald test was used to determine the influence of covariates on complication rate. An alpha level of 0.05 was used to determine statistical significance.

**Results:** The rate of PJI significantly increased linearly from blood glucose levels of 115 mg/dL onwards. We determined that blood glucose (OR 1.004, 95% CI: 1.001-1.006, p=0.001), male gender (OR 1.480, 95% CI: 1.185-1.848, p=0.001), body mass index (OR 1.049, 95% CI: 1.033-1.065, p<0.001), operative time (OR 1.004, 95% CI: 1.001-1.007, p=0.006), length of stay (OR 1.059, 95% CI: 1.038-1.080, p<0.001), post-operative hematocrit (OR 0.751, 95% CI: 0.621-0.909, p=0.003), peripheral vascular disease (OR 1.942, 95% CI: 1.042-3.617, p=0.037), liver disease (OR 2.576, 95% CI: 1.344-4.935, p=0.004), rheumatic disease (OR 1.991, 95% CI: 1.266-3.132, p=0.003), and alcohol abuse (OR 2.588, 95% CI: 1.096-6.110, p=0.030) were associated with PJI. The Youden index was used to determine an optimal blood glucose threshold of 132 mg/dL to reduce the likelihood of PJI.

The PJI rate in the entire cohort was 1.59% (1.46% in non-diabetics compared to 2.39% in diabetics, p=0.001). Diabetics did not have an association between blood glucose level and PJI (OR 1.002, 95% CI: 0.998-1.006, p=0.331), although there was a linear trend for postoperative glucose predicting PJI.

**Conclusions:** The relationship between POD1 blood glucose levels and PJI increased linearly, with an optimal cut off of 132 mg/dL. Immediate and strict post-operative glycemic control is critical in reducing post-operative complications, and we demonstrate that even mild hyperglycemia is significantly associated with PJI.

<sup>1</sup>Turina M. Crit Care Med. 2005 Jul; 33(7):1624-33.