Retroperitoneal hemorrhage (RPH) is a potentially catastrophic complication after percutaneous coronary intervention (PCI). Previous studies identified female gender, body surface area, and high arterial puncture location as independent risk factors for RPH. There have been conflicting reports regarding the association with vascular closure devices (VCDs). Chronic renal insufficiency (CRI) and diabetes mellitus have been associated with both peripheral vascular disease and vascular access-site complications. The putative association of VCDs, CRI, and diabetes mellitus with RPH in the contemporary PCI era was investigated. A total of 3,062 consecutive patients undergoing 3,482 PCIs at Brigham and Women’s Hospital from January 2005 to April 2007 were evaluated for the study. All 3,311 patients with femoral angiography underwent hand-caliper-based quantitative vascular analysis and were included in this analysis. Multivariate analysis was performed using a backwards selection algorithm, and a propensity adjustment was developed to control for possible confounding variables regarding VCD use. The incidence of RPH was 0.49% (17 of 3,482 patients). After multivariate and propensity analyses, covariates that significantly influenced the risk of RPH were CRI, glycoprotein IIb/IIIa inhibitors, and high arterial puncture (p< or =0.007). VCD use was not independently associated with the
development of RPH (p = 0.74). In conclusion, this large prospective cohort study identified CRI, but not VCD use, as an independent predictor for RPH and peripheral vascular disease.