We evaluated the exact quantitative long-term impact of repeated catheterizations, vascular closure devices, and cardiovascular risk factors on the femoral artery after cardiac catheterization. A total of 2,102 available femoral angiograms from 827 consecutive patients were analyzed using caliper-based quantitative vascular analysis. These patients underwent coronary interventions between January 2005 and April 2007 and had at least one additional catheterization procedure through the ipsilateral femoral access site from December 2001 until January 2008. Multivariate analysis was performed to control for confounding variables. The primary outcome was change in artery size. The average punctured artery diameter was 6.5 +/- 2.1 mm. The average time between the first case and last follow-up was 349 days. There was no significant change of the punctured artery size over time after the index procedure (P = .15) and no change associated with the use of vascular closure devices (P = .25) after multivariate analysis. Smaller arteries were associated with female gender (-1.22 mm, P< .0001), presence of angiographic peripheral vascular disease (PVD, -1.19 mm, P< .0001), and current (-0.48 mm, P = .001) or former (-0.23 mm, P = .01) smoking status, whereas previous statin therapy was associated with an increase in artery size (+0.47 mm, P< .0001). Vascular closure devices were used less often compared with manual
compression in cases preceding the first detection of angiographic PVD (P< .001). Vascular closure devices are not associated with a change in the artery size or progression of PVD. Overall, there is no change in vessel size over time after repeat catheterizations, with a decrease in vessel size associated with current and former smoking and an increase with previous statin therapy.