

Kubo and colleagues [Kubo T et al. *J Am Col Cardiol* 2010] used virtual histology (VH) IVUS to investigate the natural history of coronary artery lesion morphology. Lesions were classified into pathological intimal thickening (PIT), 6 thin-capped fibroatheroma (TCFA), thick-capped fibroatheroma (ThCFA), fibrotic plaque, and fibrocalcific plaque. Over the 12 months of follow-up, most VH-TCFAs healed; however, new VH-TCFAs also developed. PITs, VH-TCFAs, and ThCFAs showed significant plaque progression compared with fibrous and fibrocalcific plaque, indicating that this is a dynamic disease.

## Transfemoral and Percutaneous TAVI: Prediction and Management of Vascular Complications

*Written by Maria Vinall*

Patients with severe aortic stenosis and high surgical risk can be treated less invasively with transcatheter aortic valve implantation (TAVI). Different access routes have been proposed for TAVI, including transapical, transsubclavian, and transfemoral, with percutaneous transfemoral being preferred because it is the least invasive and nonsurgical. Bernard Chevalier, MD, Institut Cardiovasculaire Paris Sud, Massy/Quincy, France, presented data from the Massy TAVI database regarding the institute's early and later experience with performing 170 transfemoral TAVIs (140 patients with full percutaneous approach).

Patients in the early and later experience groups had similar demographics, patients in the later group were at higher risk, based on Euro scores ( $26.9 \pm 11.8$  vs  $21.1 \pm 10.7$  in the late group;  $p=0.003$ ) and left ventricular ejection fraction (LVEF;  $45.8 \pm 13.1$  vs  $54.3 \pm 14.2$  in the late group;  $p<0.001$ ). Access vessel diameter was measured angiographically or with multislice computed tomography (MSCT). Patients were required to have calcification and tortuosity scores between 0 and 3. Vascular complications (20 patients vs 8 in the late group;  $p=0.012$ ) occurred significantly more often among patients in the early group, most likely due to a learning curve with the Prostar device. This translated into longer intensive care unit stays ( $7.5$  vs  $3.3$  days;  $p=0.039$ ) in the earlier cohort, despite their lower risk profile.

The optimum sheath:femoral artery ratio (SFAR) was 1.05 mm. Ratios that were higher than this were associated with significantly ( $p<0.05$ ) more frequent femoral artery, iliac artery, and Valve Academic Research Council (VARC) major and minor vascular complications, as well as mortality (both in-hospital and 30-day). Factors that

were predictive of major VARC complications were body mass index, early experience, SFAR, and femoral artery minimum luminal diameter.

Prof. Chevalier presented his top tips to reduce vascular access complications during TAVI:

- Do not use an 18F sheath if common femoral artery (CFA)  $<6.8$  mm
- Stick the middle of the anterior wall of the CFA
- Use fluoroscopy to check the deployment of the 4 needles
- Introduce large sheath only on extra stiff wire
- Progress with a back-and-forth rotation
- Eliminate large iliac dissections before removing the sheath
- Make the surgical knots with wet sutures at the end of the TAVI
- Keep the wire in place when pushing the first knot
- Check angiographically from the opposite side after closure

In order to deal with potential complications, it is important to be comfortable with specific techniques, including a crossover, balloon angioplasty, femoral stenting, and covered stenting. In concluding, Prof. Chevalier stressed the following:

- A full percutaneous approach allows a less invasive solution, but the operator will need to overcome a learning curve
- Avoid transfemoral TAVI if the CFA  $<6.8$  mm, even with Corevalve (SFAR  $>1.05$ )
- A team approach is necessary (particularly if experience is limited)
- Optimal patient screening, approach selection, and device refinement may improve outcomes

## Revascularization in the Diabetic Patient

*Written by Maria Vinall*

Diabetes is an independent predictor of many serious adverse events, including major adverse cardiac events (MACE). Spencer King, MD, St. Joseph's Heart and Vascular Institute and Emory University, Atlanta, Georgia, USA, reviewed several studies that evaluated revascularization in diabetic patients who have stable coronary artery disease (CAD). Dr. King discussed the issues that surround