INTERVENTIONAL CARDIOLOGY

Radial artery access—a RIVAL to the femoral approach

The radial approach for percutaneous coronary intervention (PCI) reduces vascular access site complications when compared with the femoral approach and results in similar success rates. These findings from the multicenter, randomized controlled RIVAL trial were reported by Dr Sanjit Jolly at the ACC 2011 Scientific Sessions and simultaneously published in the *Lancet*. In the RIVAL trial, no significant differences between the two approaches were found in the primary composite outcome (death, myocardial infarction, stroke, and major bleeding not related to CABG surgery). However, the radial approach reduced the incidence of this end point in patients with ST-segment elevation myocardial infarction (STEMI), and those treated at centers with high levels of experience in radial access.

“...outcomes of radial access are likely to improve with increasing procedural volume and experience...”

Major bleeding is a dangerous outcome in patients undergoing interventional procedures, and greatly increases the risk of death and ischemic events. Currently, the majority of PCI procedures are performed through the femoral artery. However, “the radial artery is a superficial and easily compressible site” says Dr Jolly, “and so its use could avoid femoral access site bleeding complications”. This

hypothesis has been supported, to some extent, by the results of small, single-center studies and meta-analyses.

The RIVAL trial was initially conceived as a substudy of CURRENT-OASIS 7, although enrollment of patients continued after CURRENT-OASIS 7 was completed. The final study population comprised 7,021 patients from 158 hospitals in 32 countries. Participants were randomly assigned to undergo coronary angiography with either radial ($n = 3,507$) or femoral ($n = 3,514$) access. PCI was also performed if deemed necessary by the physician ($n = 4,660$; 66% of patients).

The incidence of the primary outcome was low in both groups (radial 3.7% and femoral 4.0%; $P = 0.50$). However, the rate of access-site complications, a prespecified secondary end point, was significantly reduced with radial access ($P < 0.0001$). A *post hoc* analysis revealed that no major bleeds occurred at the radial access site, whereas 18 occurred at the femoral artery. “There have been concerns that radial access may be associated with lower PCI success rates,” explains Dr Jolly, “but this is not the case in the RIVAL trial,” although access site crossover was more common in the radial group than in the femoral group.

Notably, patients in the radial group who were treated at high-volume centers, by physicians who were highly experienced in the radial approach, had significantly lower rates of the primary outcome than those in the femoral group. By contrast, treatment at centers highly

© Andrei Malov | Dreamstime.com

experienced in the femoral approach did not translate into a comparable clinical benefit, indicating that the outcomes of radial access are likely to improve with increasing procedural volume and experience. In addition, the incidence of the primary outcome was lower among patients with STEMI for whom the radial approach was used, whereas this benefit was not observed in patients with non-STEMI. The investigators stress that further randomized trials will be needed to investigate this finding.

Dr Jolly reassures readers that “both access routes are safe and effective, [but] physicians and patients may choose radial access because of its ... reduced vascular complications”.

Alexandra King

Original article Jolly, S. S. *et al.* Radial versus femoral access for coronary angiography and intervention in patients with acute coronary syndromes (RIVAL): a randomised, parallel group, multicentre trial. *Lancet* doi:10.1016/S0140-6736(11)60404-2