

## SUMMARY

Cardiac catheterization performed via the distal radial artery (DRA) from the anatomical snuffbox or distal dorsal radial access is a new method of arterial access. Compared to the conventional radial approach (cTRA), it offers some advantages including a significant reduction in postprocedural radial artery occlusion (RAO), reduction in the time required for hemostasis, and reduction in bleeding complications and their severity. This method facilitates the use of the non-dominant, left upper limb (LUE) even for operators accustomed to approaching catheterization from the right UE.

**OBJECTIVES:** 1) To introduce the distal radial artery approach (dTRA) in cardiac catheterization for patients with suspected or known coronary artery disease. 2) To optimize the system of post-procedural care after surgery from the distal radial artery. 3) To demonstrate the utility of the left distal radial approach in routine clinical practice. 4) To demonstrate the benefit of routine use of ultrasound-guided distal radial artery punctures.

**METHODS AND RESULTS:** 1) We screened 75 patients suitable for catheterization via the DRA route in a pilot project. Based on ultrasound criteria, 55 patients were included. Of these, 46(84%) were successfully catheterized. 91% of procedures were performed from the left, non-dominant limb. Only two clinically non-serious complications were captured. No postprocedural RAO was present in any of the catheterized patients.

2) Participation in the first large, randomized DISCO-RADIAL trial comparing primary RAO in the proximal radial artery (PRA) in dTRA and cTRA in a wide range of patients. A total of 1307 patients were enrolled in 15 centers of which 650 were randomized to dTRA. Stable forms of CHD accounted for 84% of patients, and 16% had acute coronary syndrome. This work confirmed the low RAO rate in dTRA (0.31%). The surprising finding of very low RAO in the cTRA group seems to confirm that rigorous RAO prevention leads to a substantial reduction of RAO in cTRA. The complication rate was very low in both groups (vascular complications and major bleeding below 1.2%). The crossover rate in dTRA (7.4%) versus cTRA (3.5%) was statistically significantly higher.

3) In the third part of the study, we focused on the ultrasound-assessed postprocedural patency of DRA and optimization of the hemostatic protocol. A total of 115 dTRA patients were included (20% female, 97% LUE access, 15% 6F catheters, 85% 5F, 34% PCI).

Compression was performed using a modified TR-Band tool with a specific, simplified protocol. No patient had RAO captured in either PRA or DRA. No complications were present. Compression time was below 90 min in 80% of patients. Compared with previous works, hemostasis time was significantly shorter than in cTRA.

4) Patients without palpable DRA are usually not found suitable for dTRA. In this part of the paper, we investigated if ultrasound-guided puncture can also be used to safely catheterize these patients via the DRA, allowing a wider population to benefit from dTRA. We enrolled 100 consecutive patients in the study without preselection by palpation. 11% had non-palpable DRA; using ultrasound-guided puncture, catheterization was possible in 82%. Overall, 94% of patients in the unselected population could be examined.

**CONCLUSION:** Catheterization by DRA leads to minimization of diagnostic and therapeutic invasiveness in patients with suspected or known ICHS. Reduction of complications, reduction of hemostatic times, and facilitation of left-sided access lead to increased safety and comfort for both patients and catheterizing physicians. The method significantly improves the logistics of same-day procedures. It is suitable for a broad, majority spectrum of patients with IHD.