Radial versus Femoral Approach for Coronary Angiography and Intervention in Patients with CABG: Systematic Review and Meta-analysis

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BACKGROUND Cardiac catheterization through the radial approach has been shown to significantly reduce vascular access complications and bleeding, as compared with the femoral approach, in multiple clinical settings. However, in the subset of patients with previous coronary artery bypass graft surgery (CABG) surgery, optimal vascular access site for coronary angiography and intervention is still a matter of debate, since conflicting results were reported. According to several observational studies, indeed, radial approach was as effective and safer as compared to femoral approach, but these findings were questioned by the only randomized trial available.

METHODS In order to systematically review studies comparing radial approach with femoral approach in patients with previous CABG, we conducted a search on major electronic databases entering the following key words: “radial,” “vascular access,” “femoral,” “coronary artery bypass graft,” “coronary angiography” and “percutaneous coronary intervention”. We included in the analysis studies reporting outcomes on at least one of the following end-points: fluoroscopy time, procedural time, contrast volume, procedural success rate and vascular complications. Data were extracted by two independent reviewers; weighted mean differences and 95% confidence interval (C.I.) were calculated for continuous outcomes, whereas odds ratio (OR) and 95% (C.I.) were calculated for dichotomous outcomes. Summary statistics were calculated by random-effects model using Review Manager 5.3 software.

RESULTS We included in the meta-analysis 1 randomized and 8 nonrandomized studies, amounting to 2763 patients. Radial and femoral approaches were comparable for fluoroscopy time (0.62 min [-0.83, 2.07]), procedural time (3.24 min [1.76, 8.25]), contrast volume (2.58 ml [-18.36, 13.20]) and procedural success rate (OR 1.42 [0.64, 3.31]); differently, radial approach was associated with lower risk of vascular complications (OR 0.48 [0.28, 0.85]).

CONCLUSIONS Our meta-analysis, although limited by the inclusion of mainly nonrandomized studies, suggests that among prior CABG patients use of the radial versus femoral approach for coronary angiography and intervention is associated with similar fluoroscopy time, procedural time, contrast volume and procedural success rate, but lower risk of vascular complications.

Keywords: Bypass graft, Radial approach

Ancillary radial versus femoral/brachial approach to reduce vascular complications in complex coronary, peripheral and structural interventions. Preliminary results of a study from the Italian Radial Club

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BACKGROUND Little is known about the value of transradial approach for secondary (ancillary) vascular approach during complex coronary, peripheral and structural percutaneous interventions.

METHODS In the present analysis we included all consecutive patients that underwent the following percutaneous interventions requiring 2 vascular approaches at 9 expert centers: complex CTO or left main trunk revascularization, TAVI, visceral vessel protection during endovascular aneurysm repair, complex lower limb angioplasty. For the purpose of this analysis we compared the outcome of those patients that received a transradial versus those that received a transfemoral or brachial ancillary approach. Primary endpoints of the study were procedural success (noninferiority) and in-hospital BARC types 3/5 total (both of primary and ancillary approaches) bleedings (superiority of the transradial group).

RESULTS In this retrospective study we included 867 patients, 419 treated with a right/left radial and 448 with a femoral or brachial approach. Main basal characteristics did not differ significantly among study groups, except for a significantly higher incidence of arterial hypertension in the radial group. Patients underwent the following types of intervention: coronary CTO 17%, other complex PCI 23%, TAVI 50%, EVAR/TEVAR 9%. Procedural success was achieved in 90% of the transradial and 92% of the transfemoral/brachial approaches (p = NS). In-hospital BARC 3/5 total and ancillary approach-related bleedings were more common in the transfemoral/brachial group (respectively, 26% vs. 8%, p = 0.0002, and 15% vs. 0%, p = 0.0004). In the transfemoral/brachial group we also observed a higher hemoglobin drop (1.92 vs 1.43 g/dl, p = 0.008) and longer hospital length of stay (8.0 vs 6.4 days, p = 0.02), whereas in the transradial group contrast load use (254 vs. 227 ml, p = 0.007) and procedural time (130 vs. 114 minutes, p = 0.004) were significantly higher.

CONCLUSIONS A transradial ancillary approach, in expert hands, significantly reduces the risk of major bleedings, without jeopardizing