Sheathless Transradial Approach using Large Bore Catheters vs Other Vascular Access for Chronic Total Occlusions Percutaneous Coronary Intervention: The Quebec CTO Program experience

Rustem Dautov*, MD, PhD, Claire Gibrat, PhD, Can Manh Nguyen, MD, Stéphane Rinfret, MD, SM

Introduction: The use of the transradial approach (TRA) in percutaneous coronary intervention (PCI) of chronic total occlusions (CTO) is still limited. We describe one of the largest single-operator experiences, which evolved from the use of smaller catheters to a preferred approach using a novel sheathless technique (ST) to deliver regular 8F guides on the antegrade side. Our aims were specifically to assess the safety of this technique, on the short and longer term.

Methods: We compared our earlier experience using 6-7F catheters to the most recent one, introduced in March 2013 using 8F catheters, either transradial or transfemoral (TFA). We then compared populations treated with the ST vs. a standard TRA or TFA. The in-hospital outcomes of interest were technical success, contrast, radiation, procedure time, and in-hospital major vascular or bleeding complications. In a sub-sample, we followed the mid-term permeability using vascular Doppler at 3-6 months post PCI.

Results: From 01.2010 to 03.2015, a total of 409 CTOs were treated in our CTO program, including 223 patients treated during the earlier experience and 186 patients with the most recent approach favoring 8F catheters. Despite an increase of the proportion of patients with very difficult lesions (J-CTO score ≥3) in the latest years (from 39% to 51%; p=0.02), we did not observe any difference with regards to success, procedure time, or in-hospital major vascular or bleeding complications. However, contrast use was higher with 8F catheters (355±152 ml vs. 292±124 ml; p<0.0001). Over two years of the latest experience, 92 patients underwent their CTO PCI with and 94 without the ST. Patients not treated with a sheathless TRA were more likely to be females (33% vs. 5% in the sheathless group; p<0.0001), diabetic (51% vs. 36%; p=0.04) and to undergo their CTO PCI with at least one TFA. As for the earlier experience, most patients received a 6F catheter on the retrograde side. Again, we did not observe any difference with regards to success, procedure time, or in-hospital major vascular or bleeding complications, which were very low in both groups. The ST did not increase procedure time (143 min vs. 154 min with the sheath; p=NS). The long-term radial Doppler evaluation was performed in 28 patients, and demonstrated 2 radial occlusions with the 8F access (7.1%) while the contralateral radial artery thrombosis rate (control), used for the 6F retrograde guiding catheter in CTO PCI, was 3.6%.

Conclusions: A liberal use of the TRA with selected TFA for CTO PCI is associated with low complications rates. Our large bore catheter ST for TRA in CTO PCI is feasible and safe, without any adverse signal of significant trauma leading to an increase occlusion rate compared to the use of 6F sheaths.

Département de cardiologie, Institut universitaire de cardiologie et de pneumologie de Québec, Université Laval

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