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Extended Abstract
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Coronary angiogram and graft study with single diagnostic catheter in dextrocardia: Best approach for Cath lab with limited resources

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Introduction: The traditional approach to coronary catheterization in patients with a history of coronary artery bypass grafting (CABG) with left internal mammary artery (LIMA) graft is via the femoral approach. However, trans-radial catheterization remains a distinct option for such patients. Operators tend to be cautious about using this approach due to the nature of having to exchange diagnostic catheters several times during the procedure, risk of spasm, alternative set-up for the procedure, arm positioning, etc. A retrospective audit of 22 single-operator coronary graft angiography cases over a six-month period demonstrates the feasibility and option to use the left trans-radial approach (LTRA) to perform a coronary and graft study with the use of a single diagnostic catheter – the TIGER (TIG) catheter (Terumo Medical Corporation).

Most operators, who opt to use the LTRA, routinely practice with the standard femoral diagnostic catheters to access the native coronary arteries and grafts.1 A disadvantage of using LTRA for graft angiography is because several catheter exchanges are necessary to engage both native coronary arteries and the bypass grafts.

My standard approach for performing coronary and graft angiography in patients is via the left radial artery (LRA) in those with a LIMA graft and via the right radial artery in those without. My personal preference is to use the TIG catheter as the exclusive standard catheter of choice for all coronary angiography via the radial artery. The TIG is designed to enable coronary angiography of the left coronary artery (LCA) and right coronary artery (RCA) via the right radial artery without the need for any catheter exchange.2 Over a six-month period, I performed a series of 22 cases using the TIG catheter via the left radial to successfully perform both coronary and graft angiography. This case description illustrates the last in the short series of successful procedures.

Case description: A 68-year-old man with a history of a three-vessel bypass in 2007. The bypass grafts were saphenous vein graft (SVG) to obtuse marginal (OM), SVG to RCA and LIMA to the left anterior descending artery (LAD).

The patient was referred for coronary angiography because he was experiencing a central crushing chest pain radiating to his left arm, relieved by glyceryl trinitrate (GTN) spray. Exercise tolerance had reduced in recent weeks with increasing shortness of breath. Other significant medical history to note included hypertension, diabetes mellitus and peripheral vascular disease, and is an ex-smoker.

I performed a left radial Allen's test before the procedure. Ulnar arch patency using pulse oximetry was confirmed with a Barbeau score of A.3 A 6f Terumo Glidesheath (Terumo Medical Corporation) was inserted using the standard Seldinger technique. My standard radial angiography protocol is to administer 200 µg of nitrate, and 5000 IU heparin intra-arterially through the radial sheath before the catheter is inserted. The TIG catheter was fed up through the left arm with a 0.35"/150 cm Emerald (Cordis, Johnson & Johnson) guidewire and into the left subclavian artery.

I found there was a learning curve of 15 cases before I had successfully adapted my practice. The structural association between the coronary arteries and aortic arch in the left radial approach varies from that of the right radial approach and even the femoral approach.5 This implies that re-education of certain manipulation techniques of the TIG catheter have to be developed to ensure a positive outcome, as well as patient satisfaction.

The TIG was originally designed to be used exclusively as a right radial catheter (Terumo Medical Corporation, 2008). It is my standard work-horse diagnostic catheter for right trans-radial procedures, and it is now my first choice for left trans-radial approaches as well.

This work is partly presented at Cardiologists 2019 March 07-08, 2019 held at Berlin, Germany.

Dextrocardia (DC) is a rare congenital anomaly. The incidence of coronary artery disease is like the general population. Dextrocardia presents several challenges due to abnormal location of the heart, mirror image pattern of aortic arch and its branches, and abnormal coronary origin and orientation, and it becomes more difficult when grafts are cannulated through trans-radial access, all with single catheter.

We have performed coronary angiogram and graft study through trans-radial access using only one diagnostic catheter due to limited resources in developing country.

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