CASE REPORT

Distal Transradial Access in the Anatomical Snuffbox for Coronary Angiography and Aortography

Vilela FD¹, Boechat e Salles JA², Cortes LA³, Ferreira da Costa GB⁴, Manso Vieira WJ⁵

¹Interventional Cardiologist of Hospital Federal de Bonsucesso and Américas Medical Service, Rio de Janeiro, RJ, Brazil.
²Interventional Cardiologist of Hospital Federal de Bonsucesso and Américas Medical Service, Rio de Janeiro, RJ, Brazil.
³Interventional Cardiologist of Américas Medical Service, Rio de Janeiro, RJ, Brazil.
⁴Interventional Cardiologist of Américas Medical Service, Rio de Janeiro, RJ, Brazil.
⁵Interventional Cardiologist of Hospital Federal de Bonsucesso, Rio de Janeiro, RJ, Brazil.

Abstract
Distal radial artery (RA) access for transradial interventions is a new approach for a technique with 25-years-old. The distal transradial access in the anatomical snuffbox for coronary procedures reduces the risk of occlusion in the RA located in the proximal to the wrist, a frequent finding in patients who develop a forearm RA occlusion due to puncture trauma or hemostasis trauma at the traditional radial puncture site. We demonstrate in this case the possibility of distal RA access to make a coronary angiography (CA) and aortography (Ao) in a public service without any additional equipment or cost, even in difficult vascular access patients.

Keyword: angiography; radial artery; coronary angiography; aortography

Abreviations
RA = Radial artery, CA = Coronary angiography, Ao = Aortography

Introduction
The radial artery is currently regarded as a useful vascular access site for coronary procedures. Since the first publications from 1993 to the present moment, the transradial approach can now be considered as the most favorite technique for coronary access [1-4]. The major advantages are: the reduction of major bleeding complications, and increased patient comfort, because of immediate post-procedural mobilization [5,6]. The most operators prefer the right radial approach. The main reason is the working position of the operator on the right side of the patient. However, frequently the operator needs to cross over to the left radial approach or femoral approach. The most common reasons to cross over artery access are: radial occlusion, underdeveloped radial artery (RA), extreme tortuosity, sclerosis or calcifications, arteria lusoria, previous right radial failure, presence of an arteriovenous shunt in the arms, past or future use of the RA as free arterial graft and patient preference. In terms of feasibility and outcome, left and right transradial approaches are similar [7]. A new technique in the transradial approach is to access the distal RA from the anatomical snuffbox (radial fossa) on the dorsal side of the hand (Figure 1). The anatomical snuffbox is a hollow space on the radial side of the wrist when the thumb is extended; it is bounded by the tendons of the extensor pollicis brevis and abductor pollicis longus anteriorly. The RA crosses the floor that is formed by the scaphoid and the trapezium bones [8].

The distal RA access from the radial fossa was described for the first time to open occluded ipsilateral RA by Babunashvili et al [9]. This artery can be used as an entry site for 4, 5 and

Correspondence to: Felipe Dantas Vilela, Americas Medical City, Av Jorge Cury 550, Barra da Tijuca, Rio de Janeiro, RJ, Brazil. Tel: (21) 98803-9800; Email: felipevilela[AT]gmail[DOT]com

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6 Fr sheaths and catheters [10]. Another important feature of this technique is a puncture proximal from the pollicis brevis artery and distal from the branch supplying the superficial palmar arch [10]. An occlusion at this site maintains antegrade flow through the superficial palmar arch. This reduces the risk of retrograde thrombus formation in the proximal RA located in the forearm, a frequent finding in patients who develop a forearm RA occlusion due to puncture trauma or hemostasis trauma at the traditional RA puncture site. Flow to the thumb will still be maintained via the superficial palmar arch, preventing ischemia and hand disability.

We demonstrate in the following case report, the possibility of distal RA access to make an angiography, in a public service, without any additional equipment or cost, even in difficult vascular access and acute aortic disease suspect.

Case Presentation

An 82-year-old man with the history of poorly controlled arterial hypertension and diabetes, with previous anterior MI, PCI of left anterior descending coronary artery, aortic-bifemoral bypass graft, and previous by thoracic aortic stent graft in site of left subclavian artery ostium; was admitted in The Bonsucesso Federal Hospital with chest pain and suspect of thoracic aortic aneurysm or dissection. After pain control with morphine, he underwent a diagnostic coronary angiography (CA) and aortography (Ao). There was a report of a difficult guide-wire progression during the access for invasive arterial pressure monitoring in the traditional RA puncture site. Before starting the procedure was detect clear pulse over the distal RA segment in the anatomical snuffbox by manual palpation.

Procedure

The right arm is placed comfortably on a cushion on the right side of the patient. After disinfection, the patient is covered with a sterile drape. The operator took up a position near the patient’s forearm for subcutaneous injection of 3 cc xylocaine filling the radial fossa. To bring the artery to the surface of the fossa, the patient was asked to grip slightly his thumb under the other four fingers, with the hand slightly abducted. The RA was punctured with a 21G needle, under an angle of 45 degrees. The needle was directed to the point of strongest pulse, proximal in the anatomical snuffbox. After successful puncture in the anterior wall of the RA, a soft tip coronary wire 0.014” (guide-wire BMW, Abbott Vascular, Illinois, USA) was used to pass a tortuosity exist in the RA traditional site of puncture. A small skin incision was made, followed by introduction of 5 Fr radial sheath (St. Jude Medical Inc., Minnesota, USA) (Figure 2). Subsequently underwent an administration of 200 mcg of nitroglycerine and a weight-adjusted dose of heparin. The operator took up a position at the level of the patient’s knees to manipulate the 0.35” wire and the coronary catheters (Judkins left 4.5 catheter and Judkins right 4.0 catheter; Medtronic Inc., Minneapolis, USA) to make the CA. A 5 Fr pigtail catheter (Merit Medical, Galway, Ireland) was used to perform the Ao. The angiography showed aortic ectasia (44 mm), no ascending aortic dissection, mid aortic regurgitation and no significant lesions in CA (Figure 3). A radial control angiography was made at the end of procedure (Figure 4). After two days, the vessel patency was confirmed by manual palpation and finger pulse oximeter.

Discussion

This case report demonstrated the feasibility of the radial approach via the distal RA located at the anatomical snuffbox. The procedures were previous related with 4, 5 and 6 Fr catheters and in stable and acute patients, for simple
and complex coronary procedures [10]. No equipment or investments are necessary to support this new approach. An additional and potentially important advantage is reduction of the risk of RA occlusion at the traditional site of puncture in the distal forearm. Since antegrade flow through the superficial palmar arch is still maintained, the RA will not thrombose in case of occlusion of the RA in the snuffbox.

This new approach is relevant for patients requiring multiple RA procedures or coronary bypass surgery with use of a free RA graft. Another advantage of distal radial access is the short hemostasis time, because of the superficial position of this small vessel. If the patient flexes his wrist, hemostasis will not be affected since compression is exerted on the palmar side of the hand. The hemostasis will not result in congestion of the hand since no major veins are obstructed. The hemostasis is relatively mild and very well tolerated by the patients. Finally, this technique can be considered for cases with radial spasm at the wrist level. Ulnar supply may sustain pulsatility in the radial fossa even after spasm is induced by failed radial punctures at wrist level [10]. This approach is not to be use in daily routine, having this technique in his mind, an operator may reduce the number of crossovers to other accesses.

Conclusions

Distal RA access for selected angiographies is feasible and safe. In this case, was possible to perform the distal transradial access in the anatomical snuffbox for coronary angiography and aortography in a public service. More studies should be carried out to analyze the advantages of this new technique.

References


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