Right Distal Radial Artery Access for Coronary Angiogram and Coronary Intervention: initial Experience in Bangladesh

Uddin MJ , Hashem S , Rahman AU, Shahriar MS

Dr Ashraf-Ur-Rahman

FCPS (Medicine), MD (Cardiology)

National Institute of Cardiovascular Diseases

(NICVD), Dhaka, Bangladesh

Potential conflicts of interest

Speaker's name: Dr. Ashraf- Ur- Rahman

- ❑ **I do not have any potential conflict of interest**

OBJECTIVE

- To share our experience with the right distal radial approach for trans radial coronary angiography and interventions.

- By performing the radial puncture in the fossa radialis or the so called anatomical “Snuffbox” we aimed to present the safety, feasibility and complications of this new technique.

Introduction

- Cardiac catheterization has continually evolved since the first procedure in 1929.

- The femoral approach has been compared with radial approach in multiple randomized and observational studies.

- Increased safety and patient comfort with reduction of bleeding complications and immediate post procedural mobilization are the major advantages of radial access.

Introduction

- Anatomical snuffbox (AS) is a depressed space located in the dorsal part of the wrist. It shows up when the thumb is extended.
- It is surrounded laterally by the tendons of abductor pollicis longus and extensor pollicis brevis muscles and medially by the tendon of extensor pollicis longus muscle.
- The distal part of the radial artery passes in a deep fashion through AS. Distally it continues as the deep palmar branch of the radial artery and joins the distal part of the ulnar artery, thus forming the deep palmar arch of the hand.

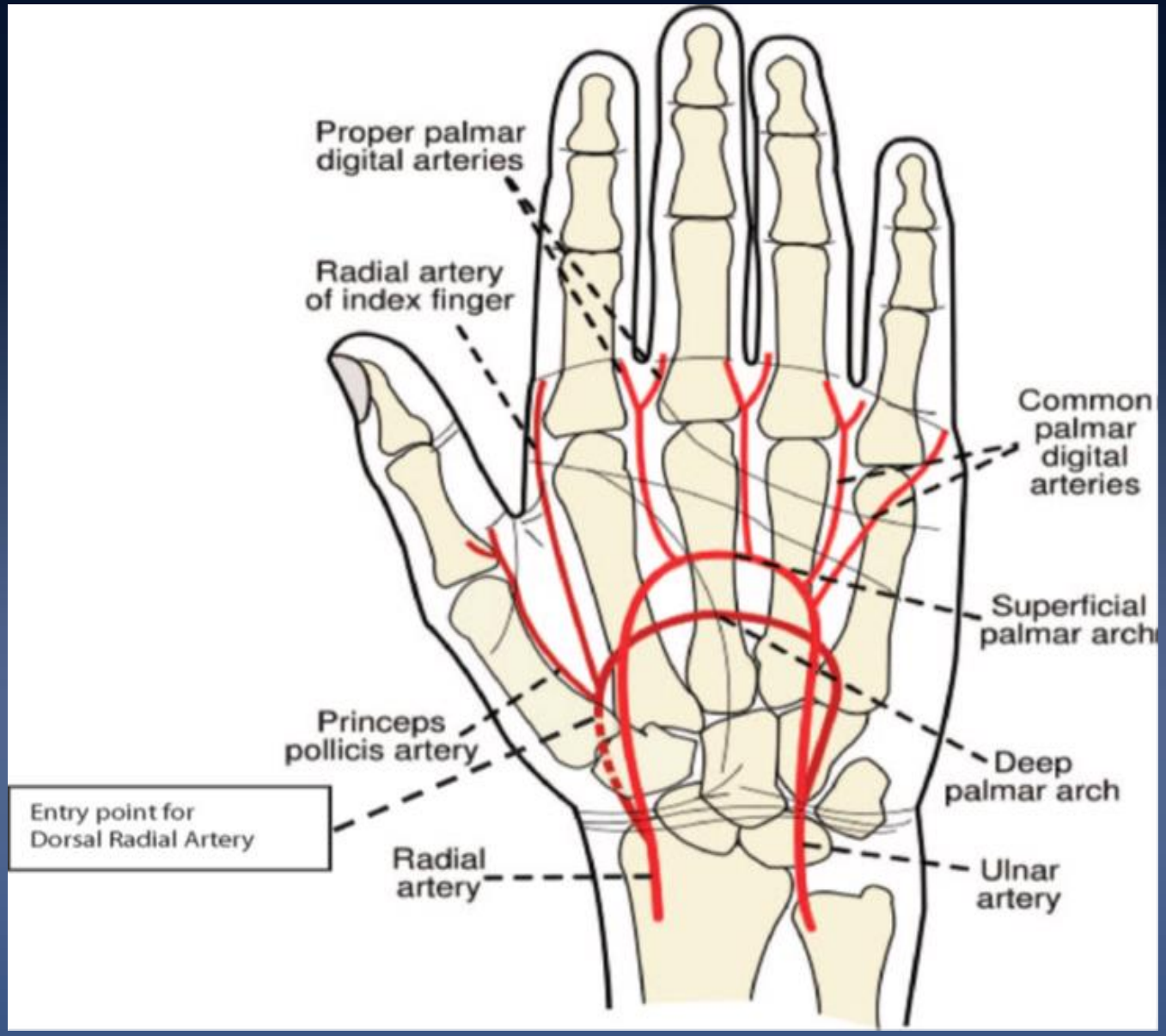


Figure 1: Puncture site in the anatomical snuffbox area which is in between the collaterals of superficial and deep palmar arch.

Introduction

- Collateral vessels communicated between the palmar arches.

- If any occlusion in the AS site occurs, tissue ischemia is prevented because of antegrade flow through the superficial palmar arch and the communicating collaterals with deep palmar arch.

METHODS

- Right distal radial artery was used as an access site in 200 patients admitted to our hospital for coronary angiography and intervention.
- All of them had good radial pulse in their anatomical snuffbox area
- During the hospital stay, demographic features and complications were recorded.

Type of study – Prospective observational study

Place of study – National Institute of Cardiovascular Diseases (NICVD), Dhaka.

Study period – December 2017 to June 2018

RESULTS

Table 1. Demographic features of study population(n=200)

Demographic para meters	Mean ± SD	Demographic parameters	Mean ±SD
Age	52.3±11.9 (30-80)	**Female**	50 (25%)
Length (cm)	162.72±6.226 (150-182)	**DM**	70 (35%)
Weight (kg)	65.48±10.024 (50-102)	**HTN**	110 (55%)
Hospital stay (day)	2.5±3.938 (1-10)	**Smoking**	104 (52%)
LVEF	0.49±0.083 (0.32-0.7)	**Chronic CAD**	72 (36%)
Male	150 (75%)	**New onset CAD**	90(45%)

RESULTS

Table 2. Procedural features of patients undergoing right distal trans radial coronary angiography and interventions

Procedural features	N=200 (%)	Procedural features	n=200 (%)
Radial sheath 6 F	108 (54%)	**Non-STEMI**	11 (5.5%)
Radial sheath 5 F	92 (46%)	**UA**	3 (1.5%)
Tigers catheters	140 (70%)	**Angioplasty**	42 (21%)
Judkins catheters	60 (30%)	**Primary PCI**	12 (6%)
Acute coronary Syndrome	26 (13%)	**Right coronary intervention**	13(30.9%)
Anterior STEMI	4 (2%)	**Left anterior descending intervention**	20(47.6%)
Inferior STEMI	8 (4%)	**Left circumflex artery intervention**	9 (21.4%)

RESULTS

- In complex Coronary Intervention like Left main lesion, CTO and bifurcation lesion, PCI was performed successfully through this route in 5.5%, 4.2% and 4.2% cases respectively.
- Mean Arterial puncture time was 1.2 min. Mean fluoroscopy time was assessed as 9.5 min.

Procedural features	n=200 (%)	Procedural features	n=200 (%)
Coronary angioplasty	72 (36%)	Complex PCI	
Primary PCI	12 (6%)	LM PCI	4 (5.5 %)
Right coronary intervention	22 (30.5)	CTO PCI	3 (4.2 %)
LAD intervention	32 (44.5)	Bifurcation lesion PCI	3 (4.2 %)
LCX intervention	18 (25.5)	Artery puncture time	1.2± 0.94 min
		Fluroscopy time	9.5±7.1(2.2 −40.1) min

RESULTS

Figure 2: Cannulation & withdrawal of vascular access sheath at the end of procedure.

RESULTS

- Total 3 patients experienced brachial spasm and 2 requiring crossover to right femoral artery.
- Unfortunately one patient developed radial artery occlusion and 2 experienced hematoma at their right forearm but none at anatomical snuffbox.
- There was no hand numbness or right arm movement disability.
- The radial sheath was removed at procedure termination. Hemostasis was achieved with manual compression.

RESULTS

Table 3. Procedural features of patients undergoing right distal trans radial coronary angiography and interventions

Complications	N= 200 %
Brachial artery spasm	3 (1.5%)
Radial occlusion	1 (0.5%)
Crossover to femoral artery	2 (1%)
Hematoma	0
Numbness	0
Right arm movement disability	0

Discussion

- We experienced that right sided distal radial access was more comfortable than the left sided mostly due to operator's right handedness.
- Kaledin et al. showed that the distal radial artery diameter was 2.2–2.6 mm and the most used radial introducer was 6 French in 98.4%;
- We used both 6Fr & 5Fr catheter successfully in 55% & 45 cases respectively. In addition, we did not experience any resistance advancing the guidewire and the 6 French catheters through the introduced sheath in AS.

Discussion

- Early hemostasis was immediately achieved in 15 min, regardless of the administered anticoagulation dose.

- Although the occlusion ratio at this site is reported to be 2.2%, the hand will not be influenced. This is because the radial portion in AS is a segment distal from the origin of the superficial palmar arch and antegrade blood flow through the superficial palmar arch would still continue without any dysregulation (Tubbs RS et al).

- Post-catheterization radial artery occlusion is the most common complication during the transradial coronary angiography, and it is reported to be 1%-10%.

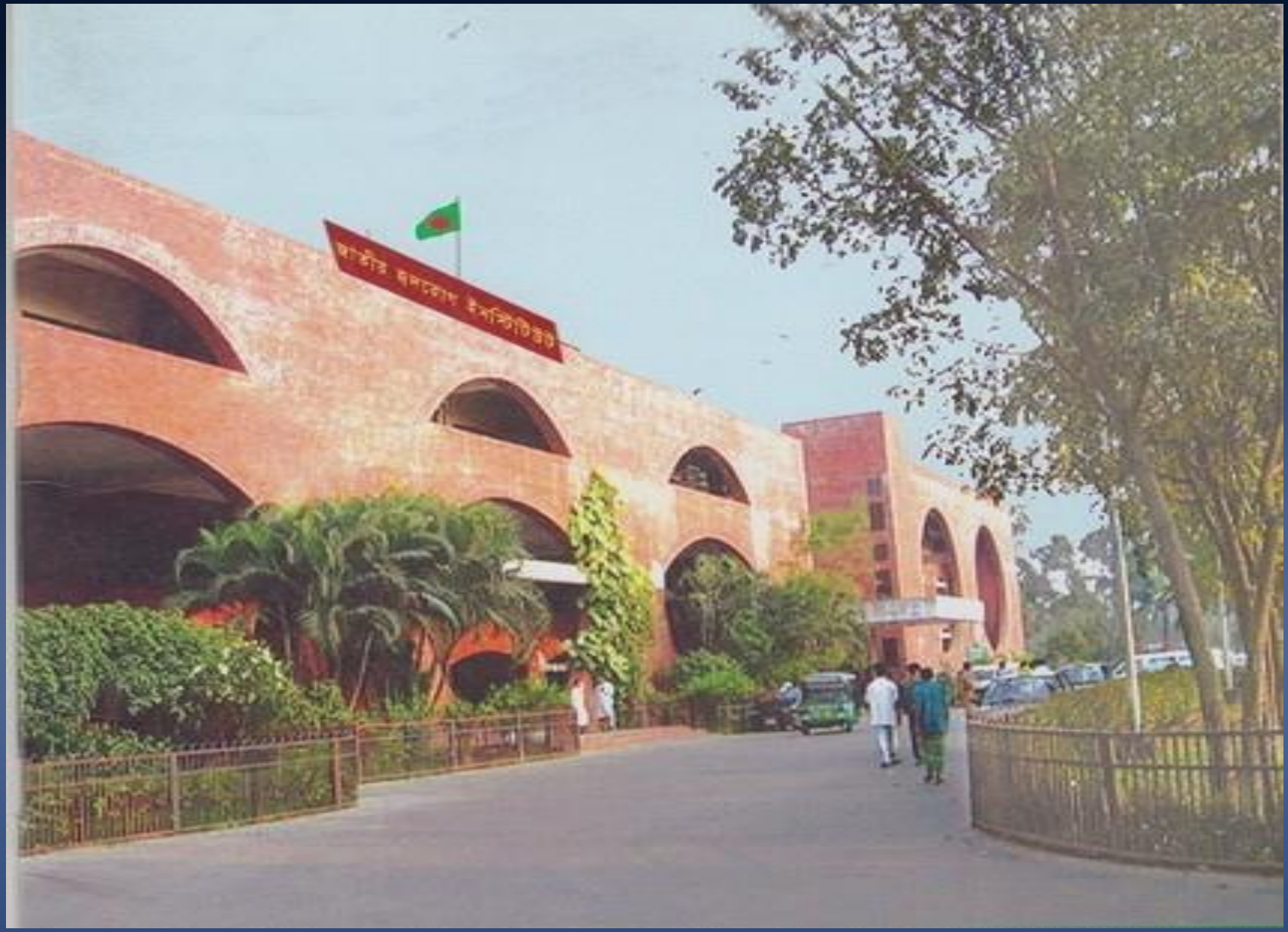
- Relatively high rates of this complication encouraged us to utilize the distal radial artery as the access site. We did not encounter any absence of pulsation in the AS. (Gupta S et al)

- This can be a safe way for multiple trans-radial coronary procedures or coronary bypass surgery with use of a free radial artery graft.

- The right distal radial artery is a continuation of the fore arm radial artery.
- Its puncture can be challenging and requires a longlearn ing curve, especially when the pulse in AS is weak or n ot felt at all.
- we experienced difficulty in patients who had a prominent right radial styloid process and a small AS area.

Conclusion

- Right distal radial approach is safe and feasible as a new technique for coronary angiography and interventions.
- It merits consideration regarding proper patient selection, preparation, expertise and equipments for successful transradial catheterization .



Thank You