VERAPAMIL PLUS NITROGLYCERIN 100 µG VERSUS VERAPAMIL PLUS NITROGLYCERIN 300 µG FOR SPASM PROPHYLAXIS WITH TRANS RADIAL APPROACH.

Thesis submitted for partial fulfillment of the Master degree in Cardiology

By

Alhassan Ali Abd Elfattah

M.B.B.Ch, Ain Shams University

Under supervision of

Doctor/ SAMEH SABET

Associated Professor of Cardiology

Ain Shams University

Doctor/ WAEL MAHMOUD ELKILANY

Associated Professor of Cardiology

Ain Shams University

Doctor/ AHMED AHMED FOUAD

Lecturer of Cardiology

Ain Shams University

2017

List of content

Introduction

Introduction

In 1948, Radner published one of the first descriptions of transradial central arterial catheterization and attempts at coronary artery imaging using radial artery cut-down and 8-F to 10-F catheters. Despite early enthusiasm for the transradial approach, limitations of contemporary equipment resulted in a shift to larger vessels such as the brachial and femoral systems for most catheter-based procedures, and the radial artery was relegated to use as a site for monitoring arterial pressure. (1)

In 1989, Lucien Campeau published his successful series of 100 coronary angiographies performed via the left radial artery with minimal occurrence of complications. (2)

Subsequently in 1993, Kiemeneij performed percutaneous coronary interventions (PCI) using 6F guiding catheters in a time when most interventional procedures were performed with larger catheters. (3)

Since then, Trans radial access (TRA) has continued to gain popularity in some regions of Europe, Canada, South America, Trans radial approach for percutaneous coronary interventions used in more than 60% of the cases. (4)

Trans radial cardiac catheterization and intervention is reduced access-site complications. (5, 6, 7) Because the radial artery is small and superficial, it is easily compressible, and bleeding complications associated with radial arterial access are extremely rare.

Improved patient comfort is also a significant advantage to Trans radial cardiac catheterization. Even with vascular closure devices, Trans femoral cardiac catheterization requires that the patient maintain a supine position for an extended period post procedure in order to achieve hemostasis. This can be especially uncomfortable in patients with chronic back problems. Trans radial catheterization obviates the need for post procedural flat time, and most patients are able to ambulate immediately following the procedure. Patient preference is clearly in favor of trans radial catheterization. (5, 6, 7)

Aim of the Work

Aim of the study

The aim of this study is to assess the incidence of radial artery spasm while using the trans radial approach for coronary angiography or angioplasty using 2 different protocols of intra-arterial nitroglycerin and verapamil.

100 ug of nitroglycerin and 5 mg of verapamil in addition to 5000 units of heparin (group A)

300 ug of nitroglycerin and 5 mg of verapamil in addition to 5000 units of heparin (group B)

Radial artery anatomy

Radial artery anatomy

The radial artery (Fig. 1) appears, from its direction, to be the continuation of the brachial, but it is smaller in caliber than the ulnar. It commences at the bifurcation of the brachial, just below the bend of the elbow, and passes along the radial side of the forearm to the wrist. It then winds backward, around the lateral side of the carpus, beneath the tendons of the Abductor pollicis longus and Extensores pollicis longus and brevis to the upper end of the space between the metacarpal bones of the thumb and index finger. Finally it passes forward between the two heads of the first Interosseous dorsalis, into the palm of the hand, where it crosses the metacarpal bones and at the ulnar side of the hand unites with the deep volar branch of the ulnar artery to form the deep volar arch. The radial artery therefore consists of three portions, one in the forearm, a second at the back of the wrist, and a third in the hand. (8)

Relations.

(a) In the forearm

The artery extends from the neck of the radius to the forepart of the styloid process, being placed to the medial side of the body of the bone above, and in front of it below. Its upper part is overlapped by the fleshy belly of the Brachioradialis; the rest of

the artery is superficial, being covered by the integument and the superficial and deep fasciæ. In its course downward, it lies upon the tendon of the Biceps brachii, the Supinator, the Pronator teres, the radial origin of the Flexor digitorum sublimis, the Flexor pollicis longus, the Pronator quadratus, and the lower end of the radius. In the upper third of its course it lies between the Brachioradialis and the Pronator teres; in the lower two-thirds, between the tendons of the Brachioradialis and Flexor carpi radialis (8).

The superficial branch of the radial nerve is close to the lateral side of the artery in the middle third of its course; and some filaments of the lateral antibrachial cutaneous nerve run along the lower part of the artery as it winds around the wrist. The vessel is accompanied by a pair of venæ comitantes throughout its whole course.(8)

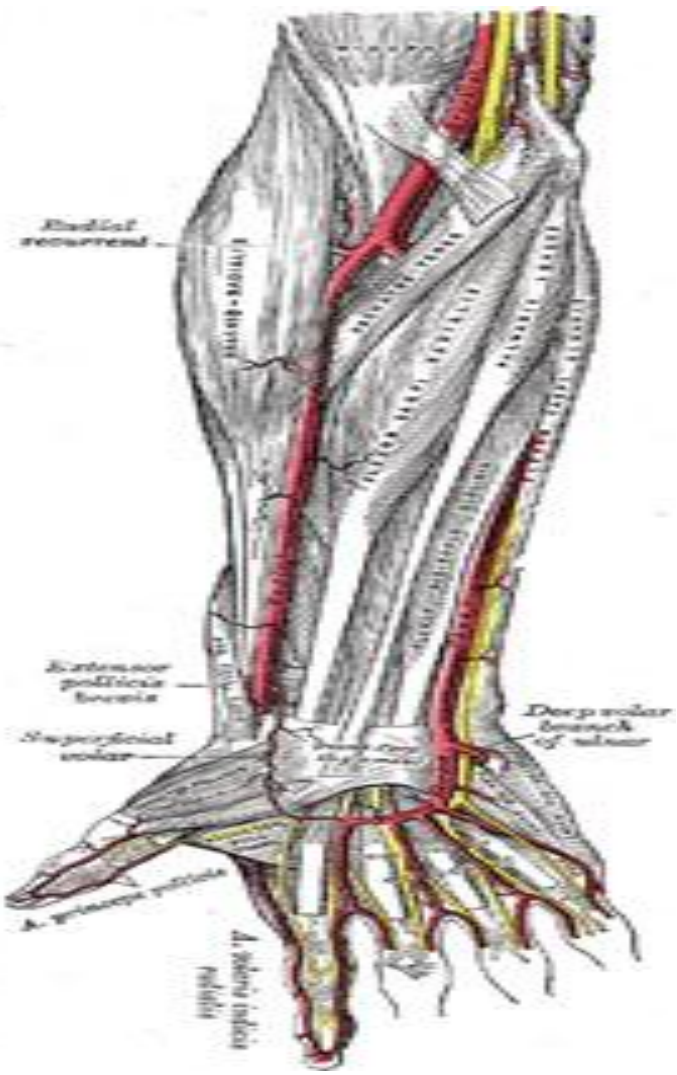

FIG. 1– The radial and ulnar arteries.

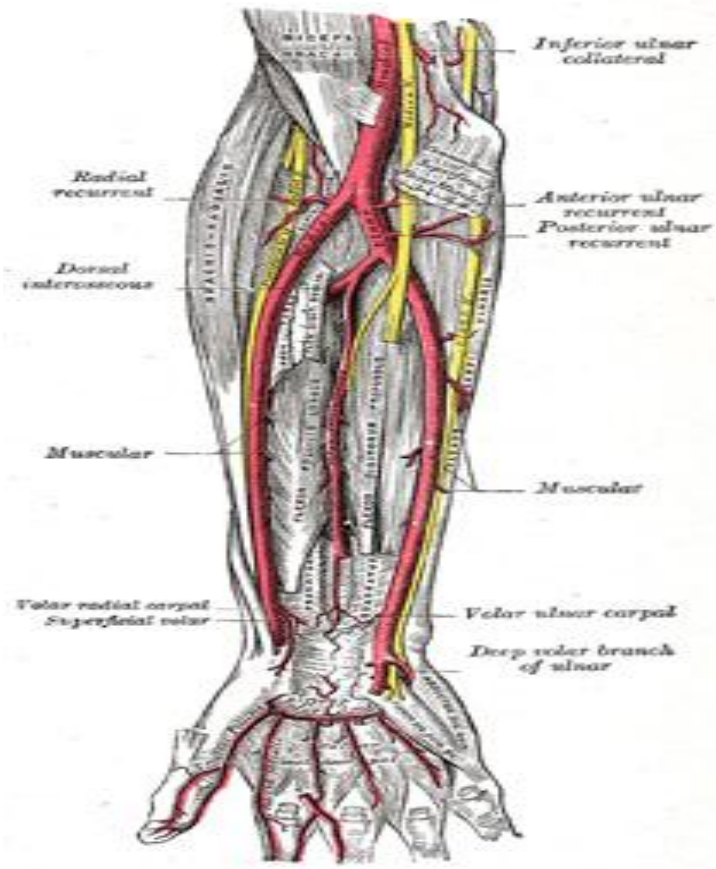

FIG. 2– Ulnar and radial arteries. Deep view.

(b) **At the wrist**

The artery reaches the back of the carpus by passing between the radial collateral ligament of the wrist and the tendons of the Abductor pollicis longus and Extensor pollicis brevis. It then descends on the navicular and greater multangular bones, and before disappearing between the heads of the first Interosseus

dorsalis is crossed by the tendon of the Extensor pollicis longus. In the interval between the two Extensores pollicis it is crossed by the digital rami of the superficial branch of the radial nerve which go to the thumb and index finger.(8)

(c) In the hand

it passes from the upper end of the first interosseous space, between the heads of the first Interosseus dorsalis, transversely across the palm between the Adductor pollicis obliquus and Adductor pollicis transversus, but sometimes piercing the latter muscle, to the base of the metacarpal bone of the little finger, where it anastomoses with the deep volar branch from the ulnar artery, completing the deep volar arch (Fig. 2).

The origin of the radial artery is, in nearly one case in eight, higher than usual; more often it arises from the axillary or upper part of the brachial than from the lower part of the latter vessel. In the forearm it deviates less frequently from its normal position than the ulnar. It has been found lying on the deep fascia instead of beneath it. It has also been observed on the surface of the Brachioradialis, instead of under its medial border; and in turning around the wrist, it has been seen lying on, instead of beneath, the Extensor tendons of the thumb.

Anomalies of the radial artery: (9,10)

Every interventional cardiologist should be aware of relatively uncommon anatomic anomalies that may impede the advancement of catheters to the aorta or increase the risk of failure of the procedure or complications. Variations include:

1- Tortuous radial artery course.
2- Radial artery stenosis.
3- Radial artery hypoplasia.
4- Radial artery bifurcation.
5- Radioulnar loops.
6- Aberrant right subclavian artery (arteria lusoria).
7- Abnormal origin of the radial artery.

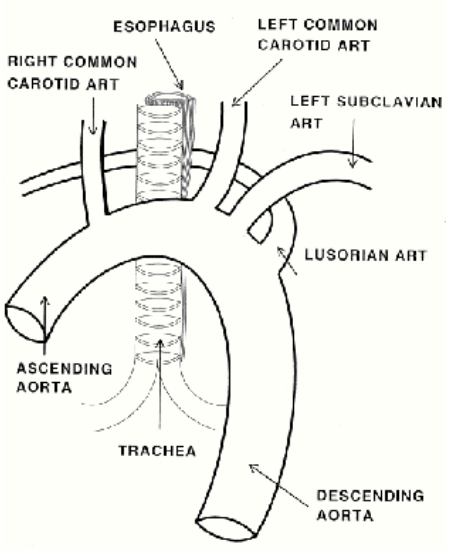

Figure 3: Radial artery anomalies, arteria lusoria. (12)