

Superficial Radial Artery – A case report

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ABSTRACT

During routine cadaveric dissection of upper limbs for student demonstration bilateral anomalous superficial radial artery (SRA) was observed in a 60 year male cadaver at NRI Medical College, Chinnakakani.

On both sides the superficial radial artery was arising from axillary artery at the lower border of Pectoralis Minor muscle. The artery emerged out between the two roots of median nerve and coursed lateral to median nerve and superficial to biceps brachii muscle (subcutaneous in the arm).

The superficial radial artery pursued a superficial course in forearm & entered dorsum of hand by running superficial to the extensors and long abductor of thumb. In 1st intermetacarpal space on dorsum of hand it has given Arteria princeps pollicis to thumb and pierced the muscle to form deep palmar arch. The artery communicated with main brachial artery in cubital fossa by an arched short communicating vessel. This type of variation may pose a problem during angiogram.

Key words: *Brachial artery, Communicating vessel, superficial radial artery (SRA)*

Introduction

The high origin of the radial artery is the most frequent arterial variation observed in the upper limb showing an incidence of 14.27% [1,2]. Tountas et al.,[3] Attributed variability of arterial pattern to failure in regression of a part of pathway taken by embryonic arterial trunks. This explains high bifurcation of brachial artery with superficial course of radial artery in fore arm [4,5]. Shiny Vinila et al.,[6] reported high origin of radial artery with asymmetrical vasculature of upper limb. These studies emphasized the importance of high origin of artery both clinically and embryologically. As this variation has much clinical significance an attempt was made to present this case of a variant artery which was observed during routine cadaveric dissections in the department.

Case report

During routine dissection for students in the department of Anatomy, NRI Medical College, Chinakakani, a high origin of radial artery from axillary artery at lower border of

pectoralis minor muscle was observed bilaterally. It has crossed the median nerve anteriorly from medial to lateral side (Figures: 1 & 2). Original brachial artery pursued its normal course. Just below the bend of elbow, the SRA communicated with the main brachial artery by an arched vessel, which was about 2.5cm in length and located deep to tendon of biceps brachii muscle. In addition to this communicating branch it has also given a radial recurrent branch. From the communicating vessel 3-4 muscular branches originated which were distributed to the surrounding muscles. (Figure: 3). Beyond this communicating arch, the original brachial artery continued as ulnar artery. From this vessel common interosseous trunk originated, which has divided into anterior and posterior interosseous branches. In forearm & palm ulnar artery pursued its normal course. Superficial palmar arch formed by the ulnar artery was incomplete and the artery continued on to the index finger as a straight vessel. Arteria radialis indicis from radial

Figure: 1. Origin of Superficial radial artery (SRA) from axillary artery from left side.

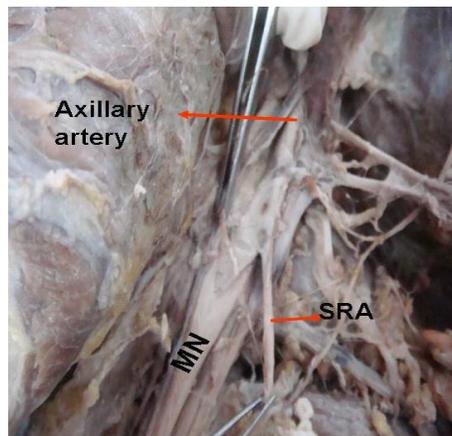
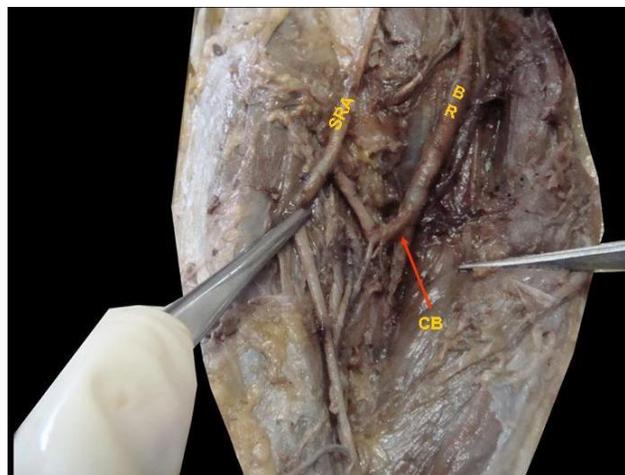


Figure: 2. SRA crossing Median nerve (MN) anteriorly

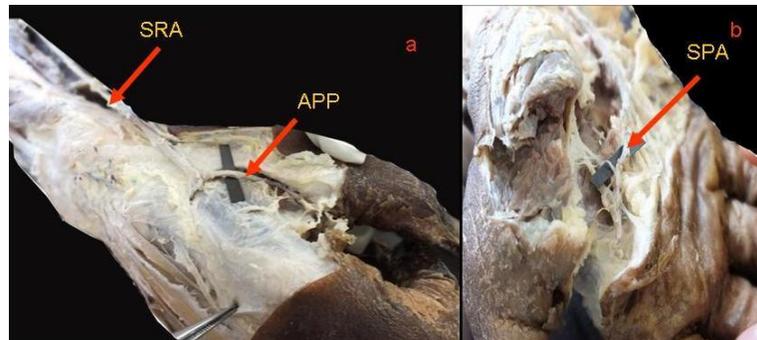


Figure: 3. Communicating vessel (CB) between Brachial artery (BR) and SRA.



artery was absent. The superficial radial artery pursued a superficial course in forearm & entered dorsum of hand by running superficial to the extensors and long abductor of thumb. In 1st dorsal interdigital space it has given Arteria princeps pollicis to thumb and pierced the muscle to form deep palmar arch. (Figures: 4a, b).

Figure: 4. a) Superficial course of Radial artery(SRA) in “anatomical snuff box”.
APP - Arteriaprinceps pollicis
b) Incomplete superficial palmar arch(SPA)



Discussion

Anomalous blood vessels may be due to anomalies during the formation of blood vessels in any part of the body. As per the case report of Salvatore Docimo the radial artery had high origin but it merged with deeply placed brachial artery at the cubital fossa, before the brachial artery divided into radial & ulnar arteries distally [7]. Their embryological explanation for the merger of the vessels was in support of intussuseptive angiogenesis involvement in the formation of larger vessels.

In the present case, the communication between high origin radial artery and original brachial artery was observed in cubital fossa. Radial artery has not merged with deeply placed brachial artery.

Embryological explanation

There is significant embryological explanation for variations in the arterial patterns of upper limb. According to Singer staging of development [8].

Stage1: The lateral branch of seventh intersegment artery, i.e., subclavian artery extends to the wrist and terminates by forming capillary plexus; its distal portion forms the anterior interosseous artery.

Stage 2: Median artery arises from the anterior interosseous artery grows along the median nerve to communicate with palmar capillary plexus. By this time the anterior interosseous artery undergoes regression.

Stage 3: The ulnar artery arises from brachial artery and unites distally with the existing median artery to form superficial palmar arch.

Stage 4: The superficial brachial artery develops in axillary region from the axial trunk and traverses the medial surface of the arm, runs diagonally from the ulnar to the radial side of the forearm to the posterior surface of the wrist to divide over the carpus into digital branches.

Stage 5: Three changes occur simultaneously. One among these three is development of an anastomotic branch at elbow between the main trunk of brachial artery and the existent superficial brachial artery.

In present case, the superficial brachial artery persisted instead of regression and showed continuation with the rest of the radial artery and probably the short arched communicated vessel might be the original artery at its commencement and these findings goes with the description given in Singer's stage 4

Clinical importance

The knowledge of such variation is important for the diagnostic, interventional and surgical procedures.

Nowadays, the superficial radial artery is widely used for coronary artery by-pass graft surgery (CABGS), it may be mistaken for a vein and accidental injection of drugs in this artery may result in complications.

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