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Case Report

VARIANT BRANCHING PATTERN OF BRACHIAL ARTERY IN CONTEXT TO ITS HIGHER BIFURCATION: A CASE REPORT

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ABSTRACT

Unlike venous system, variations in arterial anatomy are less frequent and most of them affect visceral arteries. Knowledge regarding the normal and variant arterial anatomy of the upper extremity has significant importance from clinical point of view. As it can guide the vascular radiologist and surgeons for accurate diagnostic interpretation as well as in the conduct of interventional and surgical procedures on the upper extremity. The knowledge of branching pattern of the brachial artery is important during percutaneous arterial catheterization, so as to prevent any complications arising from accidental damage to the anomalous vessel and knowledge of the variations are important for plastic surgeons using flaps for reconstructive surgeries. This variation was found in while dissecting the right arm of a female cadaver aged around 50 yrs. During dissection it was found that the brachial artery bifurcates in the arm and the ulnar artery course superficial to the superficial layer of flexor muscles. When this happens the ulnar artery may be mistaken for a vein. When certain drugs are injected into an artery, the capillary bed is damaged, followed by gangrene. The hand could be severely injured by injecting into superficial ulnar artery.

KEY WORDS: Brachial Artery, Variation.

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INTRODUCTION

Aim of this study is to study different variations in the branching pattern of brachial artery, which are clinically important. The brachial artery, a continuation of the axillary, begins at the distal (inferior) border of the tendon of teres major and ends about a centimetre distal to the elbow joint (at the level of the neck of the radius) by dividing into radial and ulnar arteries .At first it is medial to the humerus, but gradually spirals anterior to it until it lies midway between the humeral epicondyles. Its pulsation can be felt throughout [1].

CASE REPORT

The dissection was carried out in Dept of Sharir Rachana, National Institute of Ayurveda, Jaipur. This variation was found in while dissecting the right arm of a female body aged around 40 yrs.

During dissection we found that the brachial artery bifurcates in the arm and the ulnar artery course superficial to the superficial layer of flexor muscles.

Variation: The brachial artery, with the median nerve, may diverge from the medial border of the biceps, descending towards the medial humeral epicondyle, usually behind a supracondylar process from which a fibrous arch crosses the artery, and which then runs behind or through pronator teres to the elbow. Occasionally the artery divides proximally into two trunks which reunite. Frequently it divides more proximally than usual into radial, ulnar and common interosseous arteries. Most often the radial branches arise proximally, leaving a common trunk for the ulnar and common interosseous; sometimes the ulnar arises proximally, the radial and common interosseous forming the other division; the common interosseous may also arise proximally. Sometimes slender vasa aberrantia connect the brachial to the axillary artery or to one of the forearm arteries, usually the radial. The brachial artery may be crossed by muscular or tendinous slips from coracobrachialis, biceps, brachialis or pronator teres. Rarely the median nerve crosses behind, and not in front of, the brachial artery near the insertion of coracobrachialis.

High bifurcation of the brachial artery [1]:

In about 3% upper limbs, the brachial artery bifurcates in the arm. When it does, the ulnar artery may course superficial to the superficial layer of flexor muscles.

Clinical significance:

1. When this happens the ulnar artery may be mistaken for a vein.

2. When certain drugs are injected into an artery, the capillary bed is damanged, followed by gangrene.The hand could be severely injured by injecting into superficial ulnar artery.

DISCUSSION AND CONCLUSION

Different types of variations of brachial artery can be observed as mentioned in various studies.

Presence of unilateral high origin of Radial artery was found in2% of cases. The Radial artery was arising from the Brachial artery just 4cms below the lower border of teres major muscle,winding around the median nerve from medial to lateral side to cross superficial to the Median nerve. The artery passed lateral to brachial artery and then was seen lying on the lateral side in the cubital fossa. The common interosseous artery was absent. The Anterior interosseous and posterior interosseous arteries were seen arising separately from the ulnar artery. Inferior ulnar collateral artery was seen arising from the ulnar artery. Superior ulnar collateral artery was arising from the brachial artery. Also both the structures, the median nerve and brachial artery were seen piercing the brachialis muscle.

High origin of ulnar artery was found in 4% of cases. The Ulnar artery was arising from the Brachial ar- tery in the arm about 10 cms distal to the lower border of teres major muscle .In both the cases the high origin of Ulnar artery was seen unilaterally. The Common interosseous artery which is normally a branch of ulnar artery was seen arising from the Radial artery, while the Ulnar artery had the same course as that of normal ulnar artery in the forearm. In 2% of cases there was a common stem for the posterior circumflex humeral artery and Profundabrachii artery. Normally the posterior circumflex humeral artery is a branch of third part of axillary artery and the profundabrachii artery is a branch of brachial artery. In our study, there were two posterior circumflex humeral arteries. One posterior circum- flex humeral artery was arising as a branch of third part of axillary artery as seen normally but it was very thin, while the other quite thick posterior circumflex humeral artery was arising from the brachial artery as a common trunk with profundabrachii artery.

The Superior ulnar collateral artery was seen arising from the Profunda brachii artery instead of arising from the brachial artery .

This variation was also unilateral [1].

High Bifurcation of Brachial Artery and its

Clinical Significance.[1] Trifurcation of brachial artery into radial, ulnar and radial recurrent arteries [2]. Accessory brachial artery was noted in eight female cadavers (11.43%) [3].

Fig 1: Sowing division of the arm region to highlight location of bifurcation observed in this cadaveric study.

Fig 2: Showing variant site of bifurcation point of brachial artery.

1-Biceps brachii 2- Brachial artery, 3-Radial artery 4-Ulnar artery 5-Deltoid muscle 6-Axillary Artery 7-Clavicle Medial cord of brachial plexus

Fig. 3: Showing higher branching of brachial artery in relation to cubital fossa.

1-Medial epicondyle 2-Median nerve 3-Biceps tendon 4-Brachioradialis 5-Pronator teres 6-Biceps brachii 7-Deltoid 8-Brachial artery 9-Radial artery 10-Ulnar Artery 11-Ulnar Nerve

Fig. 4: Showing variation site location in relation to short head of biceps tendon near to its superior attachment site , at junction of upper and middle one third of right sided arm.

1-Ulnar artery 2-Radial artery 3- Ulnar Nerve 4- Median Nerve 5-Capsule of Right sided Shoulder joint 5- Brachioradialis 6-Axillary Artery

Conflicts of Interests: None

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