



STUDY OF BRACHIAL ARTERY AND ITS BRANCHES THEIR VARIATION AND CLINICAL SIGNIFICANCE

Anatomy

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ABSTRACT

Background-The brachial artery continuation of the axillary artery, and supplying the upper limb. The present study was conducted on 28 upper limbs to find out the prevailing branching pattern of this important artery, the practical session of peripheral medical college in bihar. The various variations depicted by brachial artery are explained. the level of neck of radius by dividing into radial and ulnar arteries.

Conclusion- brachial artery 26.29 cm long and divided into its terminal branches 2.99cm distal to intercondylar line. Clinical implications of these variations are also highlighted vide supra.

KEYWORDS

brachial artery, radial and ulnar artery, profunda brachii

INTRODUCTION

The brachial artery is the main artery of the arm. It begins at the lower border of the teres major muscles as a continuation of the axillary artery and terminates in front of the elbow at the level of neck of radius by dividing into radial and ulnar arteries. Anteriorly in the upper part, it is related to medial cutaneous nerve of the forearm, which lies in front of it, in the middle part, it is crossed by the median nerve from lateral to medial side. In the lower part, in the cubital fossa, it is crossed by bicipital aponeurosis. posteriorly from above downwards, the brachial artery lies successively on long head of triceps, medial head of triceps, coracobrachialis, and brachialis muscles. medially the ulnar nerve and basilica vein in the upper part of the arm, and median nerve in the lower part of the arm. Laterally the median nerve, coracobrachialis, and biceps in the upper part of arm and tendon of biceps in the lower part. Branches of the brachial artery, muscular branches to the muscles of the anterior compartment of the arm.

Profunda brachii artery, largest and first branch. It arises from the posteromedial aspect of the brachial artery just below the lower border of the teres major. It accompanies the radial nerve with which it immediately leaves the lower triangular intermuscular space to enter the spiral groove on the posterior surface of the humerus. Nutrient artery to humerus enters the nutrient foramen of the humerus located near the insertion of coracobrachialis. Superior ulnar collateral artery arises near the middle of the arm and accompanies the ulnar nerve. Inferior ulnar collateral arises near the lower end of humerus and divides into the anterior and posterior branches, which take part in the formation of the arterial anastomosis around the elbow. Radial and ulnar arteries. Variation in the brachial artery – smaller branches of brachial artery anastomose around the elbow to form the collateral circulation, have no constant pattern some times brachial artery accompanies median nerve behind the supracondylar process of humerus from which a fibrous arch is most often thrown over the artery.

METHODS

Study Site

The total 28 cadavers [20 males and 8 females]. upper limbs were dissected our department of Anatomy Darbhanga medical college and hospital Laheriasarai bihar india. The total cadaves were adults of unknown age group. Brachial artery were dissected and traced proximally to the continuity with axillary artery at the level of lower border of teres major. total length of brachial artery 2.99 cm.

RESULTS

The cadavers dissected showed brachial arteries having a typical branching pattern in the cubital fossa the left brachial artery had a normal course but the right artery had a variant branching pattern. On the right side, the brachial artery divided into a medial and a lateral branch in the middle third of arm. The medial branch accompanied the median nerve on its medial aspect and persisted superficially down the medial side of the arm. It entered the cubital fossa above the bicipital

aponeurosis, as a content of the roof of the cubital fossa where it divided into ulnar and radial arteries opposite the neck of radius (Figure 1, 2).

The radial branch descended superficially in the forearm along the medial border of brachioradialis muscle and had a normal anatomical course. (Figure 2).

The ulnar branch descended medially, superficial to the flexor group of muscles upto the lower third of the forearm. In the interval between the tendons of flexor digitorum superficialis and flexor carpi ulnaris, it was positioned superficial to the ulnar nerve. The artery and ulnar nerve then passed into the hand between the superficial and main fibres of the flexor retinaculum with the further course of the ulnar artery being unremarkable (Figure 2).

In the arm, the lateral branch of brachial artery was narrower than the medial branch described above. It was enclosed in a fascial sheath accompanied by venae comitantes. In the cubital fossa it descended just medial to the median nerve providing muscular branches to the superficial flexor group of muscles and then progressed deep to the pronator teres as the common interosseous artery (CIA) (Figure 3). The radial recurrent, anterior and posterior ulnar recurrent arteries were found to arise from the common interosseous artery in the cubital fossa. The common interosseous artery terminated by dividing into anterior and posterior interosseous arteries. After formation, anterior interosseous artery emerged inferior to the lower border of pronator teres and ran superficial to the deep group of flexor muscles of forearm along with the median nerve (Figure 4). At the upper border of pronator quadratus it pierced the interosseous membrane to anastomose with the posterior interosseous artery. The posterior interosseous artery followed its normal anatomical course.



Figure 1

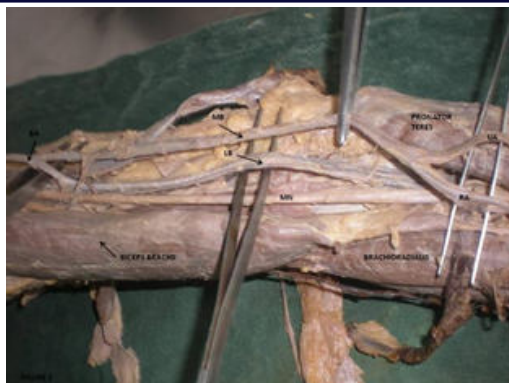


Figure 2



Figure 3

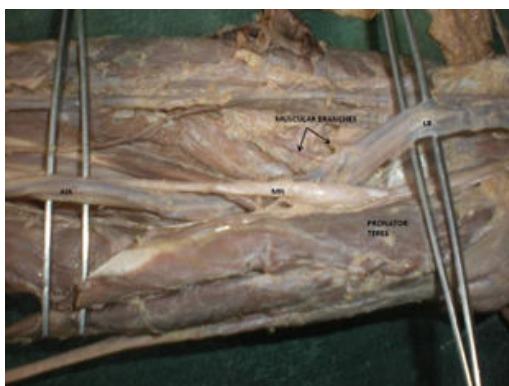


Figure 4

The lateral branch of brachial artery descended down along the arm with venae comitantes in a fascial sheath posteromedial to the median nerve. In the cubital fossa it lay medial to the median nerve then ran deep to the pronator teres to continue as the common interosseous artery. This rare arterial anomaly has been described as Brachiointerosseous artery which has been defined as a high origin of interosseous artery coexisting with a brachial artery that branches into radial and ulnar arteries. Its incidence has been considered to be less than 0.26%.

CONCLUSION

On an average, brachial artery was 2029 cm long and divided into its terminal branches 2.99cm distal to intercondylar line. different types of origin of arteria profunda brachii and superior et inferior ulnar collaterals. Variation have been explained on basic of ontogenic stages in development of human brachio- antebrachial system, and clinical significans of these variations are also highlighted vide supra.

DISCUSSION

Where classical tex book description was true, the brachial artery was a continuation of axillary artery at lower border of teres major and bifurcating into radial and ulnar arteries at a mean distance of 2.99 cm. anomalies of the brachial artery can be attributed to genetic or racial factors or to derangements in the development of the primordial arterial axis of the upper limb. The primitive vasculature of the limb

bud consists of a primary axial artery and its branches draining into a peripheral marginal sinus with new vessels developing as sprouts from existing vessels. A single trunk arising from the 7th intersegmental artery develops as the subclavian artery in the primitive limb bud and persists as the brachial artery in the arm and common interosseous artery in the forearm. The anterior and posterior interosseous arteries arise as branches from the common interosseous artery, while terminal branches of the brachial artery, the ulnar and radial arteries appear last. Hence any aberration of the brachial artery may occur due to alterations in its normal course of development.

Baral et al reported multiple vascular variations in the axilla, forearm and palm. Tohono et al reported a high origin of the left ulnar artery arising from brachial artery in the upper arm, where the brachial artery branched into radial and common interosseous arteries in the cubital fossa. Different branching patterns of the brachial artery have been published by Nakatani et al, Durgun et al, Yoshinaga et al and Cherukupalli et al, however as per our report the brachial artery divided into medial and lateral branches in the middle third of arm, with the medial branch continuing superficially to divide into radial and superficial ulnar arteries. This pattern of branching has been named as superficial brachioulnoradial artery by Moncayo- Marques (1941) and its incidence has been reported to range from 0.13% - 1.2%.

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