

High Division of Brachial Artery Analogous? Start of Radial and Ulnar Arteries

QUAIN Y KAUSAR T A RAZA

Department of Anatomy, Fatima Jinnah Medical College, Lahore

Correspondence to Dr. Qurrat ul Ain

Out of eighty upper limbs dissected in cadavers, high division of brachial artery was observed in two limbs. Brachial artery divided into its terminal branches just after its start at the lower border of axilla. Radial artery was placed medially whereas ulnar artery was lateral in position. After crossing elbow joint both arteries acquired their usual anatomical positions in the forearm.

Key words: Brachial artery analogous, radial artery, ulnar artery

Normally brachial artery starts at the lower border of teres major, and ends about a centimeter distal to elbow joint by dividing into radial and ulnar arteries¹. Brachial artery is first medial to humerus and then spirals anteriorly to lie between humeral epicondyles. Bicipital aponeurosis crosses it anteriorly at the elbow. Median nerve crosses it anteriorly from lateral to medial side². At the elbow brachial artery sinks deeply into triangular intermuscular cubital fossa, where it divides near the neck of radius into its terminal branches radial and ulnar arteries.

Radial artery descends along lateral side of the forearm to the wrist, where it is palpable between flexor carpi radialis medially and anterior border of radius laterally³. Occasionally, a high branching of brachial artery may occur in upper arm or even in distal axilla^{1,4}.

Materials and methods

Eighty upper limbs of cadavers were selected, during routine dissection. Dissection was carried out in the anatomy dissection hall of Fatima Jinnah Medical College Lahore. Brachial artery and its branches were dissected out in each of the 80 limbs. Normal pattern was listed in group A and anatomical variations were listed in group B. Results were tabulated and percentage of variation was calculated.

Results

Group A

Out of 80 upper limbs dissected, 78 (97.5%) showed routine division of brachial artery into radial and ulnar arteries at the elbow joint. Radial artery being lateral and ulnar artery medial. Median nerve crossed the brachial artery in front from lateral to medial side and at elbow it was placed medial to brachial artery.

Group B:

Two out of 80 dissected upper limbs in cadavers showed variation in brachial artery. Bifurcation of brachial artery occurred high up in the arm (Fig 1,2). The interesting variation observed was that the radial artery started medially and crossed ulnar artery just above the elbow to become lateral (Fig.3,4). Likewise ulnar artery started laterally and ultimately became medial in the forearm. Median nerve crossed ulnar artery in front from lateral to medial side and came to lie medial to ulnar artery (Fig

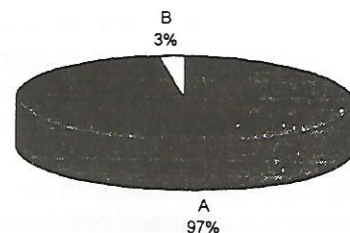
3,4). An important observation was that variation was observed in males and only in their right limbs. In left limbs of both cases brachial artery showed routine division and course at the elbow joint.

Table 1

| Groups | n=80 | %age of variation |
|--------|------|-------------------|
| A | 78 | 97.5 |
| B | 2 | 2.5 |

A - Normal,

B - Variations



Graph. Percentage of variation of high division of brachial artery

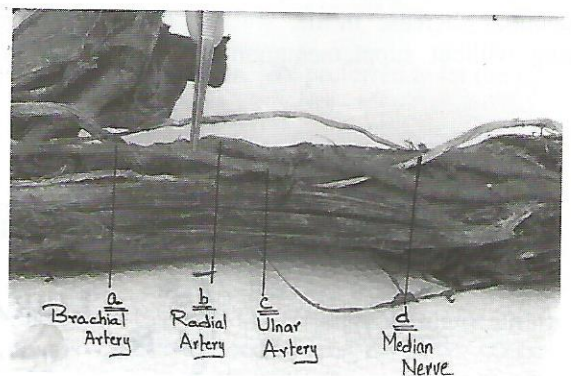


Fig. 1 a: Brachial artery, b: Radial artery, c: Ulnar artery, d: Median nerve

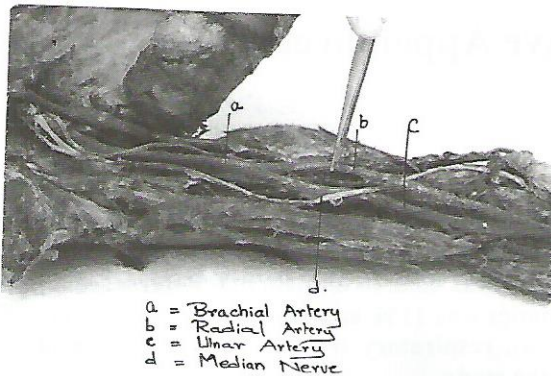


Fig.2. a: Brachial artery, b: Radial artery, c: Ulnar artery, d: Median nerve

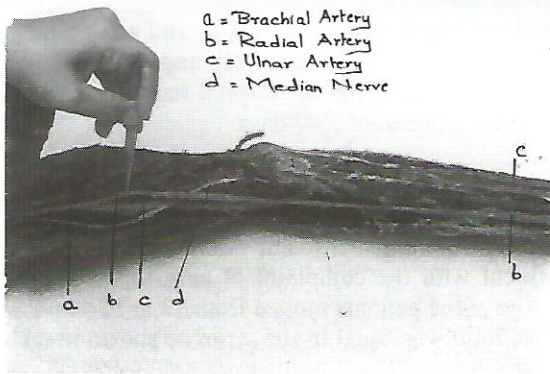


Fig. 3. a: Brachial artery, b: Radial artery, c: Ulnar artery, d: Median nerve

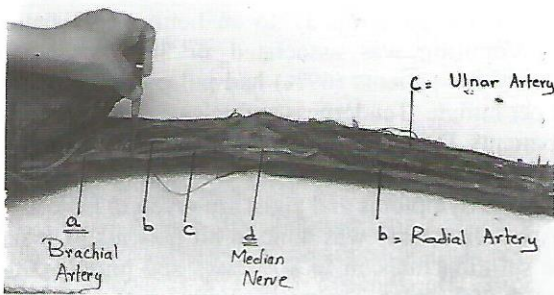


Fig. 4. a: Brachial artery, b: Radial artery, c: Ulnar artery, d: Median nerve

Discussion

Apart from anatomists, having knowledge on normal and variant arterial anatomy of the upper extremity is clearly essential and of practical importance for surgeons and radiologists who perform therapeutic and diagnostic procedures in this region. Accurate knowledge of relationships and course of these major arterial conduits and particularly of their variational patterns is of considerable importance in the conduct of reparative surgery in arm, forearm and hand. Variation of upper extremity arteries have been noted to complicate vein puncture or arm surgery⁵. Possible arterial variations should be kept in mind during arteriographic examination of upper extremity⁶. High division of brachial artery has been reported previously⁷. No previous data regarding variations in relations of radial and ulnar arteries in the arm has been recorded. Observation of variation in right upper limb has also been reported in previous research works^{8,9,10}.

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