

## Variations in termination of brachial artery – A case report

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### Abstract

Normally the brachial artery divides at the neck of the radius 2 to 3 cms below the crease of the elbow into two terminal branches namely ulnar and radial arteries. Common interosseous artery arises from ulnar artery.

In the present study there was difference in the terminations of brachial arteries in two limbs of the same body. In the left upper limb, the artery terminated into ulnar and radial arteries and the common interosseous artery. In the right upper limb, the artery terminated into ulnar and radial arteries and the common interosseous arteries were arising from the radial artery but not from ulnar artery. In both limbs radial and ulnar arteries were present anterior (superficial) to flexor group of muscles. There were also difference in the calibre of the above vessels. Hence the study was done on the terminations of the brachial artery and reported.

**Key words:-** Trifurcation,- Bifurcation,- Brachial artery,-Ulnar artery,- Radial artery,-Common interosseous artery.

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**B**rachial artery is the main artery of the arm. It is the direct continuation of axillary artery, beginning at the lower border of teres major and enters into cubital fossa accompanying the median nerve. Under the cover of bicipital aponeurosis, it divides into a larger ulnar artery and smaller radial artery antero medial to the neck of the radius. Common interosseous artery arises from the ulnar artery which again redivides into anterior and posterior interosseous arteries.

### Materials and methods

This study was done on twenty human upper limbs during routine dissection by the first year MBBS students in the department of anatomy of Sri Devraj URS Medical College at Tamaka, Kolar, and Karnataka. Out of twenty upper limbs, two upper limbs of same body showed variations in the terminations of the brachial arteries. The above specimens were carefully dissected under water, cleaned, and then dried well with acetone. Later they were painted fabric red colour paint, numbered and photographed.

### Observations

#### *In the specimen-1*

In the left upper limb brachial artery trifurcated into ulnar, radial, and common interosseous arteries. Ulnar and radial arteries were running superficial to flexor group of muscles. In the lower one third of the fore arm, ulnar artery has divided into two branches before entering into the palm, while common interosseous artery was running deep to the flexor group of muscles. All the vessels were of different calibres. No other variations were observed in this specimen.

#### *In the specimen-2*

In the right upper limb of same body, brachial artery was divided into ulnar and radial arteries, and common interosseous artery was arising from the radial artery. Ulnar artery had not been divided into two branches unlike in left limb before entering into the palm. Both arteries were running superficial to flexor group of muscles and common interosseous artery was running deep to flexor group of muscles. No other variations were seen in this specimen.

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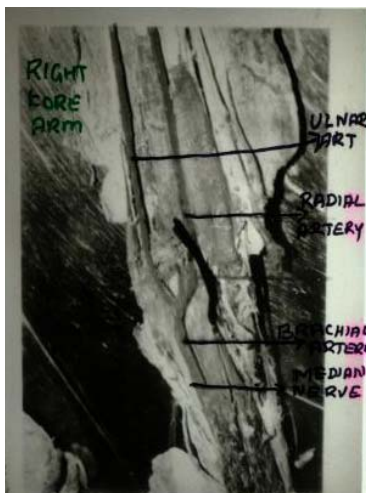
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**Photograph 1** showing Trifurcation of Brachial Artery into Radial Ulnar, and common Interosseous Arteries



**Photograph 2** showing Bifurcation of Brachial Arteries into Radial Ulnar, common Interosseous Artery arising from Radial but not from Ulnar Artery



### Discussions

Various authors like Williams et al (1999), and Huber (1930), Massie (1944), Tharek (1951), Anson and Maddoc (1952), Boyd et al (1956), Lockhart (1959), Romans (1964), Anson (1966), Patnaik et al (2001), have made studies on termination of brachial artery.

William et al (1999) have mentioned that the brachial artery along with median nerve passes posterior to the supracondylar process then it passes posterior or through the bulk of the pronator teres muscle. This type of anomaly is commonly seen in some carnivores. It may bifurcate proximally and reunite to form single trunk. It sometimes, trifurcate proximally into ulnar, radial, and common interosseous arteries. Sometimes ulnar artery arise proximally. Rarely there may be communicating vessel connecting axillary artery and brachial artery<sup>1</sup>.

No such above anomalies were found in present study except trifurcation of brachial artery into ulnar, radial, and common interosseous arteries in left upper limb and bifurcation of brachial artery in right upper limb.

Huber (1930) found additional accessory branches of brachial arteries. He observed trifurcation of brachial artery into ulnar, radial, common interosseous arteries or median artery. He also observed radial recurrent arising from the lower part of brachial artery and not as a one of the terminal branch.<sup>2</sup>

Patnaik et al (2001) have found trifurcation of brachial artery into ulnar, radial, and radial recurrent arteries in a right superior extremity of fifty years old male cadaver during dissection. Third branch was radial recurrent artery. While common interosseous artery was given off from the ulnar artery, which divided into anterior and posterior interosseous arteries, the radial artery passes normally to its destination<sup>3</sup>.

In the present study, brachial artery had trifurcated into ulnar, radial, and common interosseous arteries in left upper limb and in right upper limb. Brachial artery had terminated into ulnar and radial arteries, but common interosseous artery was arising from the radial artery and not from the ulnar artery. There were no terminal branches of radial recurrent branch or median artery. Unlike in the studies of Huber (1930) and Patnaik et al (2001). No communicating branches were found between radial and ulnar arteries.

Henry Hollinshed (1962) has stated that “one of the two arteries lie superficial to superficial flexor group of muscles. The other artery is taking the usual course is crossed superficially by the median nerve”<sup>4</sup>

In the present study two upper limbs (10%) of same body showed ulnar and radial arteries running superficial to superficial flexor group of muscles, in contrast to 75% as reported by Hollinshed.

Occasionally aberrant artery may be present and may be mistaken for a vein and in case of injury may produce severe bleeding. If IV drugs injected it may produce gangrene resulting in partial or total loss of part of limb. Ulnar artery is present superficial to superficial flexor group of muscles in approximately 3% of the populations, and then the artery may be pulsatile or visible<sup>5</sup>.

In the present study, no aberrant artery was observed but ulnar artery was superficial to superficial flexor group of muscles.

Ulnar artery may also take origin proximally and radial artery, common interosseous artery may form the other division. Radial artery also may take origin proximally from brachial artery running superficial to forearm flexors or deep fascia or rarely subcutaneous. Common interosseous artery may take origin proximally. In this study, there were no proximal origin of ulnar, radial or common interosseous arteries.<sup>1</sup>

In the present study brachial artery showed different terminations in two upper limbs of same body (10%). In the left upper limb brachial artery trifurcated into ulnar, radial, and common interosseous arteries at the neck of the radius. Both ulnar and radial were running superficial to superficial flexor group of muscles and common interosseous artery was running deep to superficial flexor group of muscles, whereas in the right upper limb, brachial artery bifurcated into ulnar, and radial arteries, whereas common interosseous artery was given off from the radial artery and not from the ulnar artery. Ulnar artery in the lower third of left forearm divided into two branches before entering into the palm but the similar division of ulnar was not observed in the right

forearm. No other abnormalities were found except difference in calibre of the above said vessels.

### **Conclusion**

The above variations of brachial artery is common rather an exception. These variations are not explained in any conventional text book. But still, this particular knowledge of above variations is found to have clinical importance especially in the field of vascular surgery. Hence it has been studied and reported.

### **Acknowledgement**

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