

## Case Report

# UNILATERAL VARIANT RADIAL AND ULNAR ARTERIES- A CASE REPORT

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## ABSTRACT

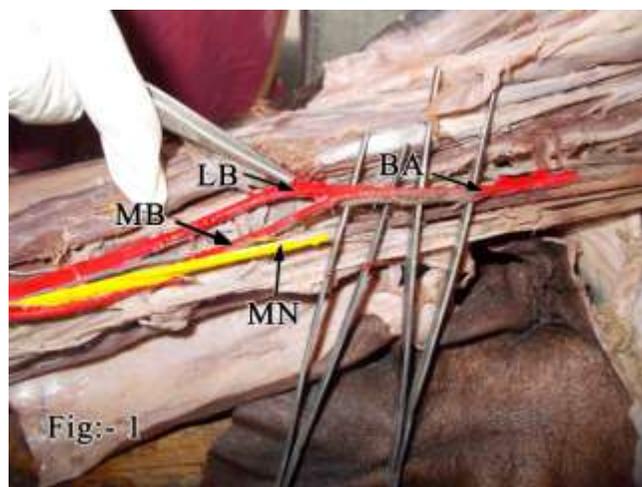
Knowledge of various anomalies of upper limb blood supply is of immense importance for radiologists, general and vascular surgeons in the diagnosis and management of afflictions of upper limb. In the present study a 60 year male cadaver presented high division of the Brachial artery into radial and ulnar arteries in a variant manner. In this report we made an attempt to discuss the embryogenesis of upper limb vasculature.

**Keywords:** Upper Limb, Brachial Artery, Radial Artery, Ulnar Artery

## INTRODUCTION

Variations in arterial patterns of upper limb have been frequently observed during routine dissection (Pelin *et al.*, 2006). Brachial artery is a continuation of the axillary artery which divides into radial and ulnar arteries at the level of neck of the radius in the cubital fossa (Willims *et al.*, 1999). The radial artery is the lateral and smaller terminal branch. The ulnar artery is the medial and larger terminal branch which passes deep to ulnar head of pronator teres to enter the fore arm. High up division of brachial artery can also be explained on the basis of observation made by Arey (1957), where he highlighted that there may be persistence or failure of developing vessels which are normally present. According to Jurins (1986) the radial artery arises comparatively late in embryological development as a new vessel of brachial artery. Explanations of these variations are of value in evaluating anatomical and embryological correlations. In the present case it is not only a high division of the brachial artery but also unusual origin of radial and ulnar arteries.

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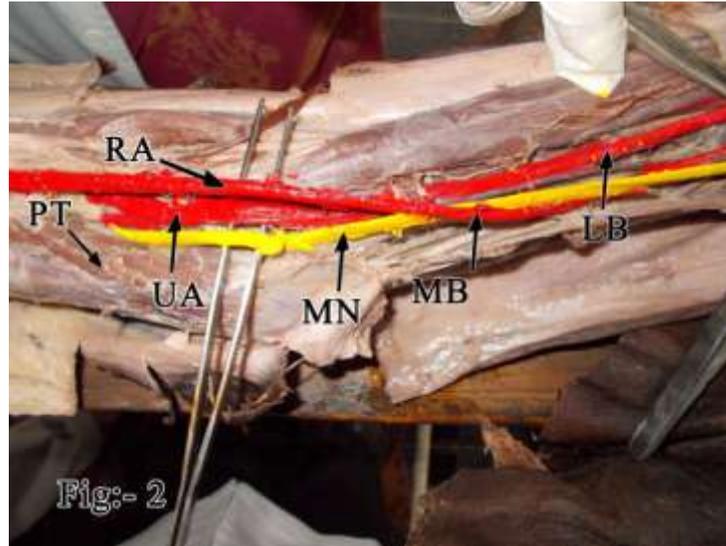


**Figure 1: Showing high division of brachial artery (BA- Brachial artery; MN- Median nerve; LB-Lateral branch; MB-Medial branch)**

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A unilateral variation in the level and pattern of division of the brachial artery was observed in right upper limb of a 60 year old male cadaver during routine dissection. The brachial artery divided into two branches five centimeters above the intercondylar line (Figure 1).

The medial branch descended deep to median nerve in lower third of arm and above the elbow it crossed the median nerve by looping over it and then continued as normal radial artery in the forearm (Figure 2).



**Figure 2: Showing crossing of medial branch (RA- Radial artery; UA-Ulnar artery; MN-Median nerve; PT- Pronator teres; MB-Medial branch; LB-Lateral branch)**

Rest of its course was normal. The lateral branch was between the median nerve and radial artery in cubital fossa (Figure2). This branch passed deep to the ulnar head of pronator teres as the ulnar artery to enter the forearm. The rest of the course of ulnar artery was observed to be normal.

### **DISCUSSION**

Anomalies of upper limb arterial pattern are fairly common. This is because temporal succession of emergence of principal arteries, anastomoses, periarticular networks and functional dominance followed regression of some paths (Willims *et al.*, 1999). Mc Cromac (1953) reported alteration from normal anatomical norm with respect to origin and course of arteries of upper extremity occur in 18.54% of cases. Occurrence of high origin of radial artery 3% to 15% as reported by different authors (Anson *et al.*, 1966; De Garis *et al.*, 1928; Karlsson *et al.*, 1982). Keen (1961) mentioned high origin of radial artery from the brachial artery. He explained this variation on basis of Areys observation regarding anomalous blood vessels. In the study of Karlsson *et al.*, the high origin of the radial artery was found in eight patients, in one with the origin from the distal part of the axillary artery, in five from proximal third of the brachial artery and in two from the middle third of the brachial artery. In 1% of cases Chandrika *et al.*, (2013) reported high origin of the ulnar artery.

Moore and Persaud (1998) described that during embryological development primary axial artery develops from seventh cervical, first and second thoracic inter segmental arteries and continues as the brachial artery in the arm and common interosseous artery in the forearm. The radial and ulnar arteries are the terminal branches of the brachial artery. The ulnar artery develops from a new arterial bud just above

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the point at which the median artery arises. The radial artery sprouts from two other arterial buds arising from the lateral side of the brachial artery and coalesce with each other.

Several variations of the radial artery have been reported because of its anomalous development. Pelin *et al.*, (2006) observed radial artery sprouting from the medial side of the brachial artery and crossing the median nerve. In the present case the medial sprouting of radial artery from the brachial artery and crossing of the median nerve was observed which is consistent with the observations of Pelin *et al.*, (2006). In addition to anomalous radial artery the present case also showed lateral origin of ulnar artery. Such a variation is of importance for radiologists and vascular surgeons whether in angiographic examination or surgical procedures of the forearm.

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