



AN ELUCIDATION OF UNILATERAL HIGH BIFURCATION OF BRACHIAL ARTERY WITH SUPERFICIAL COURSE OF RADIAL ARTERY

Chanchal Yogi¹, Lakshita Sharma², Dharmendra Choudhary³, Sandeep Madhukar Lahange⁴

- 1- MD Scholar, Dept. of Rachana Sharir, National Institute of Ayurveda, Jaipur
- 2- MD Scholar, Dept. of Rachana Sharir, National Institute of Ayurveda, Jaipur
- 3- Assistant Professor, Dept. of Rachana Sharir, National Institute of Ayurveda, Jaipur
- 4- Professor, Dept. of Rachana Sharir, National Institute of Ayurveda, Jaipur

Corresponding Author: chanchalyogi1412@gmail.com

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ABSTRACT

The Brachial artery is typically the continuation of the Axillary artery, which starts at the inferior border of the Teres Major muscle which in turn splits into the ulnar and radial arteries, which are the main arteries that supply blood to the forearm, at the radius's neck in the cubital fossa. We discovered a case of unilateral higher bifurcation of the brachial artery in the proximal half of the right arm, 2.2 cm distal to the inferior border of the Teres Major muscle, with the superficial course of the radial artery during routine dissection of a 75-year-old male North Indian male upper extremity fixed with 10% formalin. During vascular and reconstructive procedures, accurate information about these variations is crucial in vascular and reconstructive surgery and also in the evaluation of angiographic images

Keywords: Brachial Artery, Bifurcation, Ulnar Artery, Superficial Radial Artery

INTRODUCTION

Upper limb arterial variations are often encountered in routine dissection or daily clinical practice. According to available medical literature, variations in the branching pattern of the main arteries of the upper limb are discovered in 25% of the studied cases. Variations of the radial and ulnar arteries and variations of the brachial artery are frequently observed, albeit less often. The brachial artery is often used in medical procedures, such as brachial pulse palpation, blood pressure monitoring, arterial puncture, arteriography, etc. 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. It is initially positioned midway between the humeral epicondyles, then progressively spirals anterior to the humerus. You can feel the pulse running through it. The brachial artery splits into three equal segments: the proximal, middle, and distal segments. Several writers have found that variations in the arteries in

the upper limbs are very prevalent. The ulnar artery follows the radial artery, where the majority of these abnormalities occur. Variations in the brachial arteries are less frequent. Although some reports of aberrant brachial artery divisions in the cubital fossa have been made, brachial artery changes in the midarm are very uncommon.

The superficial brachial artery, which is present in 12.3% of dissections, is divided by Keen into three types: (a) the superficial brachial arteries that continue in the cubital fossa and bifurcate into the radial and ulnar arteries as usual (3.6% to 9.6%);(b) The radial and ulnar branches of the superficial brachial arteries are referred to as the "High origin of radial artery" (15%) and (c) the superficial brachial artery (2.8%). The forearm's superficial radial and ulnar arteries run in these situations. The superficial brachial artery gets its name because it goes superficially to the median nerve, whereas the brachial artery often goes deeply to the median nerve.

Variations of the brachial artery

Variations of the brachial artery and the corresponding incidences as they are represented in the literature

Variations of the brachial artery	
Variation	Incidence
Superficial brachial artery	3.6% to 9.6%
High bifurcation of the brachial artery	8%
High origin of radial artery	15%
High origin of ulnar artery	2.8%
High division of a superficial brachial artery	<1%

The brachial artery in the current study bifurcated into its terminal branches at a higher level, unilaterally splitting into the radial and ulnar arteries at the middle of the arm. The artery located medially was known as the ulnar artery, and the artery located laterally as the radial artery.

Due to their significance in local vasculature, plastic surgery, and other invasive treatments, knowledge of potential vascular anatomical variations in the upper limb is crucial. The brachial artery is often used in

medical practice because it is easier to access and closer to the heart than other big arteries.

CASE REPORT

A standard dissection was performed at the National Institute of Ayurveda in Jaipur's Sharir Rachana department. A formalin-fixed 75-year-old North Indian cadaver was dissected to reveal these differences. The upper limbs were fixed in formalin, and the body was donated voluntarily for this study. A 2.2 cm distance between the inferior border of the Teres to the unilateral upper bifurcation of the brachial artery. A routine dissection revealed that the subject had significant

muscle in the proximal half of the right arm and a shallow flow of the radial artery. Through our department's body donation program, a human corpse Variations:

In Right Arm-

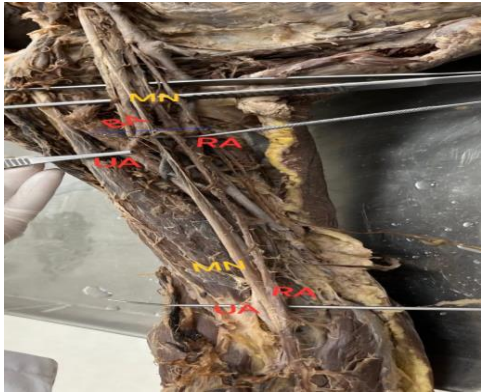


Fig 1.1:Ant. View of the arm- depicting Medial Nerve (MN), Radial Artery (RA), Brachial Artery (BA),

In Left Arm

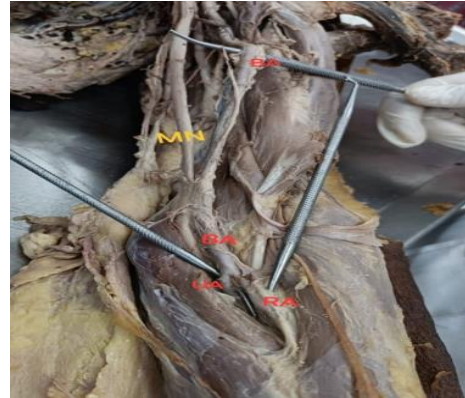


FIG 1.2: Ant. View of the arm- depicting Medial Nerve (MN), Radial Artery (RA), Brachial Artery (BA), Ulnar Artery(UA), Ulnar Artery(UA)

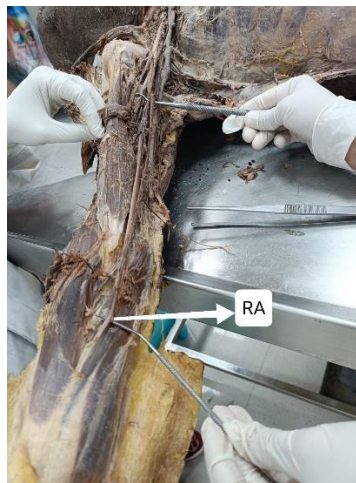


Fig -1.3: Ant. View of arm- depicting superficial course of radial artery

DISCUSSION

The main artery in the upper limb is the brachial artery. It usually ends by splitting into the radial and ulnar arteries at the level of the radius neck. Variations in the arteries supplying the upper limbs are frequently noted—the radial artery experiences most alterations, followed by the ulnar artery. In contrast to

that complied with all ethical standards was procured for the dissection. Variations in the right arm are depicted in figure 1.1, 1.2, 1.3

these two arteries, BA alterations are less frequent. Numerous investigators have provided detailed descriptions of the upper limb's vascular variations. The radial artery has a high origin in 15–20% of cases. It can originate as high as the axillary artery, but it usually originates in the proximal portion of the arm. Similar findings were found in the current case report, where the BA split into the radial and ulnar ar-

teries in the upper portion of the arm. The median nerve was observed extending superficially throughout the forearm and crossing the radial artery.

CLINICAL SIGNIFICANCE

Variations in the brachial artery's branching pattern are important when using cardiac catheterisation for arterial grafting, pedicle flaps, or angioplasty. Before surgery, it is important to determine whether the brachial artery has aberrant divisions or placements. However, it is neither practical nor economical to perform a complete work-up by CT angiography on every patient who visits the emergency room. Therefore, before beginning the treatment, doctors must know this potential. There was a report of a high bifurcation of the brachial artery, presenting with acute ischemia as a result of an embolic event. After this defect was found, ischemia was effectively treated with an embolectomy

REFERENCES

1. High Bifurcation of the Brachial Artery: An Embryological Overview, [Gregory Tsoucalas](#),¹ [Anna Eleftheriou](#),^{two} and [Eleni Panagouli](#)³

2. High up bifurcation of the right superficial brachial artery with Brachio radial artery, Sreekanth Talapaneni¹☀, Prahlad Banpur², Aechoor Munuswamy Surender³, Sughra Yasmeen⁴
3. Bilateral asymmetry of the highly bifurcated brachial artery variation, ELENI PANAGOULI, SOPHIA ANAGNOSTOPOULOU, DIONYSIOS VENIERATOS
4. UNILATERAL HIGH BIFURCATION OF BRACHIAL ARTERY: A CASE REPORT, Ahmed M. Auwal, Aadaud D. Zagga, Samuel A. Asala
5. High Bifurcation of Brachial Artery With Acute Arterial Insufficiency: A Case Report, [C. Cherukupalli, MD](#), [A. Dwivedi, MD](#), and [R. Dayal, MD](#)[View all authors and affiliations](#)
6. HIGHER BIFURCATION OF BRACHIAL ARTERY WITH SUPERFICIAL COURSE OF RADIAL ARTERY IN FOREARM: A STUDY REPORT, Padma Varlekar¹, Hiren Chavda¹, Dharati Kubavat², Shailesh Kumar Nagar³, SS Saiyad¹, Chintan Lakhani²

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