

## Anomalous Division of Axillary Artery – A Case Report

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### ABSTRACT

During the routine dissection for undergraduates in the Department of Anatomy we studied the origin, course of the vessels of arm .

A variation in the branching pattern of third part of Axillary Artery was observed in the right upper limb of an adult male cadaver. The course and branches of the axillary artery on the left side was also studied and there was no variation on left side. The arterial anomalies in the upper limb are due to defects in the embryonic development of the vascular plexus of the upper limb bud. Accurate knowledge of the normal and variant arterial pattern of the human upper extremities is important both for reparative surgery and for angiography.

**KEY WORDS** Axillary Artery, Arterial Anomalies, Superficial brachial branch. Deep brachial branch

### INTRODUCTION

Axillary artery is the continuation of Subclavian artery at the outer border of first rib till the lower border of Teres Major where it continues as the Brachial Artery. It is divided into three parts by the Pectoralis Minor muscle Branches:

First part – Superior Thoracic Artery.

Second part – Lateral Thoracic and Acromio-Thoracic arteries.

Third part – Subscapular, Anterior and Posterior Circumflex Humeral arteries.<sup>1</sup>

This study reports an anomalous division of Axillary Artery into superficial and deep brachial branches.

### MATERIALS AND METHODS

During the routine dissection for undergraduates in the Department of Anatomy we studied the origin, course of the vessels of upper limb.

A variation in the branching pattern of third part of Axillary Artery was observed in the right upper limb of an adult male cadaver.

The variations were studied and photographed.

### OBSERVATIONS AND RESULTS

A variation in the branching pattern of third part of Axillary Artery was observed in the right upper limb of an adult male cadaver.

The third part of Axillary Artery divided into a superficial and a deep branch at about distance of 4 and ½ inches from the junction of middle 1/3 and medial 1/3 of clavicle.

The superficial branch gave rise to Superior and Inferior Ulnar Collateral arteries.

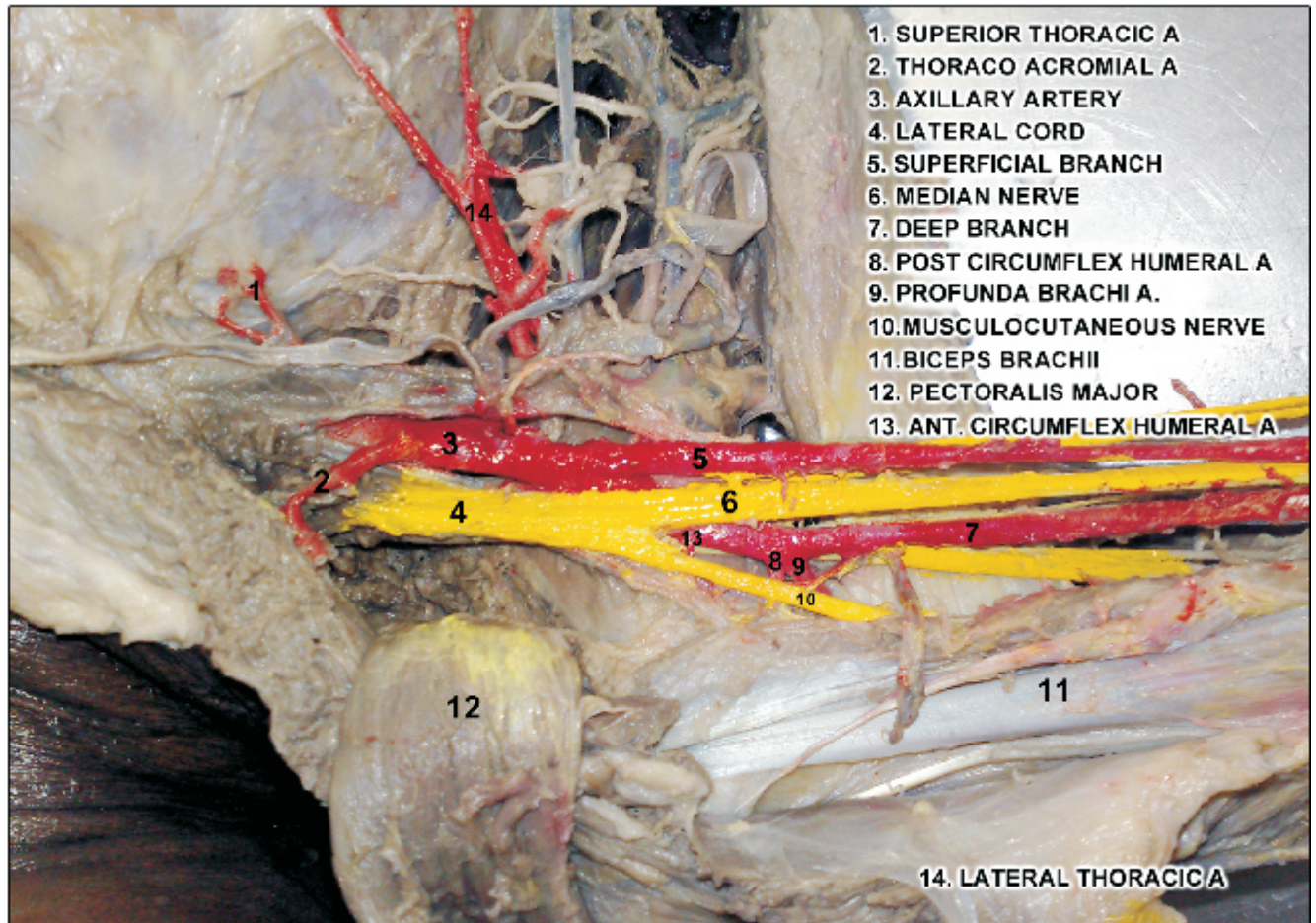
It divided about 3 inches above the base of Cubital Fossa into two branches which behaved similar to Radial and Ulnar arteries. Radial artery left the Cubital Fossa partially enveloped by Brachioradialis .

In the lower forearm it came to lie between Brachioradialis and Flexor Carpi Radialis.

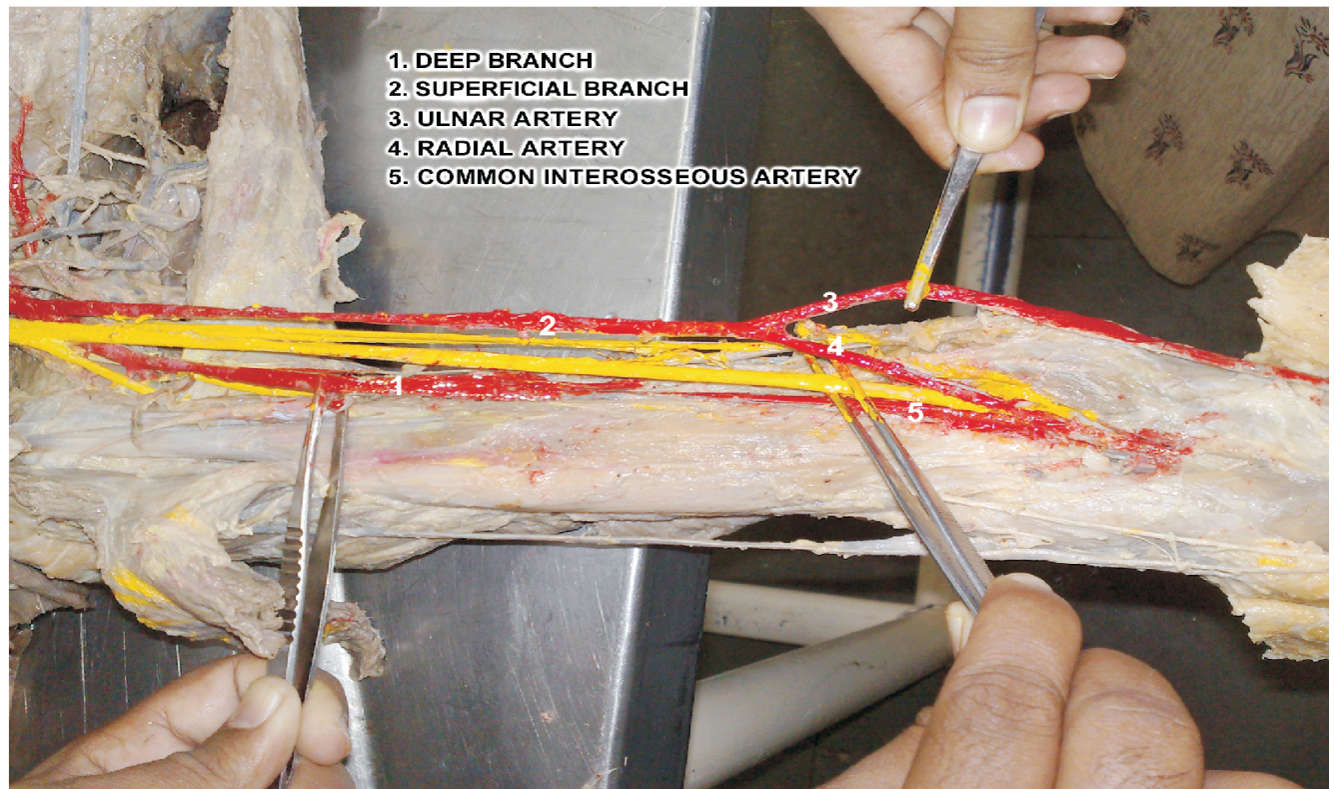
Ulnar artery continued downwards having a subfacial course and appeared between Flexor Digitorum Superficialis and Flexor Carpi Ulnaris. In the wrist and palm course of both arteries was observed to be normal.

Deep branch after division passed beneath or and Posterior circumflex Humeral arteries and Subscapular artery and Profunda Brachii branch. median nerve crossing it from medial to lateral.

**Fig1: Division of third part of axillary artery into superficial and deep branch**



**Fig 2 : Division of medial branch into radial and ulnar arteries.**



Here it gave Anterior and Posterior circumflex Humeral arteries and Subscapular artery and Profunda Brachii branch.

It continued into Cubital Fossa as Common Interosseous artery and at the upper border of Interosseous membrane divided into Anterior and Posterior Interosseous arteries.

The Axillary vein was found anteromedial to the medial branch of Axillary artery.

Musculocutaneous nerve and lateral root of Median Nerve was lateral to the medial branch of Axillary artery. The branching pattern on the left side was normal.

## DISCUSSION

Axillary artery dividing in its 3<sup>rd</sup> part has been differently named by earlier workers. Anomalous division of Axillary Artery into superficial and deep brachial branches has been reported where there was an abnormal trunk taking origin from the third part of the Axillary Artery, giving rise to Anterior and Posterior Circumflex Humeral, and Subscapular arteries.<sup>2</sup> One of the branch which passes superficial to median nerve and replaces the main trunk is named Superficial Brachial artery by Adachi.<sup>3</sup>

Trevers and Rogers opined that there are two Brachial arteries instead of one continuing as Radial and Ulnar arteries.<sup>4</sup>

During embryogenesis the lateral branch of the seventh cervical Intersegmental artery becomes enlarged to form the Axial Artery of the upper limb which on further development becomes (a) Axillary artery (b) Brachial artery (c) proximal part of Ulnar artery between the levels of origin of radial and common interosseous arteries (d) Common interosseous artery and (e) anterior interosseous artery.<sup>5</sup>

The arterial anomalies in the upper limb are

due to defects in the embryonic development of the vascular plexus of the upper limb bud. This may be due to arrest at any stage of development, showing regression, retention, or reappearance and may lead to variations in the arterial origins and courses of the major Upper limb vessels.<sup>6</sup>

They are of the view that the anomalous blood vessels may be due to<sup>7</sup>

- (i) The choice of unusual paths in the primitive vascular plexuses,
  - (ii) The persistence of vessels normally obliterated
  - (iii) The disappearance of vessels normally retained
  - (iv) Incomplete development and
  - (v) Fusions and absorption of the parts usually distinct.
- upper limb vessels.

## CONCLUSION

Anomalies in the origin and course of principal arteries are having practical importance for the radiologists and vascular surgeons. In axillary approach to chronic dislocation of the shoulder joint the incision is transverse and it may injure the deep brachial artery.<sup>8</sup>

Brachial plexus injury is a common condition which requires exploration and repair. During surgery the abnormal branch may be a definite cause of concern if its presence is not kept in mind. Branches of the upper limb arteries have been used for coronary bypass and flaps in reconstructive surgery. Accurate knowledge of the normal and variant arterial pattern of the human upper extremities is important both for reparative surgery and for angiography.

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