

**A CASE REPORT ON THE VARIATIONS IN THE BRANCHING PATTERN OF  
AXILLARY ARTERY WITH CLINICAL SIGNIFICANCE**

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Article Received on 27/07/2023

Article Revised on 17/08/2023

Article Accepted on 07/09/2023

**ABSTRACT**

The axillary artery is the main artery of the upper limb. It is the continuation of the subclavian artery and will continue as the brachial artery. In the axillary fossa, it is in relation to the axillary vein and brachial plexus. The pectoralis minor muscle divides the axillary artery into three parts and these parts have different branches, but there are some variations in the branching pattern. The knowledge regarding variations in these branching patterns is of great clinical importance for clinicians. In this case study we will explain the variation found during routine dissection.

**INTRODUCTION**

The axillary artery is a large blood vessel that conveys oxygenated blood to the lateral aspect of the thorax, the axilla (armpit), and the upper limb. Its origin is at the lateral (outer) margin of the first rib, as the continuation of the subclavian artery. It continues as the brachial artery after passing the lower margin of teres major muscle. The pectoralis muscle divides the axillary artery into three parts, the muscle is superficial to the artery.

- First part – the part of the artery superior to the pectoralis minor
- Second part – the part of the artery posterior to the pectoralis minor
- Third part – the part of the artery inferior to the pectoralis minor.

The axillary artery is accompanied by the axillary vein, which lies medial to the artery, along its length. In the axilla, the axillary artery is surrounded by the brachial plexus. The second part of the axillary artery is the reference for the locational descriptions of the cords in the brachial plexus. The axillary artery has several smaller branches. The origin of these branches is highly variable (e.g. the posterior and anterior circumflex arteries often have a common trunk). An arterial branch is named for its course, not its origin.

- First part (1 branch)
  - Superior thoracic artery (Supreme thoracic artery)
- Second part (2 branches)
  - Thoraco-acromial artery
  - Lateral thoracic artery. If the lateral thoracic artery is not branching from the axillary artery, will most likely branch from the following (in order of likelihood): (1) thoracoacromial, (2) third part of

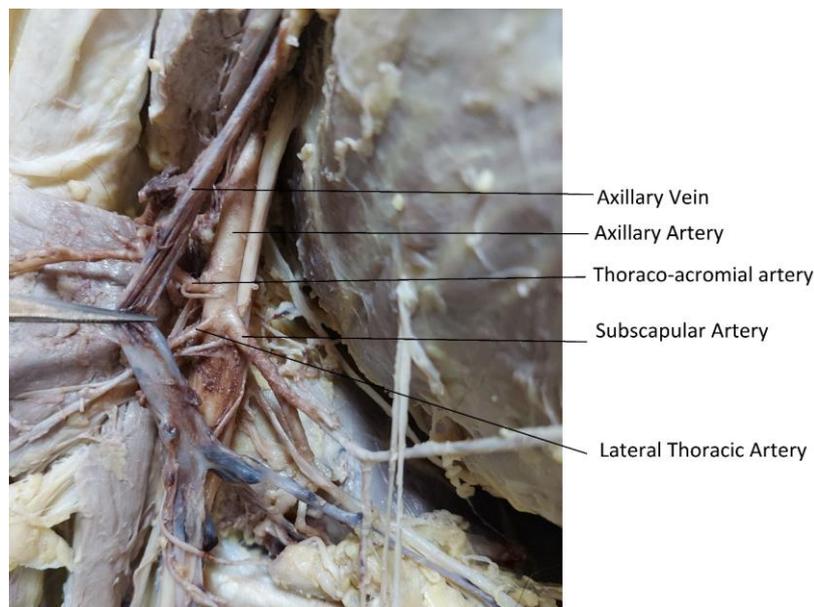
axillary artery, (3) suprascapular artery, (4) subscapular artery

- Third part (3 branches)
  - Subscapular artery
  - Anterior humeral circumflex artery
  - Posterior humeral circumflex artery

The subscapular artery, the largest branch of the axillary artery, arises from the third part of the axillary artery at the lower border of the subscapularis muscle, which it follows to the inferior angle of the scapula, where it anastomoses with the lateral thoracic and intercostal arteries, and with the descending branch of the dorsal scapular artery (deep branch of the transverse cervical artery if it arises from the cervical trunk), and ends in the neighbouring muscles.

**CASE REPORT**

During routine dissection for the MBBS students, we found the variation is origin of subscapular artery in 60 years old, donated embalmed male cadaver in the Department of Anatomy Indira Gandhi Medical College, Shimla, Himachal Pradesh India. In this case the subscapular artery was a branch of the second part of axillary artery {Fig.1}. Normally it is a branch of third part of axillary artery. The muscles were present anterior to the psoas major muscles and were easily distinguished.



**Fig. 1: Showing axillary artery with its branches in axillary fossa.**

### Clinical Significance

The axillary artery can be safely clamped without endangering the arm, but only in a location proximal to the origin of the subscapular artery (and distal to the thyrocervical trunk of the subclavian artery). The anastomotic network surrounding the scapula provides an alternate path for collateral circulation to the arm from arteries including the dorsal scapular artery and suprascapular artery. Also the right axillary artery is often used as an arterial cannulation site in cardiac surgery, particularly for repair of aortic dissection and replacement of the ascending aorta and aortic arch.

### DISCUSSION

The variations in the branching pattern in the axillary artery is of great use for surgeons, orthopedics as well as for anaesthesiologists. If the doctors are not aware of these variations, they might clamp the artery at a different site which may cause ischemia of the upper limb.

### CONCLUSION

Knowledge of the variations in the branching pattern in the axillary artery should aid surgeons in locating the artery as well as avoiding potentially unnecessary complications. Clinical implications which can be of importance to Surgeons, Orthopaedists, Physiotherapists, and Radiologists.

### REFERENCES

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