



THORACOACROMIAL ARTERY - AN ANATOMICAL VARIATION

Anatomy

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ABSTRACT

Introduction: The thoracoacromial artery is a vital vascular structure which supplies pectoral region and upper limb. It is continuation of the subclavian artery. Pectoralis minor muscle divides the artery into three parts. A branch from the 1st part is superior thoracic artery. 2nd part are thoracoacromial artery (further divides into pectoral, clavicular, acromial and deltoid which are at right angle to each other) and lateral thoracic artery. 3rd part gives out subscapular, anterior circumflex humeral and posterior circumflex humeral artery respectively. Anatomical variation and its branching pattern have been extensively reported, contributing to the understanding of surgical anatomy and procedures in shoulder region. **Methods:** Ten embalmed cadavers were dissected to study the thoracoacromial artery and its branches. The anatomical variations of branching pattern were observed and detailed images were captured in the left side of cadaver. **Result:** Instead of having a thoracoacromial artery on left side. I found the presence of branches of thoracoacromial artery arising separately, directly from 1st and 2nd part of axillary artery in which clavicular branch and pectoral branch share a common twig. They were analyzed and images were captured. **Conclusion:** This highlights a unique unilateral anatomical variation where the acromial artery arising from 1st part while the deltoid, pectoral and clavicular branched from 2nd part of axillary artery. Understanding this variation is essential for optimizing surgical and interventional radiological and minimizing complications like iatrogenic arterial injury during regional anaesthetic block, damage to axillary artery during shoulder arthroplasty surgeries.

KEYWORDS

Thoracoacromial artery, Axillary artery variation, Branches of axillary artery.

BACKGROUND:

Axillary artery is the main artery of the upper limb. It is the continuation of third part subclavian artery. It begins from the outer border of the 1st rib till inferior border of teres major muscle, where it continues as the brachial artery.

Pectoralis minor muscle divides the artery into three parts, which are 1st part proximal, 2nd part posterior and 3rd part distal to the muscle[1].

Branches from 1st part are superior thoracic artery. 2nd part is thoracoacromial trunk it further divides into pectoral, clavicular, deltoid and acromial, and lateral thoracic artery. 3rd part is subscapular artery, anterior and posterior circumflex humeral artery respectively[1].

As thoracoacromial artery is a vital vascular structure supplying the shoulder, pectoral region and upper limb.

Anatomical variations in its branching pattern have been extensively reported, contributing to the understanding of surgical anatomy and procedures in the shoulder region.

METHOD:

A total of ten embalmed cadavers were dissected in the department of Anatomy Government Medical College, Siddipet bilaterally by following proper steps from Cunningham's manual of dissection[2].

The clavicular head of Pectoralis major was cut and the axillary artery with its branches were dissected meticulously, traced and photographed.

RESULT:

Unilateral variation was observed in the branching pattern of axillary artery in one cadaver. In rest of the cadavers, axillary artery was normal in its course and distribution.

Absence of thoracoacromial trunk was observed and having a common twig for pectoral and clavicular branches, deltoid branch coming directly from 2nd part of axillary artery. Acromial branch coming directly from 1st part of axillary artery.

The study findings were compared with the existing literature to establish the prevalence and clinical significance of this anatomical variation.

DISCUSSION:

The branches of axillary artery show numerous variations in number, origin and distribution. Thoracoacromial artery normally branch of 2nd part of axillary artery arises as a common trunk, which further divides into pectoral, clavicular, deltoid and acromial branches.

In our study it was observed acromial branch of thoracoacromial artery is arising from 1st part of axillary artery, deltoid branch is arising separately from 2nd part of axillary artery giving a common twig for pectoral and clavicular branches. Variation in branching pattern of axillary artery is due to defect in embryonic development of axis artery of upper limb bud [3].

The unusual course may be a cause for concern to the interventional radiologist and vascular surgeons, and may lead to complications in surgeries involving the axilla and pectoral region.

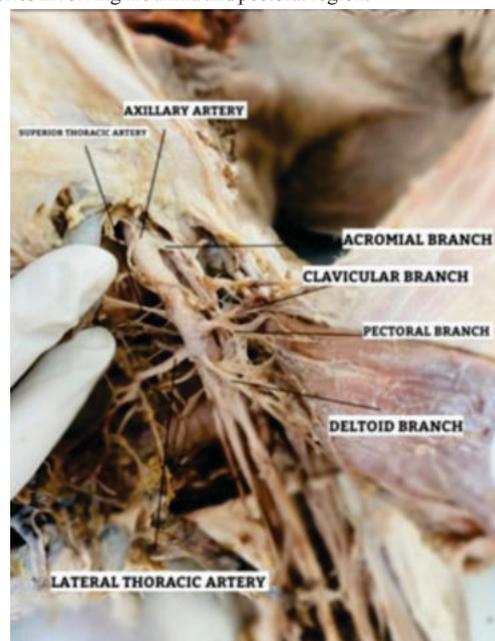


FIG-1

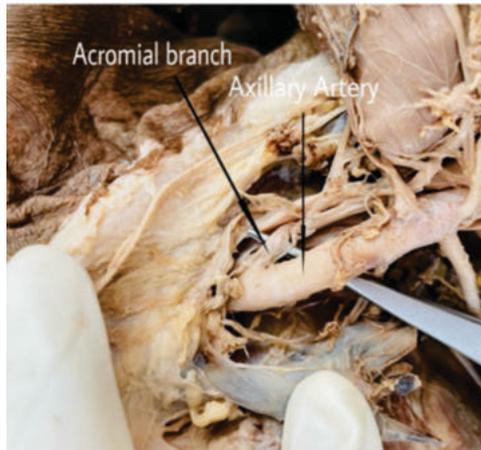


FIG-2

CONCLUSION:

- Knowledge of branching pattern of axillary artery is necessary during:
- Catheterization or cannulation of axillary artery for several procedures.
- Axillary artery thrombosis.
- Antegrade cerebral perfusion in aortic surgery.
- Reconstruction of axillary artery after trauma.
- During surgical intervention of fracture upper end of humerus, shoulder dislocation.
- Iatrogenic arterial injury during regional anesthetic block.
- Damage to axillary artery during shoulder and arthroplasty surgeries.
- Therefore both normal and abnormal anatomy of axillary artery should be well known for accurate diagnostic interpretation and surgical intervention.

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