

Anomalous branching of the axillary artery: A case report

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Abstract

We present a case regarding the anomalous branching in the third part of the axillary artery on the left side in a 35-year-old male Nepalese cadaver. In the third part the axillary artery divided into superficial brachial and deep brachial arteries. The superficial brachial artery continued in the arm without giving any branches and ended in the cubital fossa dividing into radial and ulnar arteries. The deep brachial artery gave rise to subscapular, profunda brachii, articular branch to the shoulder joint, anterior circumflex humeral artery and posterior circumflex humeral artery. This variation is very rare and incidence is around 0.12-3.2% in the available literature. The normal and abnormal anatomy of the axillary region is having practical importance for the vascular radiologist and surgeon and it should be known for accurate diagnostic interpretation.

Key words: Axillary artery, brachial artery

The axillary artery is a continuation of the subclavian artery from the outer border of the first rib and ends at the inferior border of the teres major and continues in the arm as brachial artery. The pectoralis minor muscle crosses the axillary artery and divides the artery into three parts, proximal (first part), posterior (second part) and distal (third part) to the muscle. The first part gives rise to superior thoracic artery, second part to thoracoacromial artery and lateral thoracic artery and the third part to anterior circumflex humeral, posterior circumflex humeral and subscapular arteries. This study reports a case of higher division of the axillary artery into superficial brachial and deep brachial artery which has not been reported in the Nepalese population.

Observation

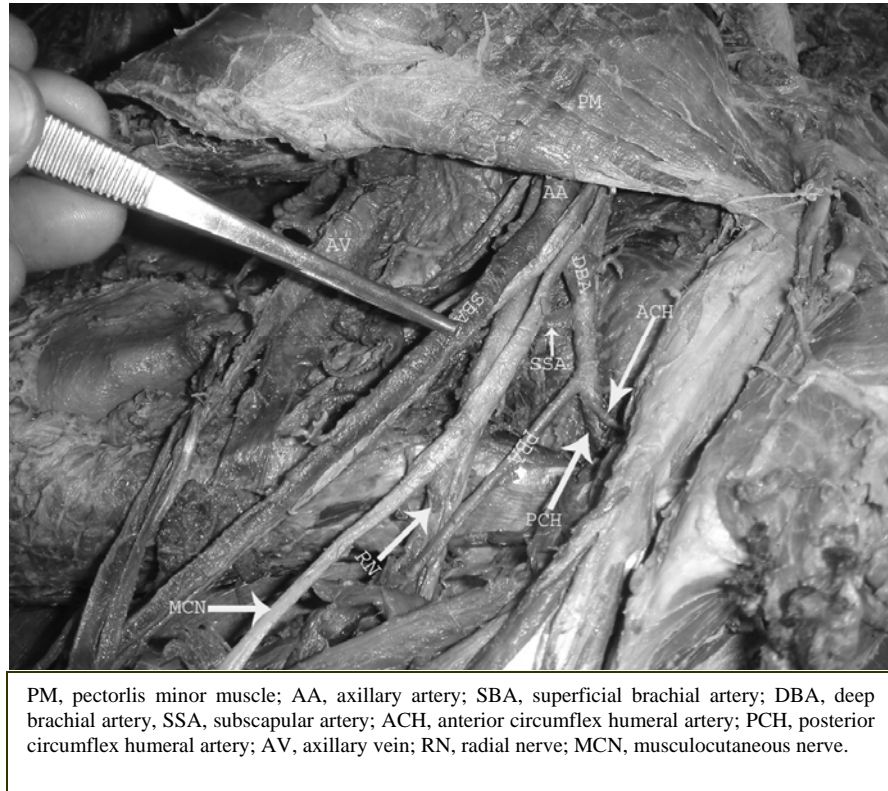
During the routine dissection OF the upper limb IN a 35 year old Nepali male cadaver, we found an unusual branching in the third part of the axillary artery on the left side. The third part of the axillary artery divided into medial and lateral trunks. The medial trunk was having higher calibre than the lateral trunk. The medial trunk is referred to as superficial brachial artery and the lateral trunk as deep brachial artery. The superficial brachial artery continued in the arm as the brachial artery proper. In the arm it has not given any branches and finally in the cubital fossa it terminated by giving rise to radial and ulnar arteries. The deep brachial artery gave rise

to subscapular, profunda brachii, articular branch to shoulder joint, anterior circumflex humeral and posterior circumflex humeral arteries. Subscapular artery coursed on the costal surface of the subscapularis muscle to the posterolateral thoracic wall. Profunda brachii artery entered the arm along with the radial nerve. Articular branch entered into the anterior aspect of the shoulder joint. Anterior circumflex humeral artery coursed deep to the coracobrachialis and the heads of the biceps brachii muscle towards the surgical neck of humerus. Posterior circumflex humeral artery entered --- the quadrangular space along with the axillary nerve. The branching patterns of the first and second part of the axillary artery are normal. The axillary vein was anteromedial to axillary artery. The cords of brachial plexus were behind the superficial brachial artery and anterior to the deep brachial artery. The branching pattern of the axillary artery was normal on the right side.

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Fig 1: A dissection showing the division of the left axillary artery in the third part into superficial brachial and deep brachial artery and the branches of the deep brachial artery and their relation with the brachial plexus



Discussion

Anomalies in axillary artery with regard to origin, course and branching are infrequent.¹ 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 axillary, brachial, radial and ulnar artery.² 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.³ The division of the axillary artery into superficial and deep stem was found to be more frequent in black persons (13.4%) than in white (4.6%).⁴ The superficial brachial artery is usually designated as the higher origin of the radial artery. However axillary artery is having two distinct variations. The high origin of the axillary artery emerges from the axillary or brachial artery and continues in the forearm as the radial artery, whereas the superficial brachial artery may or may not be a brachial artery in the sense of giving rise to radial and

ulnar arteries.⁵ This case is having unique significance because the superficial brachial artery has not given any branches during its course in the arm and there is no variation in the vascular arches of the hand. This case is very rare and incidence is around 0.1-3.2% in the available literature and is similar to that reported in a Turkish male cadaver on the right upper limb⁵. However this kind of variation has not been reported in Nepalese population as per the available literature.

Conclusion

Anomalies in the origin and course of principal arteries are having practical importance for the vascular radiologists and surgeons. In axillary approach to chronic dislocation of the shoulder joint the incision is transverse and it may injure the deep brachial artery.⁶ 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.⁷ Therefore both the normal and abnormal anatomy of the region should be well known for accurate diagnostic interpretation and therapeutic intervention.

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