

Case Report

High Division of Right Sided Axillary Artery in Female Cadaver: A Case Report

Vanitha^{1*}, Chandrika G Teli^{2*}, H.S.Kadlimatti^{3*}, Gajanand R P^{4**}

¹Tutor, ²Assistant Professor, ³Professor & Head, ⁴Lecturer,

* Department of Anatomy, ESIC Medical College, Gulbarga, Karnataka, India.

** Department of Anatomy, Sharavathi Dental College, Shivamogga, Karnataka, India.

Corresponding Author: Vanitha

Received: 14/03/2016

Revised: 28/03/2016

Accepted: 30/03/2016

ABSTRACT

High division of axillary artery was noted in right upper limb of female cadaver, during routine dissection for medical students. Artery divided 1cm below the pectoralis minor into superficial and deep branch. Superficial branch underwent a superficial course in the arm and was tortuous in cubital fossa gave radial recurrent branch, continued as radial artery. Deep branch gave subscapular, anterior and posterior circumflex humeral branches in axilla here it is enclosed by Y shaped two roots of median nerve. It continued as brachial artery in arm which gave profunda brachii, superior and inferior ulnar branches. In cubital fossa deep branch without dividing continued as ulnar artery. Anomalous origin and course of these arteries are important for the vascular radiologist and surgeon.

Keywords: Axillary artery, cardiac catheterization, pectoralis minor, subclavian artery, superficial brachial artery.

INTRODUCTION

Axillary artery, a continuation of the subclavian begins at the outer border of first rib extends to the inferior border of teres major and continues as brachial artery. The pectoralis minor muscle crosses it and divides it into three parts, first proximal to muscle second posterior to it and third distal to it. It gives superior thoracic, thoraco-acromial, lateral thoracic, subscapular, anterior and posterior circumflex humeral branches. [1]

Sometimes the Axillary divides into radial and ulnar arteries and is occasionally the source of the anterior interosseous artery. Most oftenly the radial branches arise proximally, leaving a common trunk for the ulnar and common interosseous or ulnar may arises proximally, the radial and

common interosseous forming other division. [1]

CASE REPORT

During routine dissection class for undergraduate medical students at ESIC medical college Gulbarga, Karnataka India, found division of 3rd part of Axillary artery as superficial and deep branch at the lower border pectoralis minor muscle Superficial branch continued as radial artery and deep as brachial artery

Course of Arteries

In Axilla: 1 cm below the lower border of pectoralis minor Axillary divide into two superficial branches thin in calibre ran superficial to medial root of median nerve. (Fig 1)

Deep branch gave subscapular, anterior and posterior circumflex humeral

artery and continue as brachial artery enclosed by Y shaped two roots of median nerve.

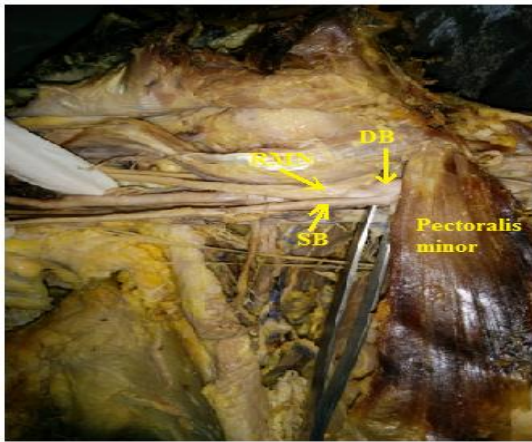


Fig 1; Shows high division of Third part of Axillary artery.SB-Superficial branch,DB-Deep Branch,RMN-Roots of Median Nerve

In Arm: Superficial branch ran downward superficial to median and deep artery.

Deep branch continued as brachial artery gave profunda brachii, superior and inferior ulnar branches.

In Cubital Fossa: Superficial branch underwent a tortuous course here (fig 2) and ran superficial to median nerve and gave radial recurrent artery, continued as radial artery. Remaining course was normal.

Deep branch or brachial artery without dividing continued as ulnar artery, which gave interosseous artery, anterior and posterior ulnar recurrent arteries branches.



Fig 2: Shows tortuous Superficial artery in cubital fossa (star) which is running superficial to median nerve and deep artery

DISCUSSION

Anomalous branching pattern of the artery can be explained embryologically. Subclavian artery enters the developing limb bud, divides into terminal branches for finger. When the embryo at 21 mm length, superficial brachial artery arises at the axillary region runs medial side of arm then to forearm and dorsum of wrist, and gives a distal branch to superficial palmar arch. At the elbow an anastomotic branch appears between brachial artery and superficial brachial enlarged sufficiently to form with the distal portion of the latter, the radial artery, as a major artery of the forearm; the proximal portion of the superficial brachial artery atrophies correspondingly. [2]

If the communicating branch between superficial brachial artery and axial artery at level of elbow fails to develop, superficial brachial artery does not disappear and continues as radial artery. On the other hand part of axial artery (distal to origin of ulnar artery) shrinks in size and ultimately it appears as if axial artery continued as ulnar artery and common interosseous arose as its branch. [3]

Normal vascular development including the patterning of the blood vessels is influenced greatly by local hemodynamic factors. Altered hemodynamic environment may give rise to variant patterning of blood vessels. [4] In this case superficial brachial artery runs superficial to bicipital aponeurosis changes the superficial relations of cubital fossa may be mistaken for vein during blood withdrawal. It may complicate intravenous drug administration and venipuncture in general and also percutaneous brachial catheterization. [5]

Tortuous course of artery in cubital fossa may be due to joint movements. Superficial course of the SBA makes the arterial grafting and cardiac catheterization easier [6] but its superficial course is more prone to injury, leading to haemorrhage and pseudoaneurysm. [7]

High division of Axillary artery is rarely seen, 1 case of high origin of radial artery from 3rd part of Axillary out of 30 cadavers, [8] 17 (3.3%) cases in 512 series of

upper extremity dissections, ^[9] (0.2%) in 480 dissections, ^[10] 1(0.12%) out of 780, ^[11] 13 (3.1%) cases in 410 axillary artery dissections were observed. ^[12] Similar case of high division of axillary artery reported before but in their case deep brachial artery joins with radial artery and superficial brachial artery divides into radial and ulnar artery. ^[13]

Abnormal branching of the axillary artery has an abnormal relationship with brachial plexus and other branches of the axillary artery. Anomalous origin and course of these arteries are important for the vascular radiologist and surgeon. Angiographic images with such vascular patterns may lead to confusion in interpretation. ^[13]

CONCLUSION

In this case we are reporting high division of Axillary artery giving high origin to radial artery, other branch as brachial and continuous as ulnar artery which is rarely seen. It is important in field of orthopaedic, radiologist and during plastic and vascular surgeries and also important for physicians for measurement of blood pressure using sphygmomanometer cuff in the arm.

REFERENCES

1. P. L. Williams, L. H. Bannister, M. M. Berry, Harold Ellis. Gray's Anatomy; The anatomical basis of clinical practice, cardiovascular system-subclavian system of arteries. 38th edn. London: Churchill Livingstone; 1995. 1537-39.
2. Singer, E. Embryological patterns persisting in the arteries of the arm. *Anatomical Record*. 1933; 55: 406-13.
3. Patnaik, V.V.G, Kalsey G, Singla, Rajan K. Bifurcation of Axillary Artery

- In Its 3rd Part - A Case Report. *J Anat. Soc. India*. 2001; 50(2): 166-169
4. González-Compta X. Origin of the radial artery from the axillary artery and associated hand vascular anomalies. *Journal of Hand Surgery*.1991; 16(2) : 293-296.
 5. Selda Yildiz, Necdet Kocabiyik, Cenk Murat Ozer. Variations associated with high division of the superficial brachial artery. *International Journal of Anatomical Variations*. 2014;7: 45-47
 6. Natsis Konstantinos , Maria Piagkou, Nikitas - Apollon Panagiotopoulos, Stylianos Apostolidis. An unusual high bifurcation and variable branching of the axillary artery in a Greek male cadaver. *Springer Plus*.2014; 3:640
 7. Jurjus AR, Correa De Aruaujo R, Bohn RC. Bilateral double axillary artery: embryological basis and clinical implications. *Clin Anat*. 1999; 12:135-140
 8. Subhash M. Gujar, Sunil G. Oza, Jaidevsingh P. Shekhawat, SanjayK. Vikani, Sweta B. Prajapati. A study on division of brachial artery and its clinical correlations. *Int J Anat Res*. 2014; 2(1):208-12.
 9. DeGaris CF, Swartley WB. The axillary artery in white and Negro stocks. *Am J Anat*.1928; 41:353
 10. Miller RA. Observations upon the arrangement of the axillary artery and brachial plexus. *Am J Anat*.1939; 64:143-163
 11. McCormack LJ, Cauldwell EW, Anson BJ. 1953. Brachial and antebrachial arterial patterns. *Surg Gynecol Obstet*. 1953; 96: 43-54.
 12. Adachii B. Das Arteriensystem der Japaner. Kyoto: Maruzen. 1928.234-237.
 13. Safiye Cavdar, Avdar, Ali Zeybek, Mehmet Bayramicli. Rare Variation of the Axillary Artery. *Clinical Anatomy*. 2000; 13:66-68.

How to cite this article: Vanitha, Teli CG, Kadlimatti HS et al. High division of right sided axillary artery in female cadaver: a case report. *Int J Health Sci Res*. 2016; 6(4):525-527.
