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A VARIANT BRANCHING PATTERN OF AXILLARY AND BRACHIAL ARTERIES – A CASE REPORT

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ABSTRACT

The axillary artery is the continuation of subclavian artery which enters the upper limb through the cervico-axillary canal. There after it continues as brachial artery which is the main source of blood supply to the arm. During the routine dissection of male cadaver of 56years in the Dissection Hall of SDM College of Ayurveda & Hospital, Udupi we observed variations such as absence of left posterior circumflex humeral artery, and a variant origin of left posterior descending artery directly from left brachial artery. These variations in vascular patterns play a vital role in the surgical procedures, management of fractures and dislocation of shoulder joint and arm region.

Keywords: Posterior circumflex artery, posterior descending artery, shoulder joint, arm.

INTRODUCTION

The axillary artery[1] begins as a continuation of third part of subclavian artery at the outer border of first rib, and ends at the lower border of teres major, where it continues as brachial artery. Branches of the axillary artery (AA) are superior thoracic artery from the first part, thoraco-acromial and lateral thoracic artery from second part, subscapular, anterior and posterior circumflex humeral artery from third part. Posterior circumflex humeral artery (PCHA) is the largest branch of third part. This artery is accompanied by axillary nerve while passing through quadrangular space, and curves laterally under cover of deltoid around the dorsal surface of surgical neck of humerus bone and anastomoses with anterior circumflex humeral artery.

The brachial artery[2] begins as a continuation of axillary artery at the distal border of teres major. Branches of the brachial artery (BA) are arteriaprofundabrachii, superior and inferior ulnar collateral artery and nutrient artery.

The arteriaprofunda brachii[3] is a large branch of brachial artery which appears in the spiral groove. In the spiral groove it gives off ascending or deltoid artery, middle collateral (posterior descending) and radial collateral (anterior descending) artery, muscular and nutrient branches. The Ascending or deltoid branch passes between the lateral and long head of the triceps and anastomoses with a descending branch of PCHA. Posterior descending artery descends through the medial head of triceps and anastomoses behind the lateral epicondyle with the interosseous recurrent artery.

AIM AND OBJECTIVES –

1. To illustrate variation in branching pattern of Axillary and Brachial arteries.
2. Comparison of different references about the branching pattern of Axillary and Brachial arteries.

MATERIALS AND METHOD

One male cadaver of 56yrs was dissected in the Dissection Hall of SDM College of Ayurveda & Hospital, Udupi.

CASE REPORT

During the routine dissection of axilla and arm region of a male cadaver of 56years in the Dissection Hall of SDM College of Ayurveda & Hospital, Udupi we observed following variations in the branching pattern of axillary and brachial artery of left upper limb. In the course of left axillary artery it was found that in the third part of AA only two branches were given out – Anterior circumflex humeral artery and subscapular artery. The posterior circumflex humeral artery was found to be absent. In the further course AA continues as BA at the lower border of teres major and below the teres major it gave off Arteriaprofundabrachii as usual. Just below the origin of Arteriaprofundabrachii, another branch was noticed and when traced it was identified as posterior descending artery (Middle collateral branch) which is originally a branch of arteriaprofundabrachii. While tracing arteriaprofundabrachii only two branches were noted – Ascending and Anterior descending artery. Posterior descending artery was found to be arising directly from brachial artery. Ascending artery, a branch of arteriaprofundabrachii was supplying the areas which were normally supplied by posterior circumflex artery in the left arm in this case.

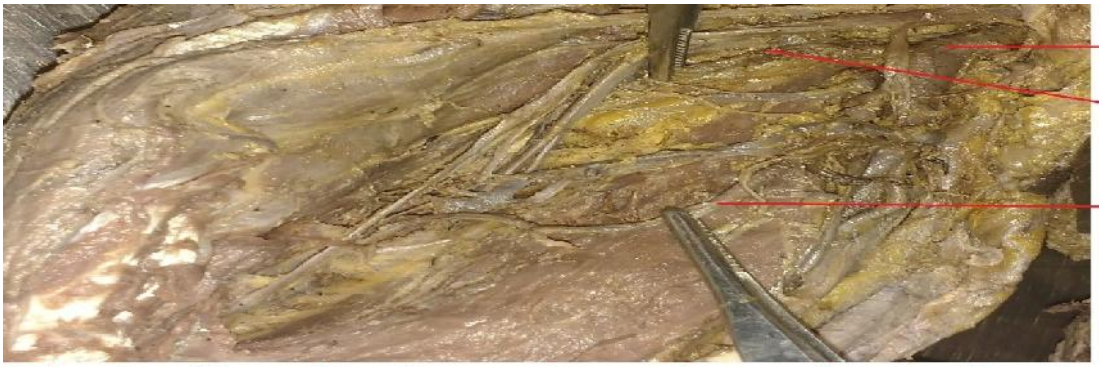

Fig 1 – Showing branches of arteria profunda brachii; 1– Arteria profunda brachii, 2– Ascending artery, 3– Anterior descending branch.

Fig 2 – Showing variant origin of Posterior descending artery; 1– Brachial artery, 2– Aretria profunda brachii, 3– Posterior descending artery.

DISCUSSION

The vascular variations in the upper extremity are fairly common and reported extensively. Among these, the reported cases of unusual branching pattern of axillary artery and arteriaprofundabrachii mimicking the present case but with exceptions are discussed herewith.

Axillary artery usually gives three branches from its third part but in this case only two branches were noted, posterior circumflex humeral artery being absent. Moreover arteriaprofundabrachii, a major branch of brachial artery appears in the spiral groove accompanied by the radial nerve. In the spiral groove the artery presents three major branches i.e. ascending, middle collateral (posterior descending) and radial collateral (Anterior ascending). In our case it was observed that left posterior descending artery directly aroused from left brachial artery which is unusual. George et al. reported the origin of a common trunk from axillary artery and giving rise to common circumflex humeral-subscapular trunk and then continuing as profundabrachii artery was observed[4]. Sawantetal reported that the axillary artery divided immediately after its commencement into 2 divisions: superficial and deep. The superficial division continued

as brachial artery and deep division performed the role of axillary artery by giving all its named branches then it continued as profundabrachii artery[5]. Samuel et al. identified a case of an abnormal arterial trunk originating from 3rd part of axillary artery giving multiple branches which are supposed to be arising from both axillary and profundabrachii arteries together. Hence, in this case, classical profundabrachii was absent[6].

The PCHA is a fairly largest branch from third part of AA, which leaves the posterior wall of axilla through the quadrangular space. It supplies the deltoid muscle and large portion of teres minor muscle, upper humeral epiphysis, rotator cuff and capsule of shoulder joint. In this case PCHA was found to be absent. The area of its supply was through the ascending branch of arteriaprofundabrachii.

Fracture of proximal part of humerus causes damage to the third part of axillary artery and its branches. Fracture at the site of radial groove causes injury to arteriaprofundabrachii and its branches, thereby causing reduction in the blood flow to the area of their supply. The persons with abnormal course of PCHA may present with symptoms of quadrangular space syndrome without actual compression in the quadrangular space[7]. So the knowledge of variations in the vascular pattern plays vital role in the surgical procedures, management of fractures and shoulder dislocations.

CONCLUSION

A great number of variations in the arterial supply of upper extremity have been described in the literature. Such anatomical variations of arteries may affect the normal blood supply. So, the knowledge of such variations is important to surgeons and clinicians in the management of disorders of shoulder and arm region.

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