

Case Study

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The Study of Anatomical Variations of Axillary Artery - A Case Report

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ABSTRACT

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There are numerous variations in the pattern of Axillary artery reported by various authors in previous studies; however, in this study more types of variations are found. The axillary artery is a direct continuation of subclavian artery extending from the outer border of first rib to lower border of teres minor. Normally the pectoralis minor divide the axillary artery into three parts. From first part, superior thoracic artery arise and from second part thoraco-acromial and lateral thoracic, and from third part, anterior circumflex humeral, posterior circumflex humeral and subscapular artery arise, but in this case, a arterial trunk is arise from the third part of right axillary artery and pass between lateral and medial root of medial nerve and divide in three branches. i.e. Ant. circumflex humeral, Post circumflex humeral and Subscapular artery and this trunk continue as profunda brachi artery along with radial nerve in radial groove. The further course and the branching pattern of profunda brachi artery were normal.

Introduction

The variation in the branching pattern of axillary artery is not uncommon (Sreenivasulu *et al.*, 2015). The variation in the branching pattern observed considerably; the common known is the subscapular artery origination from a common trunk with the posterior circumflex humeral artery. The variations in the origin of anterior circumflex humeral and posterior circumflex humeral artery are occasional whereas anomalous origin is common for profunda brachii artery (Ramesh *et al.*, 2008; Huelke, 1959). Axillary artery is the second next artery to be lacerated by violence and thus is more susceptible to diseases (Yoshinaga *et al.*, 2006). Embryologically, axillary artery

represents axial system of development together with brachial and anterior interosseous arteries (Senior, 1926). Sufficient knowledge of variant branching pattern of these vessels is important in the field of reparative surgery as well as during angioplasty procedures. The percentage incidence of presence of bilateral common subscapular-humeral trunk from 3rd part of axillary artery is 3.8% and bilateral thoracohumeral trunk is 1.9% (Saeed *et al.*, 2002). Rare case of presence of bilateral double axillary artery was reported (Jurjus *et al.*, 1999). In an alternative approach of femoral arterial cannulation, the right axillary artery is preferred in the presence of aortic or

iliofemoral diseases (Kokotsakis *et al.*, 2005). Since the axillary artery is in close relation with the cords of brachial plexus, during surgical repair of brachial plexus, it is important to have knowledge of such anomalous arterial trunk of axillary artery to prevent bleeding. Therefore, deep understanding of all possible variant branching patterns of axillary artery is useful to the cardio-vascular surgeons.

Observations

During dissection on a about 50 years old female, we noticed a variation in the branching pattern of right axillary artery. The branching patterns of its proximal two parts were normal. An arterial trunk was given off from its third part and it was passed between two roots of median nerve. The diameter of the arterial trunk was less as compared to the main artery.(fig-1).This arterial trunk gave three branches (ant. circumflex humeral, post circumflex humeral and subscapular artery) and continued as profunda brachii artery and enter in radial groove, along with radial nerve.

Further course of profunda brachii artery was normal.

Results and Discussion

The vascular variations in the upper limb are fairly common and reported extensively (Naveen *et al.*, 2014). The origin of a common trunk from axillary artery and giving rise to common circumflex humeral-subscapular trunk and then continuing as profunda brachii artery was observed by George *et al.*, which is in agreement with our case. but in our case the arterial trunk course through lateral and medial root of median nerve. The first report in literature about the origin of common trunk passing between two roots of median nerve was by Kogan and Lewinson in 1998.

Ramesh *et al.*, (2008) also observed a very similar case of common trunk like ours, including its course through the median nerve roots and giving branches of third part of axillary artery.

Fig.1 A arterial trunk arise from brachial artery and pass between two roots of median nerve



Fig.2



Fig.2 Three branches from arterial trunk—(↘) Ant circumflex humeral, (↗) Post circumflex humeral and (↔) Subscapular artery

Fig.3 Ant. circumflex humeral artery

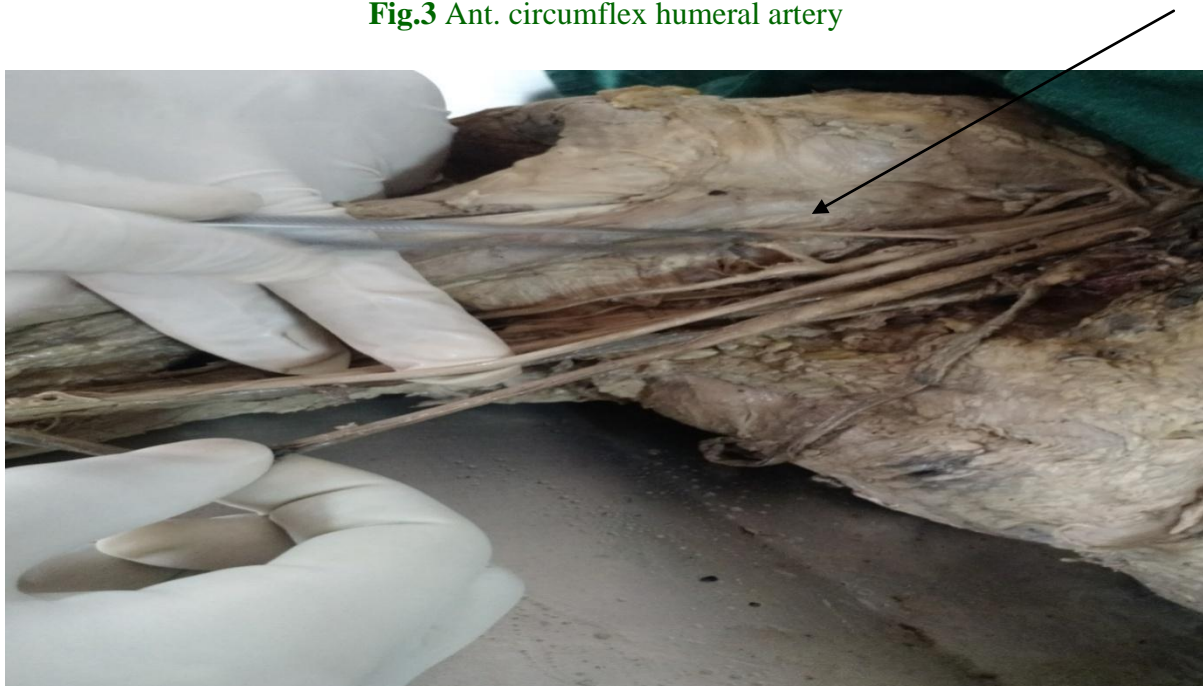


Fig.4 Post circumflex humar artery



Fig.5 Subscapular artery



Fig.6



Fig.6 Brachial artery (←) and profunda brachii artery (↖)

In another case reported by Sawant *et al.*, (2012), the axillary artery divided immediately into two divisions, superficial and deep. The superficial division continues as the brachial artery and the deep division gives all branches of the axillary artery. But in our case, the main axillary artery gives branches from its first part and second part, and branches of the third part of the axillary artery were given by the arterial trunk.

Naveen *et al.*, (2014) also observed the same arterial trunk including its course through the median nerve roots and giving branches of the third part of the axillary artery.

Bergman *et al.*, observed that the third part of the axillary artery is known to show its variant branching pattern. It includes two circumflex humeral arteries arising from a single trunk or

together with the profunda brachii or together with the subscapular artery, which is in agreement with our case. Though a lot of variations were seen in previous studies by various researchers, but our study showed few additional ones, which help in avoiding the possible diagnostic or interventional therapeutic errors.

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