

Study of lateral thoracic artery in cadaveric in Patna medical college

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Abstract

The lateral thoracic artery is a branch of the second part of the axillary artery. The lateral thoracic artery originates from the medial surface of the axillary artery, posterior to the distal part of pectoralis minor. It courses infero medially along the inferior border of pectoralis minor to the anterior surface of serratus anterior. It anastomoses with the internal thoracic and intercostal arteries as well as with the superior thoracic artery.

The study was planned on 20 cadaveric subjects. The axillae from embalmed cadavers allotted for dissection in the Department of Anatomy for duration of 3 years were used for the study. The axillary region was dissected and exposed according to the methods described in Cunningham's Manual of Practical Anatomy.

From the present study the origin of the lateral Thoracic artery was observed; as we found some variations in the origin of the lateral Thoracic artery. It arose from the 2nd part of the Axillary artery as a common trunk with thoracodorsal artery; as a branch from subscapular artery as double branch of lateral thoracic artery.

Keywords: lateral thoracic artery, axillary artery, cadaveric study, etc.

1. Introduction

The lateral thoracic artery is a branch of the second part of the axillary artery. The lateral thoracic artery originates from the medial surface of the axillary artery, posterior to the distal part of pectoralis minor. It courses inferomedially along the inferior border of pectoralis minor to the anterior surface of serratus anterior. It anastomoses with the internal thoracic and intercostal arteries as well as with the superior thoracic artery [1].

It circulates oxygenated blood towards lateral areas of the breast as well as upper thorax. Branching off via the axillary artery, the lateral thoracic tracks the pectoralis minor muscle's lower boundary. Alongside the chest, it supplies the serratus anterior muscle.

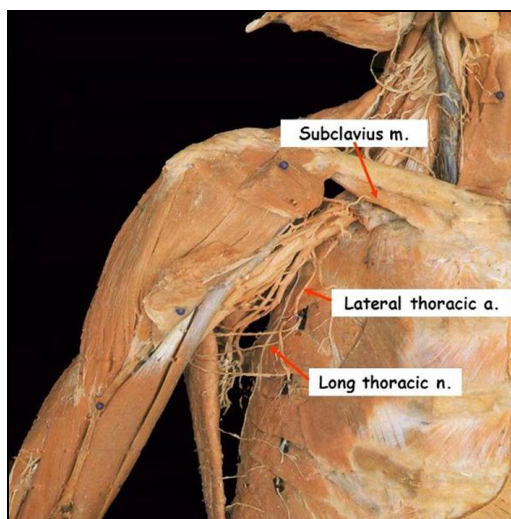


Fig 1

The lateral thoracic artery also goes by the name of the

external mammary artery. It distributes oxygenated blood to lateral regions of the breast and upper thorax. Branching off from the axillary artery, the lateral thoracic follows the pectoralis minor muscle's lower border. At the side of the chest, it services the serratus anterior muscle. The similarly named lateral thoracic vein runs along the same course. While the artery delivers oxygenated blood, the vein drains away the blood once it becomes deoxygenated. From there, the blood flows into the axillary vein, and eventually it ends up back at the lungs and heart. From there, new oxygen is introduced into the blood stream before it is re-circulated. Depending on gender, there is a slight anatomical variation with the lateral thoracic artery and surrounding blood vessels. Females require a slightly different flow and volume of blood within their chests. This relates to the fact that females possess a much more intricate system of body tissue within their breasts and mammary glands. In men, the region of the chest is mostly muscle tissue [2].

Depending upon gender, there is a small anatomical diversification with the lateral thoracic artery as well as neighboring blood vessels. Proximal part of the main trunk of axillary artery of upper limb forms the axillary and brachial arteries and its distal part, the anterior interosseous artery. Variations in branching pattern of axillary artery are due to defects in embryonic development of the vascular plexus of upper limb bud. This may be due to an arrest at any stage of development of vessels followed by regression, retention or reappearance, thus leading to variations in the arterial origin and course of major upper limb vessels. The present study was planned to study the variations of lateral thoracic artery. As this is useful during procedures of lateral aspects of the thorax such as reconstructive plastic surgery and modified radial mastectomy [3].

Methodology

The study was planned on 20 cadaveric subjects. The axillae

from embalmed cadavers allotted for dissection in the Department of Anatomy for duration of 3 years were used for the study. The axillary region was dissected and exposed according to the methods described in Cunningham's Manual of Practical Anatomy. The arterial pattern and variations of PCHA were noted down [6].

Results

The data from the 20 cadaveric subject were collected and the arterial pattern of the lateral thoracic artery were noted as given below.

Table 1: Arterial pattern of lateral thoracic artery.

Arterial Pattern	Male		Female	
	Left	Right	Left	Right
Number of Subject	15		5	
Side	Left	Right	Left	Right
II part of Axillary artery	12	12	5	2
Lateral thoracic artery + Thoracodorsal artery	2	1	0	2
Lateral thoracic artery + Subscapular artery	1	1	0	1
Double Lateral thoracic artery	0	1	0	0

Based on observations made by Trotter M and co-authors (1930), on dissections of 384 arms reported that the lateral thoracic arose from subscapular in 24, whereas in our study it was seen in 3 specimens [4]. The above table signifies that LTA was a constant direct branch from second part of axillary artery with 17 findings in our study. In a study conducted by Ming-Tzu P (1940) on 70 axillae of Chinese population made observations based on mode of origin of the branches of the axillary artery and various types were classified according to the different arrangements of its branches. Of the 20 types, Subscapular Artery with lateral thoracic artery was seen in 11.4% [5].

In a study conducted by Huelke DF (1959) [6] in 89 adult cadavers reported that, the lateral thoracic artery when variant was more often a branch of the subscapular or thoracodorsal artery similar to the variant patterns in our study [6].

Olinger A and Menninger B in their study conducted on 166 axillae found that LTA arose with TDA in 7.2 %, in our study we observed a little higher incidence of 4 cases [7]. Astik R and Dave U, in their study found lateral thoracic artery arising from subscapular artery in 16 out of 80 upper limbs (20%) which was higher compared to our study [8].

Magden O (2007) reported a case in which the lateral thoracic and thoracodorsal arteries arose together from the third part of the axillary artery as "a lateral thoracic – thoracodorsal" common trunk, similar pattern was observed in 5 specimens in our study [9].

Loukas M *et al.* observed that multiple LTAs were present in 3.09% (26 out of 420 specimens) whereas in our study we found in 1 specimens [3].

The study was carried out to show important variations in the branching pattern of lateral thoracic artery, in order to orient the surgeons performing reconstructive plastic surgery and modified radical mastectomy.

Conclusion

From the present study the most common difference noted in present study was common trunk for lateral thoracic artery and thoracodorsal artery. The variations of lateral thoracic artery is useful during procedures of lateral aspects of the thorax such as reconstructive plastic surgery and modified radical mastectomy.

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