

CASE REPORT

Axillopectoral Muscle- A Unilateral Musculotendinous Arch

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Abstract

An axillary (axillopectoral) muscle (arch) is one of the rare muscular variations in the axillary region. During routine dissections of pectoral region and axilla we found a musculotendinous band was found extending from latissimus dorsi muscle to pectoralis major muscle. Arterial, venous and nervous structures passed under this musculotendinous band which constitutes an arch in the axillary region. Although axillary arch is not very rare, it is generally neglected and not explored or described well. It has immense clinical and morphologic importance for surgical operations performed on axillary region; thus, surgeons should well be aware of its possible existence.

Key words: Axillary arch muscle, Axillary fossa, Axillopectoral muscle, Langer's axillary arch

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Introduction

An axillary (axillopectoral) muscle (arch) is one of the rare anatomic muscular variations in the axillary region. A musculotendinous band on the left axillary region that originated from latissimus dorsi to the deep surface of the tendon of pectoralis major muscle also known as Langer's axillary arch. Many variants of this muscular anomaly have been observed like muscle adhering to the coracoid process of scapula medial epicondyl of humerus, teres major, long head of tricep brachii, coracobrachialis, bicep brachi.⁽¹⁾ The most common described form of this muscle extends from latissimus dorsi to pectoralis major, the short head of bicep brachii. This variation occurs in about 7% of the population, more common among Chinese than in Caucasians and more common in female.⁽²⁾

The embryological origin of this muscle remains unclear.⁽³⁾ and some anatomists consider muscular arches of the axilla as rudimentary phylogenetic remnants of the panniculus carnosus.⁽⁴⁾ Anatomic variations of axilla are important for physicians and surgeons who perform axillary examination or surgery. Axillary arch, which crosses the axillary artery

and vein just above the region, might usually be selected for the application of a ligature, and may mislead the surgeons during the operation.⁽⁵⁾

Case Report

During routine dissection for undergraduate student of left axillary and pectoral region in a 51 year male cadaver was carried out in Department of Anatomy at Jawaharlal Nehru Medical College Sawangi (Meghe) Wardha Maharashtra. The skin, superficial fascia and deep fascia were reflected to expose the pectoral region and flexor compartment of arm. A musculotendinous band was seen which started from the anterior border of the latissimus dorsi and crossed the axilla in front of axillary vessels, cords and branches of brachial plexus. It then inserted into deep surface of the tendon of pectoralis major muscle close to humerus and give tendinous extension to pectoralis minor at its insertion on coracoids process without any interruption by any type of tendinous fibers. Its dimensions were 12 cm in length and 1.6 cm in width. It was identified as axillary arch muscle. The axillary artery, veins and nerves of the brachial plexus were lying under this muscular arch and the muscle slip was supplied

by the thoracodorsal nerve. It was located in the mid-axillary region and crossed the axillary artery at its end. The right side of the axilla was also dissected and there were no structural variations were found and thin variant muscular slip was not present.

Photographs: Langer's Axillary Arch



Discussion

Alexander Ramsay (1795) first described muscular arch variation located in axillary fossa⁽¹⁾ after which it was confirmed by Carl Langers in 1864 and known as “Langers arch”. Sachatello identified this variation as the axillopectoral muscle in 1977⁽⁶⁾ followed by Sisley in 1987⁽⁷⁾ and Turgut et al in 2005⁽³⁾. Later it was described by many authors.

Prevalence of this variation appears to be higher in dissected cadavers than surgical examinations. In Japanese, the prevalence of axillary arch is found to be 9.1%⁽⁸⁾ and 5.3%⁽⁹⁾ in two different studies on 176 and 94 body halves respectively. Prevalence of this variation in Turkish population reported as 1.9% in 26 cadavers⁽³⁾, where in Bulgarian population reported as 3.6% in 56 cadavers⁽¹⁰⁾ and in Spanish population it is reported as 3% from a study of 50 cadavers⁽¹¹⁾. This indicate that incidence of Axillary arch varies in different countries though the incidence is unknown in Indians.

Langer's arch usually is seen as a single band, but it can divide into double or, rarely, multiple structures which extend across the axilla. In its complete and common form, it arises from latissimus dorsi and inserts into the trilaminar tendon of pectoralis major on the humerus, while in its incomplete form it presents with varying insertions into pectoralis minor, coracobrachialis, long or short heads of biceps, teres major, coracoid process, first rib, axillary fascia or coracobrachialis fascia⁽²⁾ The nerve supply to this variant muscle is most commonly from medial pectoral nerve or thoracodorsal nerve.⁽³⁾

Clinical Significance

The presence of an axillary arch muscle during physical examination may be detected as a palpable mass within the axilla or a loss of the typical axillary concavity.⁽¹²⁾ It can be confused with enlarged lymph nodes or soft tissue tumor. Clinical features such as intermittent axillary vein obstruction or a finding of fullness within the axilla itself can be clinically useful but MRI scan may be required to confirm the diagnosis.⁽¹³⁾ Clinically it has been implicated in costoclavicular compression syndrome, axillary vein entrapment, median nerve entrapment,

hyperabduction syndrome, thoracic outlet syndrome and shoulder instability syndrome. (12,14)

Langer's arch is usually asymptomatic and its main importance is the confusion it can cause during routine axillary surgery for breast cancer. Although lymph node dissection for breast cancer is the most common type of surgery performed in axilla, there are surgical procedures in this area, which may be affected if Langer's arch is encountered. Access for bypass surgery using the axillary vessels may be compromised if there is failure to identify Langer's arch.⁽¹⁵⁾ Ischaemic necrosis has complicated latissimus dorsi breast reconstruction if the thoracodorsal pedicle is stretched or compressed by an unsuspected axillary arch.⁽¹¹⁾

Conclusion

This variation is important for axillary surgery, and the surgeon must recall its possible presence and must be cautious during dissection. If a muscular slip related to the latissimus dorsi muscle is present during routine axillary lymphadenectomy, it is possible that some lymph nodes could be localized posteriorly and laterally to the arch. It may also bear various surgical and medical problems such as axillary vein entrapment syndrome, development of lymph edema of the upper limb following breast surgery, upper limb neurovascular symptoms or it is likely presenting as an axillary mass, which confuses with axillary lymph nodes.

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