

# Langer's Muscular Axillary Arch- Features and its Importance

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## Abstract

Anatomical variations are common in axilla. These are usually encountered during axillary explorations for breast cancer and other surgical procedures. The most common being the presence of a muscular slip known as the axillary arch. This muscle, usually arises from the latissimus dorsi to be attached to the pectoralis major (which is more common) or to the coracobrachialis or to the fascia over the biceps brachii. This may be single or present as multiple bands and may or may not be clinically apparent. The axillary arch may cause thoracic outlet syndrome like symptoms, may pose difficulty in axillary explorations for various surgical procedures, reconstruction techniques and axillary bypass operations. The current case report is to discuss the features of this variation, with an emphasis on its surgical implications.

**Key words:** axilla, muscular slip, latissimus dorsi, pectoralis major.

## Introduction

During routine dissection conducted for the medical students, an anomalous muscular slip was found in the right axilla of a 60 year old male cadaver as shown in figure I. This slip was triangular in shape, with base attached to the latissimus dorsi and apex to the posterior aspect of pectoralis major close to its insertion, measured 7.5cm in length and 6mm in width. The muscular slip passed over the axillary neurovascular bundle. No separate nerve supplying this variant muscle was found. The axillary anatomy on the left side was normal.

## Discussion

Variant muscular slips may be present in the axilla. One arrangement of these fibres, when present in humans is in the form of an arch stretching across the axilla between the pectoralis major and the latissimus dorsi[5]. This when present, measures 7-10cm in length and 5-15mm in breadth.[6,10] It has been termed by various names like Langer's axillary arch, arcus axillaris, axillopectoral muscle or pectodorsal muscle. It has a significant frequency of 7-13% in dissecting

room specimens. This was discovered by Ramsay in the year 1795. It was Langer who described this muscle more accurately, hence the name Langer's axillary arch [1,2].

In its complete form, the muscle arises from latissimus dorsi, inserts into the tendon of pectoralis major. While in its incomplete form, it presents with varying insertions into pectoralis minor, coracobrachialis, long/short heads of biceps brachii, teres major, coracoid process, first rib, axillary fascia or the coracobrachial fascia [1]. The blood supply of the arch is derived from the lateral thoracic vessels, while the innervation is being provided by the thoracodorsal nerve, the caudal pectoral nerve or by the perforating branches of the 2nd and 3rd intercostal nerves or from the pectoral loop of brachial plexus [1,3,4]. Though a separate innervation for the arch was not found in this case, it may be through the main mass of latissimus dorsi.

Cases have been reported about this muscular anomaly during axillary dissection in cadavers and few cases were reported where this muscle was accidentally encountered during surgeries [2,7,9].

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The muscular arch when present causes difficulties in staging lymph nodes, axillary surgery, thoracic outlet syndrome, rarely shoulder instability or cosmetic problem can be a reason for axillary mass and can exert pressure on neighbouring neurovascular bundle and lymph routes [8]. Boonje described such a female patient aged 37 years, in whom the symptoms were not specific for any particular causes of obstruction of veins. Sachatello reported a similar case with intermittent obstruction of axillary vein [1].

It can cause confusion during routine axillary surgery for breast cancer. Its presence may impede the adequate exposure of true axillary fat and may limit access to the lower lateral group of lymph nodes, thus resulting in incomplete clearance of axilla [1,2].

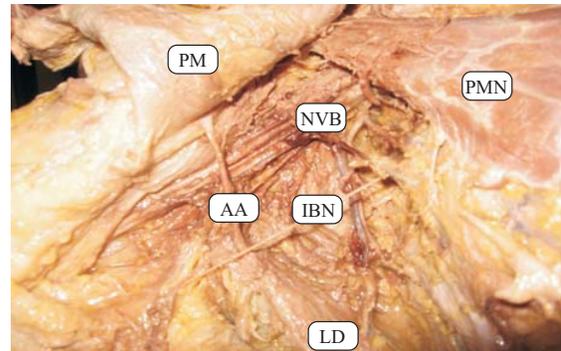
Access for bypass surgery using axillary vessels may be complicated if there is failure to identify Langer's arch. The axillary neurovascular bundle may be injured during axillary surgeries confusing the arch for the true lateral edge of latissimus dorsi. Ischaemic necrosis has complicated latissimus dorsi breast reconstruction when the thoraco-dorsal pedicle was stretched or compressed by an unsuspected axillary arch [1,2,9]. It can cause shoulder instability syndrome especially during abduction and lateral rotation of shoulder joint [8]. It can present as an axillary mass and can be confused with enlarged lymph nodes or soft tissue tumors [1].

Pre operative diagnosis of Langer's axillary arch is possible by symptoms of intermittent axillary vein obstruction which are non specific for any particular cause of obstruction, by phlebography, when there is loss of normal axillary concavity, when there is marked disparity between obvious visual fullness in the axilla and if there is difficulty in palpating axillary mass [2]. If such an arch is found during axillary lymphadenectomy, the lymph nodes posterior and lateral to the arch should be excised. Missing these nodes during axillary node dissection leads to recurrence in patients with melanoma and breast cancer and also inaccurate staging may affect diagnosis and treatment of breast cancer.

## Conclusion

The muscular axillary arch of Langer though a variation, is not uncommon. It should be kept in mind in differential diagnosis of thoracic outlet syndrome and axillary masses. Knowledge of this muscular slip is essential while performing surgeries in the axillary region, whether for lymphadenectomy or for bypass surgeries.

Figure I Dissection of axilla showing axillary arch



PM- Pectoralis major, LD- Latissimus dorsi, AA- Axillary arch, NVB- Axillary neurovascular bundle, PMN- Pectoralis minor, IBN- Intercostobrachial nerve.

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