An unusual axillary arch and its associated clinical implications: A case report

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Abstract

Introduction

The axillary arch, also known as Langer's muscle or the axillopectoral muscle is a rare muscular anomaly of the axilla. It is described as a thin muscular slip extending usually from the latissimus dorsi to the pectoralis major.

Case Report

During routine dissection classes for undergraduate students in the Department of Anatomy, Kasturba Medical College, Manipal, an anomalous axillary arch was observed in the left upper extremity of a 55-year-old male cadaver. Muscular slips arising from the lateral edge of the latissimus dorsi muscle were blending with the deep fascia covering the pectoralis major muscle and the deep fascia of the arm. Interestingly the upper and lower fibers of the muscle exhibited a twisted pattern and were much bulkier unlike the cases reported so far.

Discussion & Conclusion

Although the existence of the axillary arch is not very rare, it is generally neglected and not explored or described well. It has immense morphological and clinical importance in axillary surgeries, axillary vein entrapment syndrome, neurovascular complaints of the upper limb etc.

Introduction

The axillary arch (AA), also known as Langer’s muscle or the axillopectoral muscle is a rare muscular anomaly of the axilla. The most commonly described form of this muscle extends from latissimus dorsi to pectoralis major, the short head of biceps brachii or to the coracoid process of the scapula.

Many other variants of this anomaly have also been observed like the muscle adhering to the coracoid process of the scapula, medial epicondyle of the Humerus or blending with the fibers of teres major, long head of triceps brachii, coracobrachialis and pectoralis minor.\textsuperscript{1} Existence of the axillary arch has evoked greater interest due to the increasing surgical importance of the axilla during surgery for breast cancer, reconstruction techniques and axillary bypass operations.\textsuperscript{2}

Case Report

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On reflection of the pectoralis major and minor during the dissection of the axilla, the axillary arch was observed. Nearly one-third of the fibers arising from the lateral edge of the Latissimus dorsi muscle were forming the axillary arch. The remaining two-thirds of the muscle fibers had a normal insertion in the intertubercular sulcus. The neurovascular structures of the axilla were thus covered by the axillary arch.

Interestingly, the axillary arch was bulkier and showed twisting of the fibers. The lower fibers arched upwards and were blending with the fascia covering pectoralis major muscle while the upper fibers arched downwards and were then continuous with the deep fascia of the arm. The nerve supply when traced was provided by the thoracodorsal nerve. No other additional variations were observed in the axilla (Figure 1).

Discussion

The axillary arch (AA) was first identified by Ramsay and later described by Langer (Langer’s arch).\textsuperscript{3} It has also been previously described as aschelsbogen, axillopectoral muscle, pectodorsal muscle or arcus axillaris.\textsuperscript{4} It is a variation of the axilla with a reported occurrence of 7-8%.\textsuperscript{2} Variations in this muscle typically involve a bidirectional slip with one origin and one insertion. Few cases have been described where the muscle’s connections are more complex, inserting at multiple sites.

The AA may arise from the latissimus dorsi muscle, either directly or indirectly with an interposed tendon. An origin of AA from the serratus anterior muscle has also been reported. The most common insertion of AA is as a single muscular band into the muscles including pectoralis major and minor, coracobrachialis, short head of biceps brachii or teres major. Insertion into the coracoid process of the scapula or to the neighboring axillary or brachial fascia was also reported.\textsuperscript{5}

The present case showed a bulkier and twisted axillary arch with the lower fibers blending with fascia covering the pectoralis major muscle while the upper fibers descended and were further continuous with the deep fascia of the arm i.e., brachial fascia. This observation is rare and is not reported so far.

The embryological derivation of the AA remains unknown, but the most reliable theory suggests its origin from the panniculus carnosus. A possible genetic basis has also been pointed out by Aziz (1980) who found it bilaterally in a patient of trisomy 13.\textsuperscript{3} The axillary arch is usually supplied by the medial pectoral nerve, suggesting that it is derived...
from the pectoral muscles. However when it is closely associated with the latissimus dorsi, it can also receive its nerve supply from the thoracodorsal nerve. The perforating branches of the second, third and sixth intercostal nerves and the medial cutaneous nerve of the forearm may also innervate this anomalous arch. In the present case, as the axillary arch was arising from the latissimus dorsi, the nerve supply was provided by the thoracodorsal nerve.

AA may be palpable during routine clinical examination when, presenting as an axillary mass, it can be confused with enlarged lymph nodes or soft tissue tumors. Its presence may lead to confusion in staging the lymph nodes. Daniels et al had stated about the axillary arch encountered during a routine axillary lymphadenectomy for breast carcinoma in Royal Marsden Hospital. The arch covered a small group of lateral axillary lymph nodes as it coursed over the axillary vein. Missing these nodes during axillary node dissection predisposes to local recurrence in patients with melanoma and breast cancer and also inaccurate staging information could negatively affect systemic treatment decisions for breast cancer after surgery. Additionally it may also lead to the injury of the axillary vessels and brachial plexus if unrecognized before surgery because of possibility of mistaking the arch for the true lateral edge of the latissimus dorsi muscle.

Clinically it has also been implicated in costoclavicular compression syndrome, axillary vein entrapment, median nerve entrapment, hyperabduction syndrome, thoracic outlet syndrome and shoulder instability syndrome. AA is usually asymptomatic and its main importance is the confusion it can cause during routine axillary surgery for breast cancer. Surgeons operating on the axilla should be aware of the possible variations of the AA. When present, AA should always be accurately identified and formally divided to allow adequate exposure of axillary contents to achieve a complete dissection and preserve vascular, lymphatic and nervous structures.

Therefore awareness of the existence of the axillary arch and its attachments is important. As in the present case wherein the AA was bulkier and showed twisted arrangement of the fibers, it could be involved in different pathologies and compression syndromes and a simple excision of this muscle may be proved effective.

References


Figure 1: Showing an anomalous axillary arch (AA) in the left upper extremity. The pectoralis major (P. maj) and minor (P. min) muscles are reflected to expose the contents of the axilla. Nearly one-third of the fibres arising from the Latissimus dorsi (LD) formed the axillary arch covering the underlying neurovascular structures of the axilla (ANVB). The remaining two-thirds of the muscle fibres had a normal insertion in the intertubercular sulcus. The axillary arch further showed a twisting pattern with the lower fibres arching upwards and blending with the fascia covering pectoralis major muscle (P. Maj) (represented by *) while the upper fibres arched downwards and were continuous with the deep fascia of the arm (DFA) (indicated by arrow). BB: biceps brachii.

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