



Fullness in the left axilla—answer: Langer’s axillary arch

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Published online: 21 May 2020
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Diagnosis

Langer’s axillary arch

Discussion

MRI shows two slips of muscle arising from the anterior margin of the left latissimus dorsi muscle, one running inferiorly and connecting to pectoralis major and another thicker slip running superiorly to coracobrachialis (Figs. 1 and 2). The latter crosses antero-inferior to the axillary neurovascular bundle without any compression or displacement. No other abnormality is identified, and the features are consistent with Langer’s axillary arch.

This anatomical variant described by Ramsey in 1795 and Langer in 1894 is an accessory muscle connecting the latissimus dorsi to various structures of the antero-superior humerus by crossing the axilla [1, 2]. The latissimus dorsi remains of constant origin but has various insertions, usually the pectoralis major muscle, coracoid process, short head of biceps tendon or coracobrachialis [3]. The muscle slip can vary in shape and size, but has two main forms. This includes direct continuation of the latissimus dorsi muscle fibres (type 1-muscular), origin at the latissimus dorsi tendon (type 2-fibrous) or a combination of the two [3, 4]. In our case, the arch showed a clear myotendinous origin. It is usually seen as a single bi-directional band but can divide into a double- or multi-band structure extending across the axilla. Most cases are bilateral but can be unilateral [3].

Clinically, the arches are described as superficial or deep to the axillary neurovascular bundle coursing from dorsomedial to ventrolateral. Superficial arches cross anterior to the neurovascular bundle with possible intermittent obstruction of the axillary vein [3]. The deep group crosses posterior or laterally. Here, the arch may only partly cross the axillary neurovascular bundle or median/radial nerve [3]. It is crucial to note the relationship of the arch to the bundle, especially in cases of axillary surgery or breast reconstruction. Recognition prior to surgery has been reported to help prevent excessive bleeding, nerve damage and lymphatic disruption [5].

Even though imaging may not show direct compression, Langer’s arch becomes taut in abduction possibly causing axillary neurovascular compression which resolves on adduction [6]. Arch-related upper limb deep vein thrombosis in the proximal axillary vein has also been described [7]. Further clinical consequences of misdiagnosis include mistaking it for a tumour, obscuring palpation and imaging of lymph nodes, and missing the underlying cause of costo-clavicular syndrome, thoracic outlet syndrome or brachial plexus impingement [5]. As most arches cross anteriorly in the axilla, the median nerve branch of the brachial plexus is most likely to be affected producing symptoms in the anterior forearm musculature or lateral aspect of the hand [8].

Langer’s arch has a reported prevalence of 6% on shoulder MRI, but can be difficult to identify depending on the sequences acquired and muscle thickness [8]. Sagittal or coronal oblique sequences are usually best for visualisation as the entire course of the muscle slip is included. The arch is usually not seen on STIR sequences due to poor contrast between muscle and surrounding fat [8]. If symptomatic, surgical division of the band can be undertaken with a few reports highlighting resolution of neurological symptoms following arch excision [9].

The case presentation can be found at doi:10.1007/s00256-020-03466-0.

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Fig. 1 **a, b** Coronal T1W TSE MR images of the left axilla showing the axillary arch (arrow, **a**) splitting into cranial and caudal components (arrows, **b**)



Fig. 2 Axial PDW FSE MR images through the left axilla from cranial to caudal showing **a** the cranial attachment extending to coracobrachialis (arrow), **b** the axillary arch (arrow), **c** its origin from the latissimus dorsi (arrow), and **d** its origin from the latissimus dorsi (arrow) and the caudal attachment to pectoralis major (arrowhead)



Compliance with ethical standards

Conflict of interest The authors declare that they have no conflicts of interest.

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