Long brachioradialis muscle: A case report
SD Shetty¹, SB Nayak¹*, V Madhav¹, A Padavinangady¹, CS Braganza²

Abstract
Introduction
The brachioradialis muscle originates from the upper part of the lateral supracondylar ridge of the humerus. Variations in its origin are very rare. The aim of this case report is to inform anatomists and clinicians about the presence of an unusually long brachioradialis muscle and about its clinical implication.

Case report
We observed the presence of a very long brachioradialis muscle in the left upper limb of an adult male cadaver. The brachioradialis muscle took its origin from the entire length of the lateral supracondylar line and merged with the insertion of the deltoid muscle. Posteriorly some of the deltoid fibres continued into the brachioradialis muscle and anteriorly fleshy fibres of the brachialis muscle directly continued with brachioradialis muscle.

Conclusion
The knowledge of such a type of variation is important for anatomists, surgeons and orthopaedicians.

Introduction
Brachioradialis is one of the muscles of the forearm that flexes the arm at the elbow and helps in supination and pronation. It is the most superficial muscle along the radial side of the forearm. It forms the lateral border of the cubital fossa. It arises from proximal 2/3 of the lateral supracondylar crest of the humerus and from the anterior surface of the lateral intermuscular septum.

The muscle fibres end above the mid forearm level in a flat tendon which inserts on the lateral side of the distal end of the radius, just proximal to the styloid process¹. Sometimes, an additional head of brachioradialis arises from the lower part of the brachialis muscle².

The brachioradialis muscle is often fused proximally with brachialis. Its tendon may divide into two or three separately attached slips. In rare instances it is double or absent. Its radial attachment may be much more proximal than the base of the styloid process. Presence of brachioradialis accessorius is one of the very rare muscular variations of the brachioradialis muscle³.

The aim of this report is to bring awareness among the surgeons about possibility of such an additional muscle which can be used in muscle grafts.

Case report
During routine dissection classes for undergraduate medical students, we noted a very long brachioradialis muscle in the left upper limb of an adult male cadaver.

The brachioradialis muscle took its origin from the entire length of the lateral supracondylar line and merged with the insertion of the deltoid muscle. Some of the deltoid fibres continued into the brachioradialis muscle (Figure 1 and Figure 2).

Anteriorly some fleshy fibres of the brachialis muscle directly continued with the brachioradialis muscle. Distally, the muscle formed the lateral boundary of the cubital fossa and its tendon was inserted to the base of the styloid process of the radius. It was supplied by a branch of the radial nerve. There were no other notable variations in the limb.

Discussion
Proper knowledge of muscular variations is essential not only for anatomists but also for surgeons. Such muscular variations may lead to errors in both diagnosis and treatment. In the present case the brachioradialis muscle

*Corresponding author
Email: nayakathsish@gmail.com

¹ Melaka Manipal Medical College (Manipal Campus), Manipal University, Manipal, Karnataka State, INDIA
² Research Institute, Nationwide Children’s Hospital Center for Gene Therapy, Neuromuscular Division Columbus, OHIO

Figure 1: Dissection of the left upper limb (anterolateral view) showing the long brachioradialis (BR) muscle. Note its high origin and fusion with the deltoid (D). Biceps brachii (B), brachial artery (BA) and common extensor tendon (CET ) can also be seen.
took its origin from the entire length of the lateral supracondylar line and merged with the insertion of the deltoid muscle. Some of the deltoid fibres continued into the brachioradialis muscle. Anteriorly some fleshy fibres of the brachialis muscle directly continued with the brachioradialis muscle.

Brachioradialis and inferolateral part of the brachialis have a common origin. Some authors consider the inferolateral part of the brachialis as a detached portion of brachioradialis. In the current case separation between the two muscles has not occurred which is seen as a fibromuscular band between the two. Fating and Salvé reported a case of a third head of the biceps brachii and coexisting fused higher origin of brachioradialis.

Brachioradialis is chiefly a shunt muscle, it acts mainly along the long axis of the forearm to provide centripetal or shunt force at the elbow joint. Shunt muscles are considered as good stabilising muscles, because their proximal attachment lies near the joint they act over and their distal attachment lies at a greater distance away from the joint.

George and Nayak have reported a case where a few fleshy fibres from brachialis merged with brachioradialis and other superficial flexor of the forearm over an oblique course. Some of the fibres were inserted on the medial aspects of the olecranon process of the ulna. The additional slip of brachialis may mechanically stabilize the ulnocubital joint. It can cause compression neuropathy of the median nerve and vascular compression symptoms due to entrapment of the brachial artery. Nair et al. found additional muscle fibres of brachioradialis with anomalous high origin and entrapment of the radial nerve in an osseomuscular canal.

The anomalous fleshy fibres in their case were attached proximally to the middle part of the shaft of the humerus, close to the insertion of the deltoid. Some of its fibres continued further up to the acromion process of the scapula. These fibres passed downwards along with the deltoid and joined the fibres from the humerus before getting merged with the brachioradialis distally.

These additional muscle fibres were compared with the brachioradialis accessories. Brachioradialis muscle is often fused proximally with brachialis; its tendon may divide into two or three separately attached slips.

Mongotra et al. found a variation in the insertion pattern of the Brachialis muscle on the left side which beside its usual insertion was inserted as a thick muscular slip to the origin of Brachioradialis. So, a fibromuscular tunnel was formed between the insertion of the Brachialis and origin of Brachioradialis.

The brachioradialis muscle is utilized in tendon-transfer operations to restore impotent hand functions, such as the ability to grasp and pinch, one which lost in the cervical part of the spinal cord, brachial plexus or peripheral nerve injuries.

Transfer of the brachioradialis tendon is also performed for correction of various deformities in spastic cerebral palsy.

The anatomical variations of the muscles of the upper limb have become important because of new imaging techniques, such as magnetic resonance imaging and computed tomography.

**Conclusion**

The knowledge of the variations reported here may be of great importance to radiologists and orthopaedic surgeons. The high origin of the brachioradialis in the current case may give added advantage to the muscle to act on the elbow joint in addition its actions on radioulnar joints.

**References**

5. Macconnaill MA. The movements of bones and joints; function of the


