

# Bilateral Additional Slips of Triceps Brachii Forming Osseo-Musculo-Fibrous Tunnels for Ulnar Nerves

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## Abstract

Rare additional slips of triceps brachii muscle was found bilaterally in a sixty two year old South Indian male cadaver during routine dissection of upper limb for undergraduate students at Melaka-Manipal Medical College, Manipal University, Manipal, India. On left side, the variant additional muscle slip took origin from the lower part of the medial intermuscular septum about 4 cm proximal to the medial humeral epicondyle. From its origin, the muscle fibres were passing over the ulnar nerve and were joining the triceps muscle to get inserted to the upper surface of olecranon process of ulna. On right side, the additional muscle slip was larger and bulkier and was arising from the lower part of the medial border of the humerus about 4 cm proximal to the medial epicondyle in addition to its attachment to the medial intermuscular septum. On both sides, the additional slips were supplied by twigs from the radial nerve. On both sides, the ulnar nerve was passing between variant additional slip and the lower part of the shaft of the humerus in an osseo-musculo-fibrous tunnel. Such variant additional muscle slips may affect the function of triceps muscle and can lead to snapping of medial head of triceps and ulnar nerve over medial epicondyle and also can dynamically compress the ulnar nerve during the contraction of triceps leading to ulnar neuropathy around the elbow.

**Keywords:** Cubital tunnel syndrome, Nerve entrapment, Snapping triceps syndrome, Triceps brachii, Ulnar nerve

## Introduction

Triceps brachii is a muscle of posterior compartment of the arm having medial, long and lateral heads and is an extensor of forearm at elbow joint. Its long head originates from the infraglenoid tubercle of the scapula, the lateral head from the area above to the radial groove of the humerus along with lateral intermuscular septum and the medial head from the area below to the radial groove and medial intermuscular septum. It is inserted on the upper surface of olecranon process of ulna and is supplied by radial nerve.<sup>[1]</sup> Variations of triceps muscle are common. The present case is unique as it is bilateral and the variant additional slip is overlapping the ulnar nerve.

## Case Report

During routine dissection for undergraduate students at department of anatomy, at our institution, we observed bilateral variation of triceps muscle in a South Indian male cadaver of a 62 year old. On left side, the variant additional slip of triceps muscle took origin from the lower part of the medial intermuscular septum, about 4 cm proximal to the medial epicondyle. From its origin, the muscle fibres were passing over the ulnar nerve and were joining the triceps muscle to get inserted on the upper surface of olecranon process of ulna [Figure 1]. On right side, the additional slip was larger and bulkier and in addition to its attachment to the medial intermuscular septum, it was arising from the lower part of the medial border of the humerus about 4 cm proximal to the medial epicondyle and then joined the triceps muscle, to get inserted on the upper surface of olecranon process of ulna [Figure 2]. The additional slips on both sides were supplied by twigs from the radial nerve.

On both sides, the ulnar nerve was passing between variant additional slip, medial intermuscular septum and the lower part of the shaft of the humerus in an osseo-musculo-fibrous

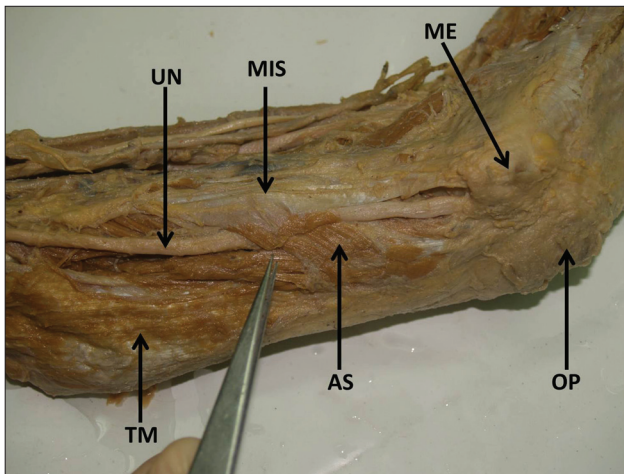
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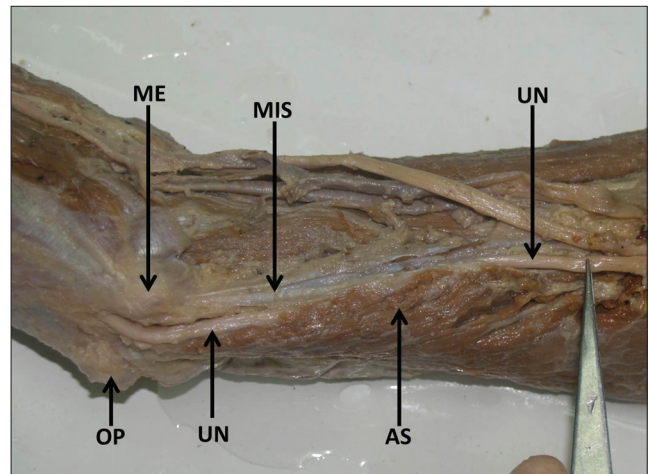


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**Figure 1:** Dissection of Left arm showing the additional slip of triceps brachii (AS) taking origin from medial intermuscular septum (MIS) and joining the other heads of triceps brachii, overlapping the ulnar nerve (UN) creating an osseo-musculo-fibrous tunnel for the nerve. (ME-medial epicondyle; OP-olecranon process; TM-Triceps brachii muscle)



**Figure 2:** Dissection of right arm showing the additional slip of triceps brachii (AS) taking origin from MIS and lower part of medial border of humerus joining the other heads of triceps brachii. UN passing through an osseo-musculo-fibrous tunnel formed by the additional slip is also seen. (ME-medial epicondyle; OP-olecranon process)

tunnel and then was passing behind the medial epicondyle of humerus to enter the forearm [Figures 1 and 2].

## Discussion

There are few reports available on additional heads of triceps brachii.<sup>[2-5]</sup> Nayak *et al.*, have reported a case of unilateral fourth head of triceps brachii along with fourth head of biceps brachii.<sup>[2]</sup> Tubbs *et al.*, reported similar case in which fourth head of triceps brachii originated from posterior aspect of surgical neck of the humerus.<sup>[3]</sup> Fabrizio and Clemente have reported additional head of triceps which originated from proximal part of humerus.<sup>[4]</sup> There are reports by Cheema and Singla about the fourth head of triceps brachii originating from the posteromedial aspect of humerus just below the surgical neck.<sup>[5]</sup> The ‘Struthers arcade’ is a thin ligamentous structure or a thickening of the brachial fascia or muscle fibers of the medial head of the triceps muscle which extend to the medial intermuscular septum or a combination of above.<sup>[6]</sup> The additional slips of triceps observed in the present case are different from the ‘Struthers Arcade’ as these slips are derived from intermuscular septa and are merging with triceps muscle to get inserted on the upper surface of olecranon process of ulna. In addition, these additional slips are distinct, prominent and bulky. When compared to previous reports, the present case is unique as the fourth head (additional slip) originates from medial intermuscular septum and overlaps the ulnar nerve and is bilateral. Additional slip may affect the function of triceps muscle in terms of its contractile power and direction of pull. Contraction of the additional slip might pull triceps medially resulting in snapping of triceps muscle over the medial epicondyle along with ulnar nerve, resulting in a condition called “snapping triceps syndrome”.<sup>[7-9]</sup> It has been reported that the ulnar nerve can get dynamically compressed during its course through the passage in between

the epitrochleoanconeus muscle and a prominent medial head of the triceps muscle.<sup>[10,11]</sup> There are also reports of abnormal insertion of medial head of triceps muscle leading to symptoms similar to cubital tunnel syndrome.<sup>[12]</sup> In the present case, compression of ulnar nerve can occur as it is passing in an osseo-musculo-fibrous tunnel leading to ulnar neuropathy around the elbow and clinical condition which may mimic the “cubital tunnel syndrome”.

## Conclusion

Though the additional heads of triceps brachii are reported before, seldom they are bilateral. Such additional slips may cause “snapping triceps syndrome” and may dynamically compress the ulnar nerve at the level of distal humerus leading to ulnar neuropathy around the elbow.

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