

## MORPHOLOGICAL STUDY

# Co-existence of superficial ulnar artery and aneurysm of the deep palmar arch in the hand

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**Abstract:** During routine anatomy dissection classes for undergraduate medical students, an unilateral case of superficial ulnar artery (SUA) in a 75-year-old male human cadaver arising from the third part of the right axillary artery at the junction of the two median nerve roots was observed. In the hand, the SUA coursed over the flexor retinaculum and anastomosed with the superficial palmar branch of the radial artery to form the superficial palmar arch. After the origin of the SUA, the axillary artery continued as the brachial artery, which was divided into radial and common interosseous arteries at the neck of the radius. The normal ulnar artery was absent. In the same cadaver, a thin walled dilatation was seen on its palmar aspect at the base of the 1st metacarpal bone (Fig. 2, Ref. 11). Full Text (Free, PDF) [www.bmj.sk](http://www.bmj.sk).

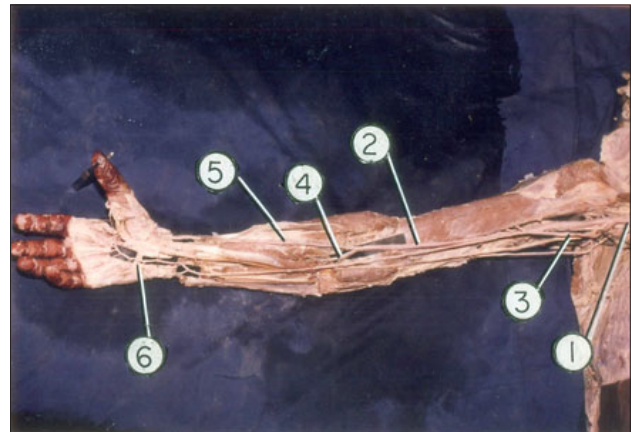
Key words: axillary artery, superficial ulnar artery, deep palmar arch, aneurysm.

Although, variations of the upper limb arterial pattern are fairly common, the presence of a superficial ulnar artery (SUA) of high origin, such as one from the axillary artery, is considered a rare anatomical variation for orthopaedic, breast and plastic surgeons (1, 2). This report presents an unusual association of unilateral SUA with the aneurysm of deep palmar arch. The clinical significance of the above variation is also described in this paper.

## Case report

During anatomical dissection at our department, a unilateral case of SUA in a 75-year-old male human cadaver arising from the third part of the right axillary artery at the junction of the two median nerve roots, 8 mm proximally to lower border of the teres major muscle was observed. The SUA followed a looped course, crossing over the lateral root of the median nerve in the upper and middle thirds of the arm close to the biceps brachii muscle and gave branches to this muscle (Fig. 1).

In the inferior third of the arm, the SUA crossed over the median nerve, running lateral to it. In the cubital fossa the SUA passed superficially over the medial aspect of the ulnar aponeuro-



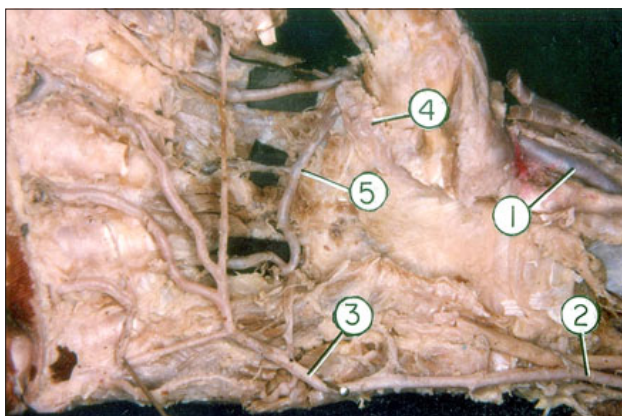
**Fig. 1.** Showing the origin of superficial ulnar artery from the third part of axillary artery. 1 – axillary artery; 2 – brachial artery; 3 – superficial ulnar artery; 4 – common interosseous artery; 5 – radial artery; 6 – superficial palmar arch.

sis and coursed subcutaneously over the antebrachial fascia in the ulnar side of the forearm superficially to the forearm flexor muscles (Fig. 1).

In the hand, the SUA coursed over the flexor retinaculum and anastomosed with the superficial palmar branch of the radial artery to form the superficial palmar arch. After the origin of the SUA, the axillary artery continued as the brachial artery, which was divided into radial and common interosseous arteries at the neck of the radius. The normal ulnar artery was absent. In the same cadaver, the radial branch took its usual course and formed the deep palmar arch. A thin walled dilatation (aneurysm) measuring 1cm x 3.5 cm, was seen on its palmar aspect at

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**Fig. 2.** Showing the aneurysm of deep palmar arch in the hand. 1 – radial artery; 2 – superficial ulnar artery; 3 – superficial palmar arch; 4 – aneurysm; 5 – deep palmar arch.

the base of the 1st metacarpal bone (Fig. 2). It traversed deep to the superficial slip of flexor retinaculum and was closely related to the flexor pollicis longus.

### Discussion

Apart from the anatomical rarity of a SUA branching from the axillary artery, the persistence of such vessel is clinically important (2–6). A SUA may complicate intravenous drug administration, venipuncture in general and percutaneous brachial catheterization (2–7). Owing to its superficial course, it is more prone to injury, results in bleeding (2, 4, 8). Additionally, the artery may be mistaken for a vein and then for phlebitis (9), or near the lower end of the forearm it might be mistaken for a persistent median artery (10). Its superficial course makes it more accessible to cannulation (2, 4). Furthermore, the presence of a SUA complicates surgical procedures, such as the preparation of a free forearm flap with neurosensory potential (3–6, 8) and radial artery grafting for coronary bypass (11). In cases where the SUA replaces the ulnar artery, such as that reported by us, its accidental injury during surgical procedures can result in serious ischaemia of the forearm. However, all the above disastrous results can be avoided, when a surgeon diagnoses this anatomi-

cal variant preoperatively. The association of aneurysm with abnormal arterial pattern poses a serious problem to the clinicians demanding a more extensive investigation of the patient prior to surgery in case of injuries to the hand. The aneurysm observed might be due to inadvertent injury to arteries during operative procedures, or due to implanted hardware. The association of SUA with deep palmar arch aneurysm is unique to the best of our knowledge.

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