Multiple Arterial Variants

Common interosseous artery arising from the radial artery and ulnar artery origin from proximal brachial artery

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ABSTRACT

The normal ulnar artery originates from the brachial artery in the cubital fossa. The high origin ulnar artery is a rare anatomic variation. Anatomic variations in the arteries of the upper extremities have been reported by different authors. It is significant for surgeons and radiologists to be aware of the possible arterial variations in order to hinder complications during surgical and diagnostic procedures. This report demonstrates an anomalous origin of the ulnar artery from the proximal brachial artery.

Key words:*Ulnar artery, anatomic variation, proximal brachial artery*

Proksimal Brakial Arterden Köken Alan Ulnar Arter

ÖZET

Normal ulnar arter kübital fossada brakial arterden köken alır. Yüksek ayrım gösteren ulnar arter nadir bir anatomik varyasyondur. Üst ekstremite arterinin anatomik varyasyonları birçok yazar tarafından rapor edilmiştir. Cerrahlar ve radyologlar açısından olası arter varyasyonlarının belirlenmesi cerrahi ve tanısal prosedür deki komplikasyonlar açısından önem arz etmektedir. Bu olguda proksimal brakial arterden köken alan anormal orijinli ulnar arter gösterilmiştir.

Anahtar kelimeler*: Ulnar arter, anatomik varyasyon, proksimal brakial arter*

INTRODUCTION

The normal ulnar artery originates from the brachial artery in the cubital fossa, crosses deep under the median nerve and passes obliquely downward and medialy, covered by the pronator teres, flexor carpi radialis, palmaris longus and flexor digitorum superficialis muscles in the proximal half of the forearm. Then, in the distal half of the forearm, it proceeds between the flexor carpi ulnaris and flexor digitorum superficialis muscles, being covered by the skin, and ends at the wrist (1,2). The high origin ulnar artery is a rare anatomic variation (0.7 to 9.38% according to the authors) but is well-known by anatomists and surgeons. It originates from the brachial artery or, more rarely, from the axillary artery in the arm, it runs on the medial or possibly ventral side of the neurovascular bundle (3-7). Many authors have published different series or reports about arterial anomalies of the upper extremities. This report demonstrates an anomalous origin of the ulnar artery from the proximal brachial artery.

CASE

As a left hand the absent radial pulse was suspected, a 50-year-old female was applied to upper extremity angiography. For this aim the left subclavian artery was catheterizatied through transfemoral incoming and arm, forearm and hand arteriograms were acquired. Through their analysis a variation at the origin of the ulnar artery was discovered. The ulnar artery originated from the proximal brachial artery (Figure 1). The ulnar artery then ran through the arm and had its normal layer in the forearm, joining the palmar arch. In addition, the brachial artery continued as the radial artery, which had a normal layer. The common interosseous artery originated from radial artery instead of ulnar artery (Figure 2).

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Received: 14.06.2010, Accepted: 17.08.2010

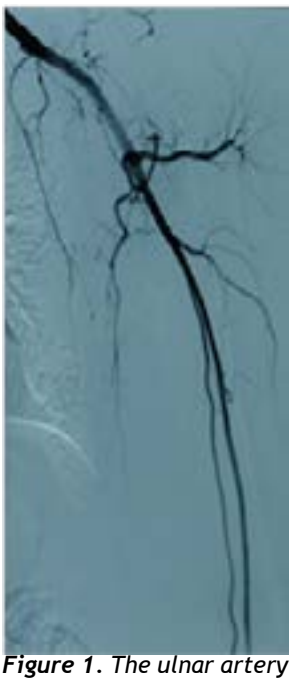

***Figure 1**. The ulnar artery originated from the proximal brachial artery.*

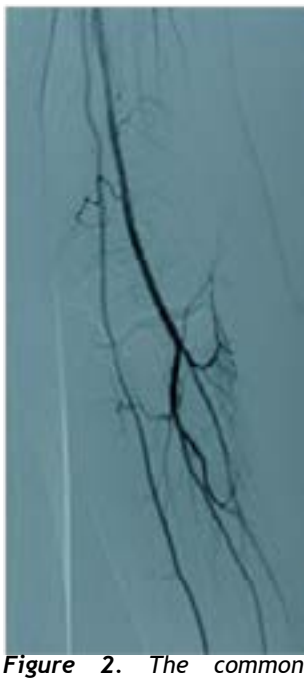

***Figure 2**. The common interosseous artery originated from radial artery instead of ulnar artery.*

DISCUSSION

Anatomic variations in the arteries of the upper extremities have been reported by different authors. In order to describe the variations in the arterial patterns published a study of 750 dissected upper extremities, where the percentage of the major arterial pattern variations was 18.53 of the total. In this article, the high origin of the ulnar artery from the brachial artery was 1.33% of the total, respectively (6). Weathersby et al found high origin of the ulnar artery in three (0.67%) cadavers. The ulnar arteries arose from the brachial artery in two cases and from the superficial brachial artery in the third case (8). Karlsson et al described their findings regarding variant arterial anatomy of arm and hand in their series of 231 patients examined with arteriography. In one (0.43%) patient the ulnar artery had a high origin from the brachial artery (9). Uglietta et al retrospectively reviewed 100 upper extremity arteriograms, and they observed major anatomic variations in the arterial branching pattern in nine (9.0%) of them. In one case (1.0%) the ulnar artery originated from the axillary artery (10). The common interosseous artery taking its origin from a high radial artery or, very rarely, from the normal radial artery has been reported (11,12). The mechanisms of development of this arterial variation are unknown. It may be that when the arteries of the upper limb develop during stages 12-23 of human embryogenesis (13). Variations of the upper extremity arteries have been noted to complicate arm surgery or vein puncture. The aberrant ulnar artery is more vulnerable to trauma and thus to bleeding, but is also more accessible for cannulation, if needed (14). In cases where the high replaces the ulnar artery, such as that reported by us, its accidental injury during surgical procedures can result in serious ischaemia of the forearm (15-19). The arteries of the upper extremities with unusual patterns may be mistaken for a vein. drugs are infused into these vessels, the result might be dreadful: gangrene with subsequent partial or total loss of the hand (6). Therefore, it is significiant for surgeons and radiologists to be aware of the possible arterial variations in order to hinder complications during surgical and diagnostic procedures.

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