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CASE REPORT

Anomaly of the radial artery encountered during repair of scaphoid non-union

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Introduction

It has been estimated that an anomaly of the radial artery occurs in approximately 1% of people attending an orthopaedic department.[2] An intimate knowledge of the vascular anatomy of the hand and its variations is indispensable to the hand surgeon, and uncommon variations are of interest to the hand surgeon and the anatomist.[2] An example of such variation of the radial artery is presented.

Case report

A 20-year-old male soldier, was referred to the hand clinic because of chronic right wrist pain. Radiography showed a scaphoid non-union, and it was decided to repair this using the Matti-Russe technique. Incision of the skin revealed a large artery and its concomitant veins. The vessels, which crossed the flexor carpi radialis tendon and passed superficial to the thenar muscles, were in place of the palmar branch of the radial artery (Fig. 1). Allen's test with a vascular clip was performed intraoperatively. When the tourniquet was released the index finger was blanched, indicating that there were incomplete deep and superficial palmar arches and that the ulnar circulation did not contribute to the radial side. With careful dissection and protection of the vessels, the operation was accomplished and the non-union repaired with the Matti-Russe technique.

After the operation, the abnormal vascular anatomy was discussed with the patient and a colour Doppler study was performed, revealing another sizeable artery passing around the distal radius, coursing superficially to the first dorsal extensor compartment and high bifurcation of the radial artery in mid forearm. On the contralateral side, vascular anatomy was normal. The patient refused further investigation for exact delineation of his vascular tree.

Discussion

Several variations of the radial artery have been described in the literature. Chamberlain and Taggart[3] described a bifurcated radial artery with both branches running parallel under the flexor retinaculum. Schacher et al.[5] reported a large superficial palmar branch with high origin and a radial artery running laterally around the distal portion of the radius close to the superficial branch of the radial nerve, crossing superficially to the first dorsal compartment. Such a superficial course may become symptomatic, requiring surgical intervention.[2] This

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Figure 1 A sizeable artery and its concomitant veins cross the flexor carpi radialis tendon and pass superficial to the thenar muscles, in place of the palmar branch of the radial artery.

radial artery anomaly is important because it may yield a false result with Allen's test, as pressure at the usual site of the radial artery may not occlude the early branching superficial radial artery. This can encourage a false sense of security regarding the ulnar-sided contribution to the radial side of the hand.[2]

A thorough knowledge of every possible variant is not as important as appreciation of the possibility of their existence and the potential ischaemic consequences if they become compromised. Such appreciation of the vascular supply of the forearm and hand allows the surgeon to repair the injured hand or finger, correct vascular malformations and use many skin, muscle and fascial flaps for reconstruction, including the important radial forearm flap.[2,4] This can create an arteriovenous shunt between the radial artery and cephalic vein, harvesting the radial artery as a graft in coronary artery bypass procedures.[1,5] When surgeons face a vascular anomaly, intraoperative Allen's testing is important in judging the adequacy of the blood supply to the hand and fingers.

In the present case, an anomalous superficial radial artery was encountered. Other terms, such as antebrachialis dorsalis superficialis, superficial dorsal antebrachial artery or superficial radial artery have been used to describe this vascular anomaly.[4]

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