EJVES Extra **5**, 20–22 (2003)
doi: 10.1016/S1533-3167(03)00020-7, available online at http://www.sciencedirect.com on SCIENCE DIRECT®

SHORT REPORT

Brachial Artery Occlusion in Patients with Bilateral High Origin of the Radial Arteries

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Key Words: High origin radial artery; Brachial artery occlusion.

Introduction

Variations in the arterial pattern of the upper extremity have been observed frequently, either in routine dissections or in clinical practice.[1] In this report, we describe a bilateral high origin of the radial artery from the brachial artery associated with symptomatic brachial artery occlusion, and the subsequent surgical management.

Case Report

A 37-year-old male patient was admitted with a two month history of increasing pain and coldness in the left arm. On closer questioning, he stated that he had injured the same arm during a football game. He was a heavy smoker. On physical examination, the arterial pressure was 110/80 mmHg in the right arm; the left arm was cool and there was a slowly enlarging painful ischemic ulcer on the second finger with the absence of pulses.

All haematological indices including a thrombophilia screen and autoantibodies were normal as were an electrocardiogram and echocardiogram. Plain X-rays of the chest and left arm were normal. Selective digital subtraction angiography (DSA) confirmed an occlusion of the left brachial artery and there was minimal filling of the high origin of the radial and ulnar arteries (Fig. 1). On the right the radial artery originated from the brachial artery high in the arm (Fig. 2).

Revascularization was reestablished with a saphenous vein interposition graft from the proximal part to the distal part of the brachial artery using end to side anastomoses. A pulse in the brachial artery just beyond the distal anastomosis beyond the graft could be felt and arterial perfusion of the whole arm was restored. The distal radial and ulnar pulses remained absent for the first few postoperative days. Anticoagulation with intravenous heparin was continued for five days, with the addition of warfarin and aspirin, and a Rheomacrodex-angiodel infusion was started. The radial pulse become palpable on the fourth postoperative day.

The subsequent postoperative course was uneventful, and he was discharged home on the seventh postoperative day without pain or coldness. Three months postoperatively, the patient's painful ischemic ulceration on the second finger of left arm had almost recovered. A follow-up DSA confirmed patency of the saphenous graft and normal flow both in the graft and in the distal arteries. The left radial artery occluded at the level of the lower third of the humerus and the distal portion was filling from the brachial artery (Fig. 3).

Discussion

A high origin of the radial artery is the most frequent variation in the arterial pattern of the upper limb in human beings. The incidence of this variation is

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Fig. 1. (a) Preoperative DSA showing an occlusion of the proximal left brachial artery, and (b) minimal filling at the high origin of the radial artery. b, brachial artery; r, radial artery.

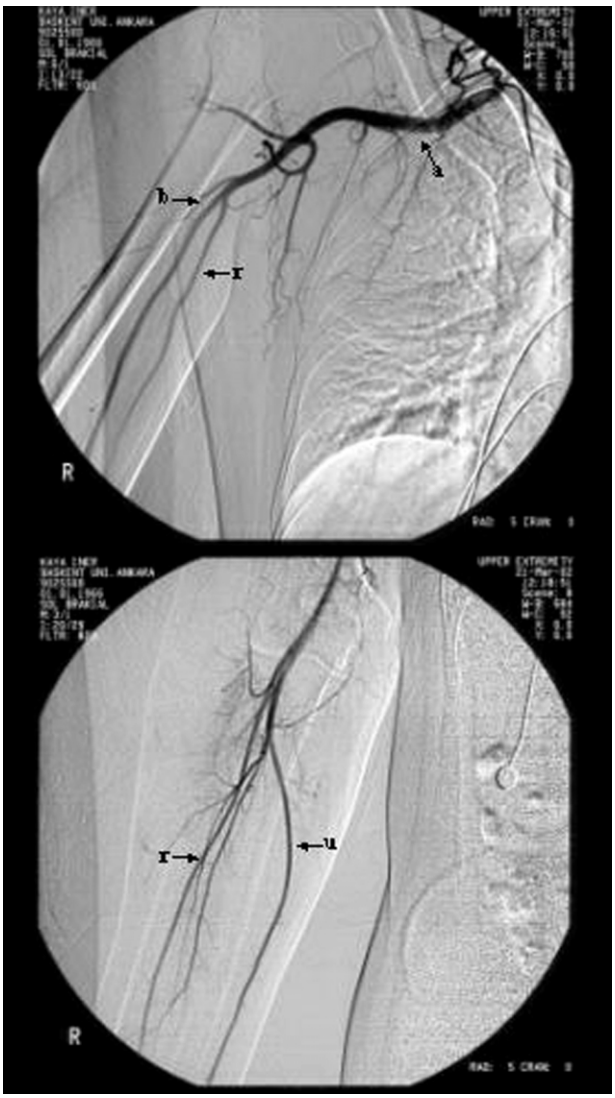

Fig. 2. (a) DSA showing the high right radial artery originating from the brachial artery, and (b) the brachial artery filling the ulnar artery and the high origin of the radial artery. a, axillary artery; r, radial artery; b, brachial artery; u, ulnar artery.

14.27% in postmortem subjects[2] and 9.75% at angiography.[3] The aberrant radial artery emerges from the axillary or brachial artery and continues into the forearm.[4] Celik et al found an origin from the brachial artery in 8.6% of their cases.[5] Sometimes the radial artery emerges from the axillary artery. This rare variation is mentioned by a few authors.[4,6] As in our case this type of the variation is usually observed bilaterally.

Most of the papers on this subject are generated by anatomists. It is important for surgeons and radiologists to be aware of possible arterial variations in the arm in order to prevent complications during surgical and diagnostic procedures.

Fig. 3. (a) Postoperative DSA showing the proximal anastomosis (arrow) of the patent saphenous vein graft, and (b) occlusion (arrow) of the left radial artery at the level of the lower third of the humerus.

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