

Arteriovenous Fistula in A Patient with Aberrant Radial Artery

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ABSTRACT

Arteriovenous fistula is the most commonly used vascular access in patients on maintenance hemodialysis. Operating surgeon has to be aware about the normal anatomy of vessels as well as variations in the course of the vessels. Here we report a case of radiocephalic arteriovenous fistula constructed in aberrant radial artery. This is the first case of arteriovenous fistula with aberrant radial artery to be reported in world literature.

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Introduction

A working arteriovenous fistula (AVF) with adequate blood flow is practically a lifeline for a chronic kidney disease (CKD) patient on maintenance hemodialysis (MHD). Planning of a successful AVF involves careful examination of suitable vessels by clinical examination and Doppler ultrasound. We recently encountered a CKD patient with bilateral aberrant radial artery. A successful AVF was constructed for the patient. The surgery was performed by the interventional Nephrologist independently.

CASE REPORT

A 75 year male, known case of diabetes mellitus type 2 and hypertension was recently detected to have chronic kidney disease requiring hemodialysis. He was considered for arteriovenous fistula (AVF) as a long term vascular access. He was found to have bilateral anomalous radial artery. The encountered vessel coursed abnormally superficial to the tendons of the extensor pollicus brevis (EPB), abductor pollicus longus (APL) and extensor pollicus longus (EPL) lying lateral to the cephalic vein as it passed through the anatomical snuffbox. A right radiocephalic AVF was constructed with side to side anastomosis (Figure 1). AVF angiogram demonstrated an aberrant course of radial artery with well developed AVF (Figure 2). Patient is successfully undergoing hemodialysis through the same fistula since 1 year. To best of our knowledge, this is the first case of AVF with aberrant radial artery to be reported in world literature.

DISCUSSION

Variations in the origin and course of the principle arteries of the upper extremity have long been studied by anatomists and surgeons [1]. The superficial radial artery was first described by Adachi in 1928 as *arteria antebrachialis dorsalis superficialis* [2]. The estimated incidence of aberrant radial artery is around 0.5–1% [3]. Being unaware about this anatomical variation could be catastrophic as evidenced by reports of accidental cannulation, injection of the superficial radial artery, emergency surgical interventions to manage vascular compromise and traumatic aneurysms [4-7].

An adequately functioning AVF has an important role in clinical course of CKD patients on MHD. It is very



Figure 1: Partially calcified right radial artery is seen lying lateral to the cephalic vein at right anatomical snuff box. A successful side to side anastomosis between the aberrant radial artery and cephalic vein was performed.

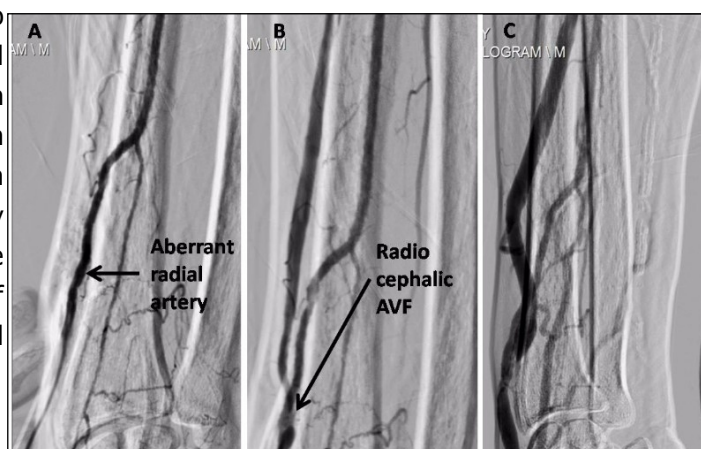


Figure 2:

- Aberrant course of right radial artery. It normally lies above the lateral epicondyle of radius bone, fistulogram demonstrated its course away from radius bone.
- Working right radiocephalic AV Fistula. Right cephalic vein is seen medial to the artery at the site of anastomosis and later running lateral to it.
- A well developed cephalic vein suitable for cannulation for hemodialysis.

important to remain aware about the aberrant course of radial artery as it can be easily confused with the cephalic vein due to its location. Doppler sonography prior to the planning of AVF can avoid such potentially fatal errors. A thorough clinical examination of target vessels for AVF is also equally important.

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