

Case Report

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Successful Surgical Management of Radial Artery Pseudo Aneurysm Following Trans-radial Coronary Artery Intervention: Report of Two Cases

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Abstract

Radial artery is now increasingly used as vascular access site for diagnostic and therapeutic procedures in cardiology practice. Though successful, it may be associated with vascular complications necessitating intervention. We report two cases of radial artery pseudo aneurysm one each arising out of diagnostic and therapeutic cardiac intervention. Though rare, successful management of such a complication is easier with radial artery as vascular access site as compared to femoral artery that is conventionally used access site for cardiac intervention procedures.

Keywords: Pseudo aneurysm; vascular injury; Coronary angiography; Percutaneous coronary artery angioplasty

Introduction

In recent times radial artery has emerged as the vascular access site for cardiac procedures [1]. This approach scores over the conventionally used femoral artery access on account of early mobilization and ease of procedure for the patient [2]. Though the incidence of blockage of the radial artery when used as vascular access is high, more serious complications like pseudo aneurysm are rare [3]. We report two cases of pseudo aneurysm formation after use of right radial artery as access to perform angiography in one case and coronary artery stenting in the other.

Case 1

A 52 yrs old lady presented with swelling in left wrist one month after undergoing a diagnostic coronary angiography through left radial artery. On examination there was a pulsatile (1.5 × 1.5 cm) swelling seen in the course of radial artery (Figure 1). She had no other symptoms and there was no coronary artery disease seen in angiography. She was initially managed conservatively with compression bandage. Despite compression dressing, pseudo aneurysm increased in size. Doppler ultrasonography was done which confirmed it to be a pseudo aneurysm. Computed Tomography peripheral angiography was performed to see extent and width of neck of defect to plan surgical intervention (Figures 2A and 2B). Patient underwent successful primary repair of radial artery rent after excision of pseudoaneurysm sac. Post-operative recovery was uneventful.

Case 2

A 72 yrs old lady with known triple vessel coronary artery disease, stable angina, underwent Tran's radial coronary artery angioplasty; three drug eluting stents were deployed in all the three major arteries. She developed pulsating swelling in the vascular access site in the next morning which was increasing in size (Figure 3). Proximal radial artery compression was applied using pneumatic device to prevent impending rupture as the tissues and skin over the aneurysm had thinned out [4]. She was referred to us for surgical repair. Under local anaesthesia radial artery pseudoaneurysm was repaired successfully without any complication (Figure 4).

Discussion

Popularity of trans-radial route for cardiac catheterization

and even subsequent therapeutic procedures rides on the easily accessibility, early mobilization, and reduced hospital stay and access site complications [5]. Though the incidence of radial artery occlusion is fairly high, other more serious complications like ischemia, nerve damage, bleeding and pseudo aneurysm formation are rare [3,6]. While the incidence of pseudo aneurysm formation at radial artery site is 0.1%,



Figure 1: Radial Artery Pseudo-Aneurysm following Diagnostic Coronary Angiography.



Figure 2: (A and B) Computerised Tomography Peripheral Angiography Showing Radial Pseudo-Aneurysm.

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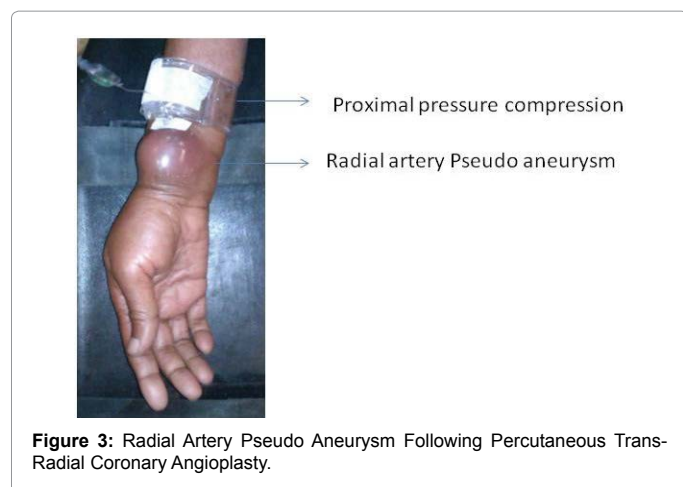


Figure 3: Radial Artery Pseudo Aneurysm Following Percutaneous Trans-Radial Coronary Angioplasty.

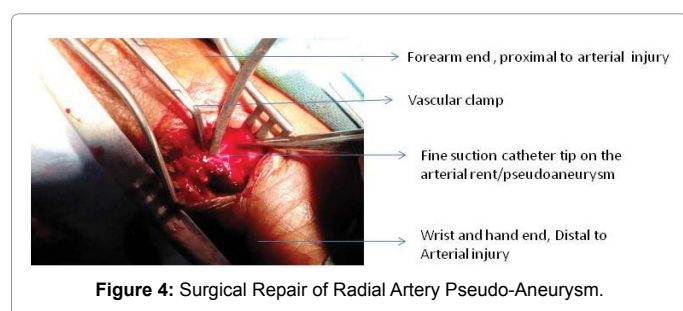


Figure 4: Surgical Repair of Radial Artery Pseudo-Aneurysm.



Figure 5: Right Femoral Artery Pseudo-Aneurysm Following Percutaneous Trans-Femoral Coronary Angioplasty.

it rises to 1% when femoral artery is used as access site for diagnostic procedure and 6% when the same is used to perform a therapeutic procedure [7,8]. Predisposing factors for complication at access site are; multiple punctures, high or low puncture site, ongoing systemic anticoagulation, inadequate post procedure compression, infection, use of large diameter sheath more than 8Fr, complex interventions, obesity, age more than 65 yrs and systemic hypertension [5,9]. Most of these make femoral site more vulnerable for complications. Pseudo aneurysm is one of the most threatening complications mandating an immediate attention. While most of these, when diagnosed early can be managed conservatively by compression at the local site with or without ultrasound guidance or sometime by injecting thrombin as an added measure to compression technique [9]. Surgical repair of pseudo-aneurysm is indicated if it is infected, failure of other therapies, rapid expansion, skin necrosis, or compressive syndrome in the form of claudication, neuropathy, or critical limb ischemia [9].

Radial artery has a distinct advantage over femoral counterpart as it is located superficially and even a small swelling in this region will be noticed earlier. Moreover it is easier to control bleeding from the

radial artery due to its anatomic location and relation to radial bone in vicinity. Radial artery poses an advantage over femoral artery of having luxuriant collateral channels with ulnar artery and existence of deep and superficial palmar arches. These anatomical findings ensure safety of limb when radial artery need to be sacrificed in some situations. However before embarking on surgery for radial artery pseudo aneurysm, evidence of patent palmar arches can be generated by a contrast CT or even with a Doppler ultrasound, which is safe and avoids contrast and radiation exposure.

In comparison a similar femoral artery pseudo aneurysm (Figure 5) is detected later in the course owing to its depth and relation to large muscles, fat and fascia. Constant compression of surrounding structure especially poorly vascularised fat, causes its necrosis and increases the chance of infection. These factors pose challenge to repairing a femoral artery pseudo aneurysm, which poses a definite threat to limb, as superficial femoral artery is sole supply to distal limb.

Conclusions

Radial artery pseudo aneurysm, though rare, can occur after coronary artery angiography or angioplasty through trans-radial route. Surgical management when indicated can be performed with good results under local anesthesia. They are always easy to manage (surgical management) in comparison with femoral counterpart with less threat to limb and life.

Disclosures

There is no conflict of interest of any author.

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