Swelling of volar aspect of the wrist

Q1: What is the diagnosis?
The diagnosis is pseudoaneurysm or false aneurysm of the radial artery. This is a leakage of blood into the surrounding tissue with persistent communication between the artery and the blood filled cavity.

Q2: What are the differential diagnoses?
Haematoma, abscess, and true aneurysm mimic the pseudoaneurysm.

Q3: How do you treat this condition?
Uncomplicated cases are treated conservatively. They include: (a) observation and compression bandage; (b) ultrasound guided compression; (c) ultrasound guided thrombin injection. Surgical intervention is reserved for complicated cases and patients who have failed conservative management.

Discussion
A pseudoaneurysm, is also referred to as false aneurysm. It is a leakage of blood from an artery into the surrounding tissue with persistent communication between the originating artery, and the terminating blood filled cavity. The arterial wall defect is referred to as the neck of the pseudoaneurysm. Unlike true arterial aneurysms, the three layers of the arterial wall do not bound pseudoaneurysms. The wall of the pseudoaneurysm is composed of fibrous tissue, and when this exists for a prolonged period of time, the surrounding tissue may mature and resemble the arterial wall. Most pseudoaneurysms are iatrogenic in origin caused by an arterial catheterisation. The other causes include the anastomosis site of arterial bypass graft, infection, or direct trauma to the arterial wall. They are more commonly seen in patients who are anticoagulated, or taking antiplatelet drugs. Femoral and radial arteries are the commonest sites.

Clinical presentation is sudden onset of tender pulsatile swelling surrounded by oedema and erythema, with a bruit on auscultation. Pseudoaneurysms are often mistaken for abscess, haematoma, or true aneurysm.

Colour Doppler ultrasound scan is an investigation of choice, which shows the turbulent swirling flow pattern, known as yin-yang sign.

The conservative treatment has become a more reliable alternative to surgical intervention in treating the peripheral pseudoaneurysms.

Ultrasound guided compression repair was first described in 1991 by Fellmeth et al. In this procedure, pressure is applied with the ultrasound transducer probe over the neck of the pseudoaneurysm until the flow ceases. The procedure has been widely used with good results. However, it is time consuming, and the success rate is low in patients taking anticoagulants. Treating the pseudoaneurysm with direct thrombin injection under ultrasound guidance is now the preferred method of treatment. It is a quick, safe procedure with excellent results, even in patients taking anticoagulants.

Surgical intervention is needed in complicated cases (symptomatic, expanding, infection, prolonged history, and with large haematoma), and in patients with failed conservative management. The options include ligation of the artery if distal circulation is not compromised, excision of the pseudoaneurysm, and anastomosis using patch graft. Previous studies have shown that the radial artery can be safely sacrificed by ligating the artery. However, ligation of the radial artery may lead to digital ischaemia, if the collateral circulation to hand is inadequate. Allen’s test and its modifications are widely used to evaluate the adequacy of the collateral circulation even though this has significant false positive and false negative results. As an alternative, excision of the pseudoaneurysm and patch vein graft gives good results. The patient was operated on in our case. He had ligation of the radial artery, after confirming the patency of the ulnar artery. The postoperative recovery was uneventful.

Final diagnosis
Pseudoaneurysm of the radial artery.

References

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