Using POCUS to identify vascular structures in soft-tissue presentations in the ED: tale of 2 cases

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Background: Soft tissue swellings are a frequent presentation in the emergency department (ED) and are commonly attributed to abscesses or cellulitis. In patients with vascular risk factors or prior arterial interventions, however, vascular pathology such as pseudoaneurysm must be considered. Failure to recognize pseudoaneurysms may result in inappropriate intervention and life-threatening haemorrhage. Point-of-care ultrasound (POCUS) offers rapid bedside assessment to distinguish vascular from non-vascular soft tissue pathology.

Case Series: We present two emergency department cases highlighting the diagnostic value of POCUS in evaluating undifferentiated soft tissue swellings. The first case involved a man in his early 30s with a history of intravenous drug use who presented with a painful, firm left groin swelling following femoral injections. Clinical assessment raised concern for a groin abscess. Given the high risk of vascular injury in this anatomical region, POCUS was performed before intervention. Ultrasound demonstrated a complex, loculated fluid collection clearly separate from the femoral artery and vein, with no Doppler flow suggestive of vascular communication. This allowed confident exclusion of pseudoaneurysm and enabled safe incision and drainage without complication. The second case involved a 31-year-old man with a complex thrombotic history, receiving warfarin and clopidogrel following recent percutaneous coronary intervention via radial artery access. He presented with a progressively enlarging, painful forearm mass at the access site. Clinical examination showed tenderness without signs of infection. POCUS revealed a hypoechoic lesion with bidirectional “yin–yang” Doppler flow and a narrow neck arising from the radial artery, consistent with a pseudoaneurysm. Early bedside diagnosis prompted urgent vascular referral and avoided inappropriate drainage or delay in definitive care.

Discussion: These cases demonstrate how pseudoaneurysms may clinically mimic soft tissue infection, particularly in high-risk patients. POCUS allows immediate identification or exclusion of vascular involvement, guiding appropriate management and preventing procedural complications. Its portability and real-time Doppler capability make it uniquely suited to emergency settings.

Conclusion: POCUS is a critical diagnostic adjunct in the emergency evaluation of soft tissue swellings. Routine consideration and bedside ultrasound assessment for pseudoaneurysm in high-risk patients can significantly improve diagnostic accuracy, procedural safety, and patient outcomes in the ED.

Soft tissue swellings in the ED are frequently presumed to be abscesses or cellulitis. Pseudoaneurysms are recognized complications of arterial trauma, intravenous drug use, and catheter-based interventions, and may clinically resemble infection. Doppler ultrasound is known to reliably identify pseudoaneurysms, but its use is often delayed or deferred to formal imaging. This case series highlights the immediate, bedside role of POCUS in the ED to differentiate pseudoaneurysms from infectious soft tissue lesions before intervention. It demonstrates how POCUS directly alters management, prevents potentially catastrophic procedures, and supports routine vascular assessment of soft tissue swellings in high-risk emergency patients.

Keywords: POCUS vascular, POCUS pseudoaneurysm, abscess I&D procedural sedation.