

Use of Lodox for Emergency Room Angiography: A Case Study



A case study from the Accident & Emergency Unit of the Charlotte Maxeke Johannesburg Academic Hospital, South Africa.

Introduction

Suspected injury to peripheral vasculature is not an uncommon occurrence in the Emergency Room (ER), and could result from fracture, dislocation or other trauma to the limbs. Either soft signs (history of bleeding, injury in proximity to major vascular structure, small non-expanding haematoma or diminished pulse) or hard signs (absent pulse or bruit) require some form of investigation¹, usually either digital subtraction angiography or CT angiography. ER Angiography (ERA) has been described previously as a simple technique to obtain this information within the resuscitation suite, using plain X-ray imaging^{2,3}.

Case Presentation

A 32 year-old male patient presented to the ER after sustaining multiple gunshot wounds. On arrival he had a Glasgow Coma Score of 15/15, blood pressure of 97 systolic and a pulse of 83. Gun shot wounds to the left groin, left buttock, penis (two), right lower leg (two), left thigh (two) and right arm were visible. The patient had an inconsistent number of entrance and exit wounds.

Imaging, Diagnosis and Treatment

On arrival at the ER, the patient underwent a full-body AP X-ray on the Lodox system to look for retained bullets. The scan revealed a compound fracture to the proximal tibia/fibula, with the bullet in situ, and a fractured left pubic ramus. The patient was resuscitated as per unit protocol and booked for formal angiography. However, due to the immense workload of the CT scanner and time constraints, a Lodox Emergency angiogram was performed by injecting contrast agent into the right common femoral artery and simultaneously activating a lower leg scan. The procedure took less than ten minutes to complete and cleared the patient of vascular injury. He was duly released to the orthopaedic surgeons for further treatment.

Discussion

Timely diagnosis and treatment of vascular injury is imperative for limb salvage⁴. This case illustrates how simple ERA using large format X-ray imaging can be used to accurately assess vasculature in cases of suspected injury. Use of Lodox for this purpose has previously been reported as a fast, safe and cost-effective improvement on ERA using conventional X-ray systems¹. Concurrent high-quality imaging of the patient's soft tissue and bony anatomy was cited as an added advantage. In this case, the ability to rapidly provide clearance of vascular injury within the resuscitation area resulted in a dual benefit to the workflow in this busy hospital and ER. The first was in allowing rapid discharge of the patient from the ER, making room for further patients. The second was in reducing burden to the over-subscribed CT scanner. Another aspect of the speedy diagnosis and treatment provided to this critical patient was the use of a full-body Lodox X-ray scan (image not shown) on entry to the ER to identify the position of the retained bullet - a procedure that may have taken up to an hour using conventional X-ray equipment, and exposed the patient to an unnecessarily high dose of ionising radiation (of which he was further spared by avoiding CT or subtraction angiography).

Conclusion

In this case, Lodox emergency room angiography not only had the potential to save a limb in the case of vascular cut-off, but also assisted in managing the workflow in a busy emergency room.

“Once again the use of the Lodox X-ray machine has proved invaluable to us.”

DR HELENA ALVES,
HEAD, ACCIDENT AND EMERGENCY UNIT,
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