Clinical Practice Guideline for Management of Mis-sited Central Catheters

Background:
This guideline is intended to provide a step-by-step management plan for mis-sited central vascular access devices based on available data for their prevention, diagnosis and management in order to minimise catheter-related complications. This Guideline should be used in conjunction with http://intranet.lothian.scot.nhs.uk/Directory/CriticalCare/Bedside care/Insertion and Care of Arterial and Central Venous Lines.doc

The most common complications of central venous access remain:

1. Vascular Injury
2. Misplacement – often in an artery

The majority of misplaced catheters, if managed appropriately, are associated with minimal morbidity.

Minor **vein** wall tears are generally unrecognised during guidewire, dilator and catheter insertion. While these are usually without consequence, major bleeding can occur if the tear connects to a low pressure body cavity such as the pleural, peritoneal or pericardial space.

Inadvertent **arterial** puncture or cannulation may be complicated by arterial dissection, arterial thrombosis, embolus, uncontrolled haemorrhage, AV fistula formation or pseudoaneurysm. Unintentional cannulation can also result in distal ischaemic damage. Massive bleeding into body cavities may occur.

Recognition:
Patients at highest risk of unrecognised arterial puncture are hypotensive, hypoxic or anaemic. Blood colour or absence of pulsatile flow should not be relied upon for confirming that the catheter or thin-wall needle resides in the vein.

Misplacement of a line should be considered if:

1. Guidewire will not advance freely/difficult insertion.
2. Central venous line does not aspirate or unable to infuse anything down it.
3. Line does not follow the expected course of central vein on CXR. For femoral lines, XR is not routinely performed and points 1 and 2 and 4 should raise suspicion.
4. Arterial pressure bleeding or waveform
5. Retroperitoneal or major femoral haemorrhage is the most frequent complication of femoral cannulation.

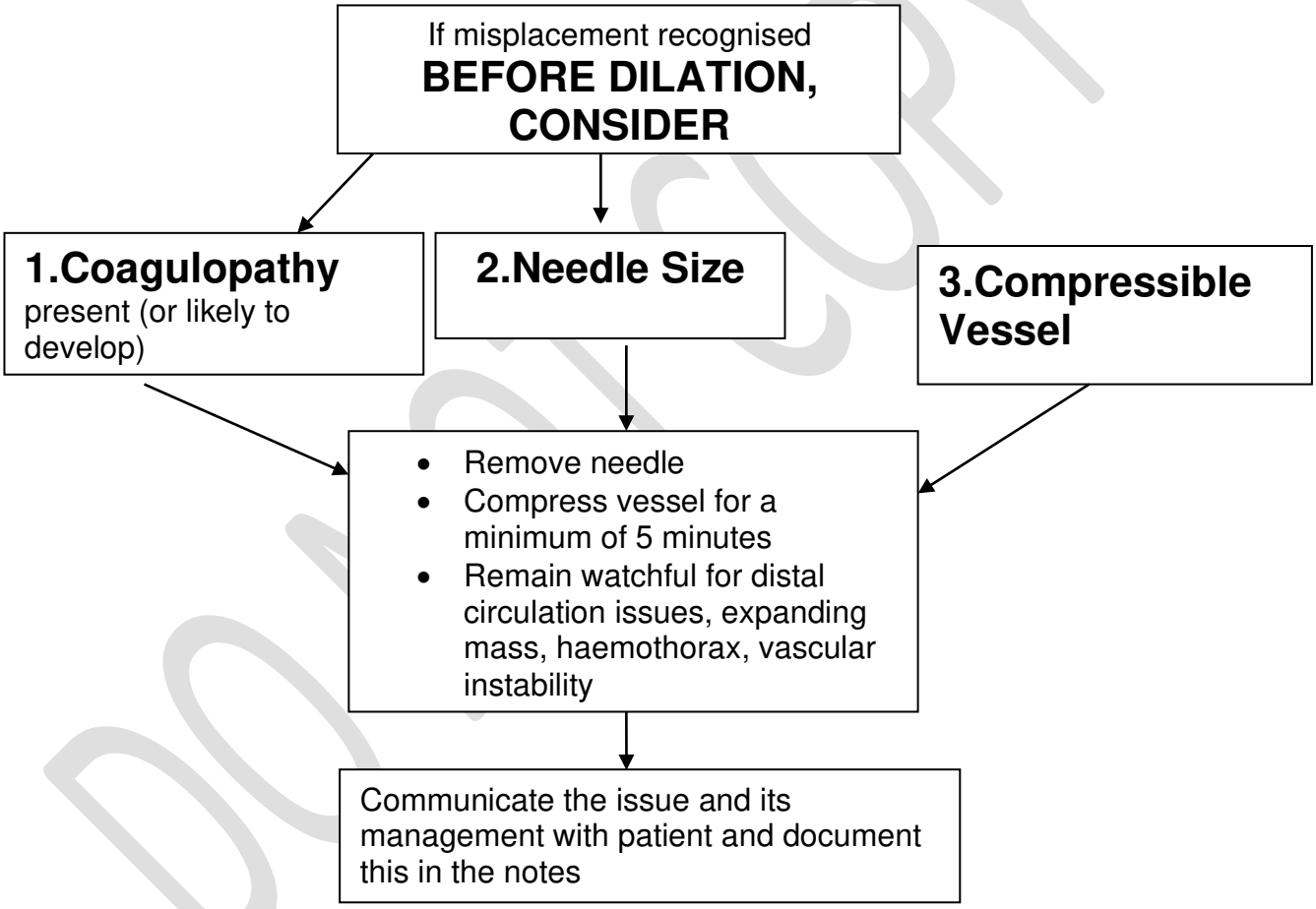
Immediate Care and Actions:

<u>Arterial Puncture only, no dilator or catheter threaded</u>:

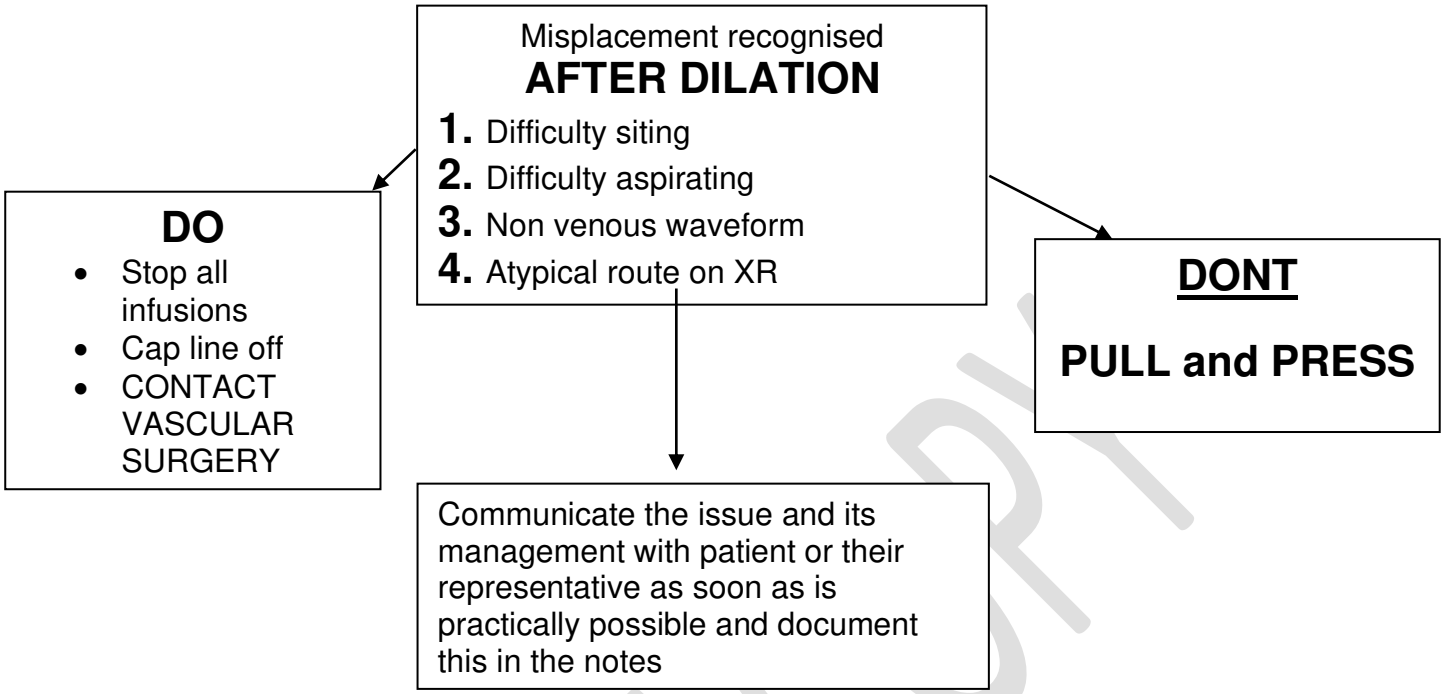
a. withdraw the needle
a. if possible, manually compress for a minimum of 5 minutes.
b. continued observation of patient for at least 24 hours
c. Document in notes

Dilator/catheter sited:

a. DO NOT pull out the catheter/dilator.
b. Leave the catheter/dilator in place and cap off until contact with vascular surgery.
c. Do not infuse anything down the catheter.
d. Contact Vascular Surgery via switchboard who will liaise with Interventional Radiology
e. Vascular imaging may be organised by way of CT angiogram or Duplex ultrasound.
f. Management will be determined by site of injury, size (French size) of puncture and clinical context; and may be multidisciplinary.
g. After the injury has been evaluated and a treatment plan has been executed, the anaesthetist and surgeon should confer regarding relative risks and benefits of proceeding with the elective surgery *versus* deferring surgery to allow for a period of patient observation.



*There is anecdotal evidence, that compressing supra and infraclavicularly for a minimum of 5 minutes following small gauge needle puncture of the subclavian may be acceptable providing there is no coagulopathy and active observation of the patient is documented for greater than 24 hours.



References:

Practice Guidelines for Central Venous Access: *A Report by the American Society of Anesthesiologists Task Force on Central Venous Access Anaesthesiology,* Anesthesiology 2012; 116:539 –73 547

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