

Guidelines for the Management of Inadvertent Arterial Puncture and/or Catheterisation



1. INTRODUCTION

A small needle puncture appears to be harmless in the vast majority of cases, and most of these small needle arterial punctures are recognized. However, failure to recognize the arterial puncture can result in subsequent placement of a large-bore catheter into an artery, ranging from 0.1% to 1.0% of attempted CVC placements in reported series. Inadvertent arterial placement of a large-bore catheter may result in hemorrhage, pseudoaneurysm, stroke, or death.

2. PROCESS

Recommendation (Action)	Justification (Rationale)
Do not simply remove the catheter and press	Several case series have shown a “pull-and-pressure” approach is associated with a high incidence of serious complications ~50% ,including death, whereas open surgical or endovascular repair is not.
Ultrasound guidance reduces but does not completely prevent the risk of arterial cannulation	Arterial puncture can occur despite the use of ultrasound
The patient needs to be anti coagulated	Prolonged arterial cannulation can result in thrombus formation and stroke.
Do not use the line for anticoagulation	The risks of embolus are high and the line should not be used as risk to the patient is the clot is in the vessel not the line
If it is a femoral line there may be a role for pull-and-pressure	This should only be done following consultation with the vascular team as false aneurysms or arteriovenous fistulae can occur late after the pull-and-pressure technique and close follow-up is needed.

3. REFERENCES

Bowdle A, Vascular Complications of Central Venous Catheter Placement: Evidence-Based Methods for Prevention and Treatment *Journal of Cardiothoracic and Vascular Anesthesia, Vol 28, No 2 (April), 2014: pp 358–368*

Shah PM, Babu SC, Goyal A, et al: Arterial misplacement of large-caliber cannulas during jugular vein catheterization: Case for surgical management. *J Am Coll Surg 198:939-944, 2004*

Guilbert MC, Elkouri S, Bracco D, et al: Arterial trauma during central venous catheter insertion: Case series, review and proposed algorithm. *J Vasc Surg 48:918-925, 2008*

The use of this guideline is subject to professional judgement and accountability. This guideline has been prepared carefully and in good faith for use within the Department of Critical Care at Brighton and Sussex University Hospitals. The decision to implement this guideline is at the discretion of the on-call critical care consultant in conjunction with appropriate critical care medical/ nursing staff.