

Short and long-term complications of prehospital arterial catheterisation performed by a Helicopter Emergency Medical Service in the United Kingdom

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Introduction

Prehospital arterial catheterisation is increasingly performed by Helicopter Emergency Medical Services (HEMS). However, due to the setting, and the clinical urgency of device insertion coupled with the potential for compromised asepsis, procedures performed in this environment may be at higher risk of complication than those delivered in-hospital. The objective of this study was to **report the complication rate of prehospital arterial catheterisation from admission to hospital discharge.**

Methods

This retrospective observational study included adult (≥ 18 -years-old) patients who underwent prehospital arterial catheterisation and were conveyed to the regional major trauma centre (MTC); 01/02/2015–17/04/2023.

The primary outcome was to **report the complication rate of prehospital arterial catheterisation** from admission to discharge. Complications were categorised as infective, vascular, or neurological and were sub-classified as major or minor. The secondary outcome was to report the duration of arterial catheter placement and the association between duration of placement and incidence of complications.



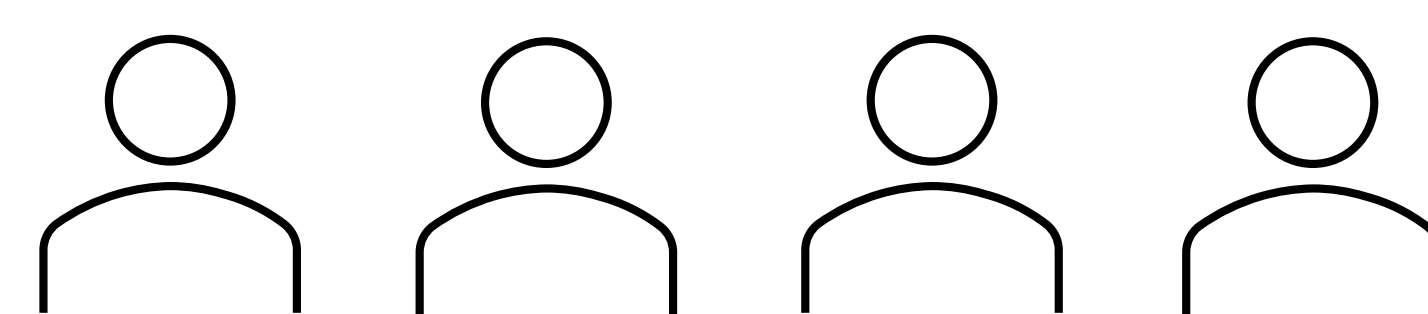
Results

322 patients were included. **During the study period, there were seven reported complications (2.2%).** Four were infective (minor) and three were vascular (one major, two minor).

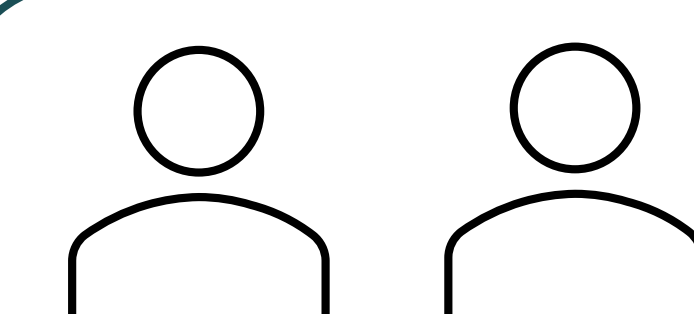
- The four minor infective complications were local inflammation around the insertion site, prompting suspicion of superficial infection and catheter removal.
- The two minor vascular complications were delayed capillary refill and distal colour changes, suggestive of temporary radial artery occlusion. Both complications resolved immediately after catheter removal.
- The major vascular complication was a complete brachial artery occlusion, requiring fasciotomy and thrombectomy.

The median [interquartile range] arterial catheter duration of placement was 32.6 [14.8–98.8] hours. Catheter duration ≥ 5 days was associated with increased odds of complications, OR 6.8 (95%CI 1.5–31.4, $p < 0.05$).

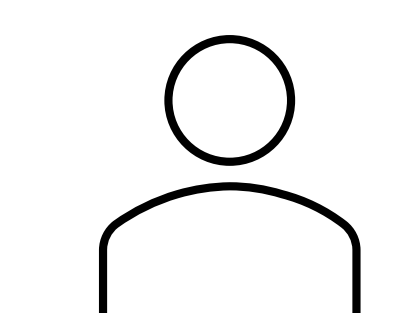
322 Patients included. 7 complications reported



4 minor infective



2 minor vascular



1 major vascular



32.6 Hours median catheter duration

Conclusion

This study demonstrates that **prehospital arterial catheterisation in critically injured patients is associated with a low rate of complications.**

