Utility and durability of ultrasound-guided brachiocephalic central venous cannulation (USG-BC-CVC) in infants and children

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INTRODUCTION

The brachiocephalic vein (BCV) is confusingly referred to as the innominate vein, the subclavian vein, and the confluence of Pirogoff. At least four case series have noted technically easy USG-BC-CVC in the operating room and in the PICU/NICU. This case series uniquely follows patients until discharge looking at how the lines were used and managed.

METHODS

Retrospective chart review of all BCV lines placed during a 24 month period at Covenant Children’s Hospital, Lubbock TX. Clinical characteristics of line placement, characterization of IV access before and after line placement, and what lines were used for were collected. Post-placement late complications were sought until discharge.

RESULTS

- 49 pediatric cases were identified.
- Cannulation was successful in all cases. One early complication of arterial puncture occurred, and required only temporary pressure. In two cases, difficult wire passage required cannulation on the contralateral side.
- No significant late complications occurred. There was one case of late mechanical failure to aspirate blood from the lumens on POD#6 leading to removal of the catheter.
- Three catheters were removed for fevers (> 38.6°C) in spite of known infectious source remote from the cannulation site.
- 9 (18.3%) were placed during emergency surgery.
- Fifteen lines were placed for known or encountered difficult IV access during induction of anesthesia following our institutional “Difficult IV algorithm” recommended alternative to prolonged/multiple attempts at PIV placement.
- Average duration of insertion was 6.3 (2-20) days.
- TPN was given in 11 (22.4%) of cases.
- In 20/49 cases, the PIV was removed ~POD#3 although the CVL remained in situ.

DISCUSSION / CONCLUSION

This study shows that BCV central lines are well tolerated by children, with an average duration of insertion of 6.3 days, often lasting beyond removal/failure of PIV’s. Catheters were useful as primary venous access, for short courses of TPN, as well as for blood draws. Other benefits previously noted include in-plane visualization of placement, and lower rate of infection compared to internal jugular or femoral route.

Left sided preference was due to handedness of the operator standing at the head of the bed after intubation. Both sides are reported successfully. Choice of side can be made after scanning both supraclavicular fossa with choice based on most complete visualization of the arc of the subclavian/brachiocephalic confluence. USG BCV cannulation is both useful and durable.

REFERENCES

1. Breschan, Br J of Anaesth 2011; 106:732-737

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