

CORRECT POSITIONING OF CENTRAL VENOUS CATHETERS IN CRS + HIPEC PATIENTS

DR AYESHA SHAJPAL (ANAESTHETICS CORE TRAINEE), DR BEN HARRIS (INTENSIVE CARE CONSULTANT)
BASINGSTOKE AND NORTH HAMPSHIRE HOSPITAL – HAMPSHIRE HOSPITALS FOUNDATION TRUST
EMAIL: AYESHAS.SHAJPAL@GMAIL.COM

SOA21

Introduction

Patients undergoing cytoreductive surgery (CRS) and hyperthermic intraperitoneal chemotherapy (HIPEC) require a central venous catheter (CVC) for their peri operative and post operative management ⁽¹⁾. Post operatively these patients receive total parenteral nutrition (TPN) which requires the CVC tip to be located between the “lower third of the superior vena cava, at the atrio-caval junction, or in the upper portion of the right atrium” ⁽²⁾.

Our objective was to complete the quality improvement cycle by reviewing our local practice of CVC insertions in this cohort, subsequent to the implementation of the e-learning module and the Hampshire Hospital Foundation Trust (HHFT) guidelines in 2019.

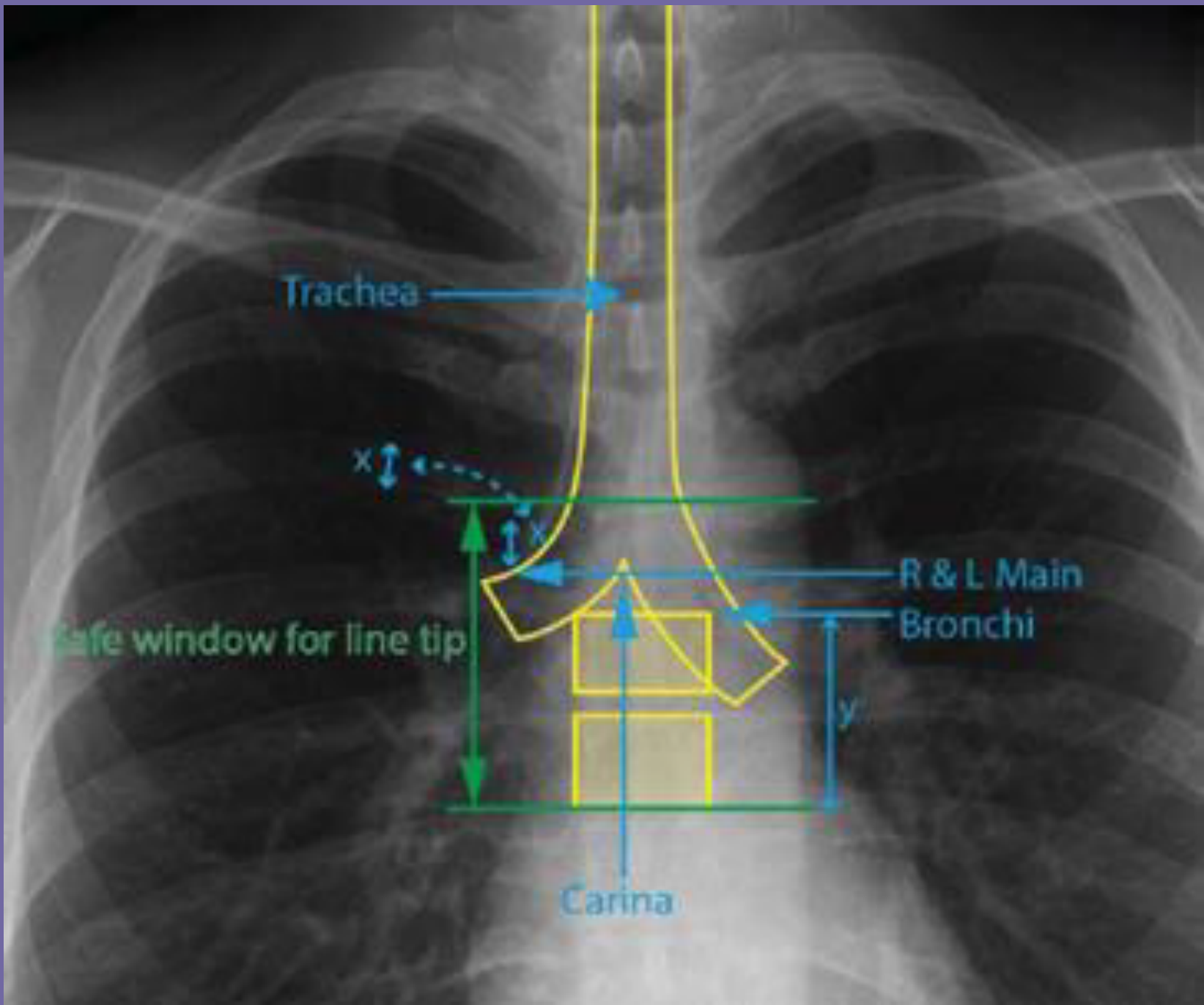


Image 1. The correct CVC tip position - Kerr M, McKenna J, Williams D. ⁽⁴⁾

Methodology

58 patients underwent elective CRS and HIPEC between 1/03/2021 and 31/05/2021 at Basingstoke and North Hampshire Hospital compared to 59 patients over a similar period in 2019 ⁽³⁾. A retrospective review of the CVC tip position on initial post-operative chest X-rays (CXR) was compared to results from the first cycle of auditing in 2019. The tip of the CVC was considered in the correct position as indicated by image 1 and if the tip was parallel to the wall of the SVC ^(4,5).

Results

84% of CVC's were assessed as having the correct tip position on postoperative CXR which is an improvement from 63% in 2019 (figure 1). The right subclavian vein for CVC access remains the most common at 72% but this a reduction from 88% in 2019 (figure 2). A total of 9 CVC tips in the 2021 audit were incorrectly positioned; only 2 of which were placed too distally. Interestingly none of the CVC's with a tip position that was too short were inserted into a left sided vein.

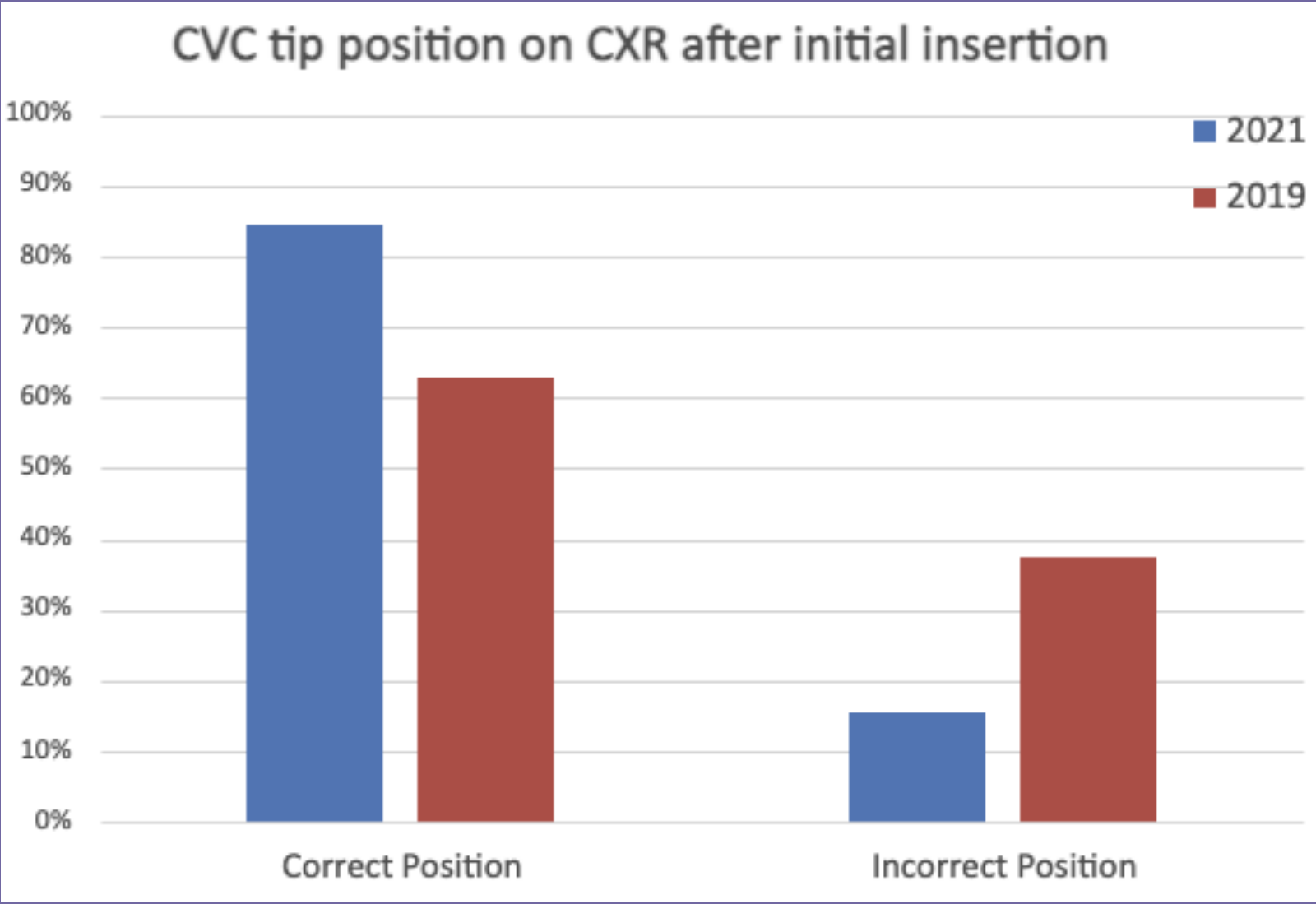


Figure 1. The percentage of correctly positioned CVC tips on initial post operative CXR. 49 (2021) compared to 37 (2019) were placed correctly, 9 (2021) compared to 22 (2019) incorrectly. 2 CVC's were placed too distal in 2021.

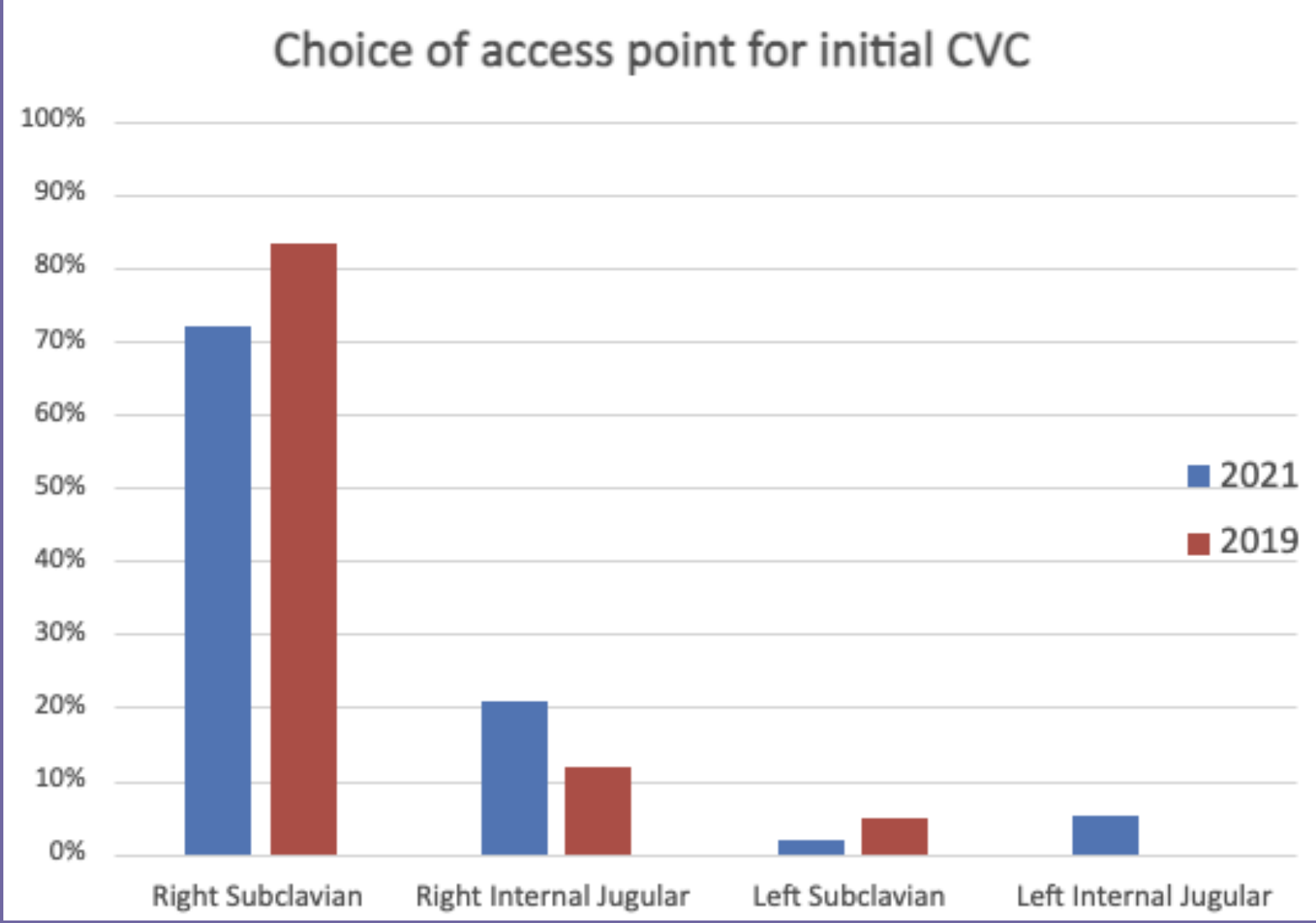


Figure 2. The choice of venous access site as a percentage comparing 2021 with 2019 data collection. 42 vs 50 for right subclavian, 12 vs 7 for right internal jugular; 1 vs 3 left subclavian and 3 vs 0 left internal jugular.

Conclusion

Our CRS + HIPEC cohort have an intensive post operative recovery and reducing the need for further invasive post operative interventions such as changing CVC's are beneficial for these patients. Following educational interventions (e-learning), updates in local guidelines and the increased awareness of the need for 20cm CVC's has resulted in better placement and reduced need for repositioning of the CVC in the immediate post-operative period. A future iteration of our quality improvement project can investigate the mode of insertion of the central lines – ultrasound guided is recommended for internal jugular access and advised for other central access sites ⁽⁵⁾ – which may further improve practice and successful first pass insertions.

References

1. Durnford S, Boss L, Bell J. Cytoreductive surgery and hyperthermic intraperitoneal chemotherapy. BJA Educ. 2021;21(5):187–93.
2. Pittiruti M, et al. ESPEN. ESPEN Guidelines on Parenteral Nutrition: central venous catheters (access, care, diagnosis and therapy of complications). Clin Nutr. 2009;28(4):365–77
3. Aplin C. Correct placement of central venous catheters following cytoreductive surgery - Audit. 2019 Jun.
4. Kerr M, McKenna J, Williams D. Audit of current central venous catheter (CVC) insertion depth. Abstract 0163 – E-Poster EPM.161, ICS, 2016
5. Bodenham Chair A, et al. Association of Anaesthetists of Great Britain and Ireland: Safe vascular access 2016. Anaesthesia. 2016;71(5):573–85