

C-loop tunnelling and oblique incision: a modified technique for PICC-Port implantation

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Introduction

PICC-Ports are totally implantable vascular access devices inserted in the upper arm using evidenced-based techniques of PICC insertion (ultrasound guided venepuncture of deep veins of the upper arm utilising micro-puncture kits and catheter tip positioning by intracavitary ECG) with port reservoir placement at the middle third of the arm

(Bertoglio et al., 2023; Brescia et al., 2023). This study explores the feasibility, cosmetic effect, and complications of a modified tunnelling and incision technique for PICC-Port implantation in cancer patients requiring medium to long term intravenous systemic anticancer treatment.

Methods

The C-loop tunnelling and oblique incision technique following Langer lines of skin tension is a modified technique with subsequent placement of reservoir in the upper third of the arm . This novel technique can enable better wound healing and improved scar formation (Berry et al., 2023) that is discreet and easy to disguise for patients. A retrospective observational study reviewing all PICC-Port implantations with C-loop tunnelling and oblique incision technique from 1 of March 2022 to 31 of December 2023 was conducted by the authors. The primary outcome from the study was to monitor feasibility and cosmetic effects. The secondary outcome was the measurement of complications, including device failure requiring the early removal of the device.

Results

A total of 248 cancer patients (n=248) were implanted with PICC-Ports following the described modified technique.

- Patient characteristics: 195 (79%) were female and 53 (21%) were male.
- Cancer groups were as followed: Breast 97 (39%); Gastro-Intestinal 80 (32%); Sarcoma 34 (14%); Gynaecological 28 (11%) and Other Cancer types 9 (4%).
- Excellent cosmetic effect and wound healing in 239 patients (96.4%)
- Minor healing issues in 9 cases (3.6%) with 3 cases (1.2%) developing hypertrophic (keloid) scarring.
- Complications occurred in 12 cases (4.8%): 6 (2.4%) upper limb DVTs (treated with anticoagulation therapy in situ); 6 (2.4%) failures requiring early removal of device; of the device failure requiring removal, 4 (1.6%) were due to reservoir pocket infection and 2 (0.8%) due to CABSII.

Conclusion

The C-loop tunnelling and oblique incision following Langer lines is an easy alternative for tunnelling and pocket formation in the upper arm with a better and more subtle cosmetic appearance than traditional PICC-Port insertion techniques. In addition, PICC-Port implantation following this technique has demonstrated very low risk of complication and optimal patient compliance. This novel technique is worthy of being consider an option for cancer all cancer patients, particularly those with body image issues.

References:

- Bertoglio et al. (2023) A multicentre retrospective study on 4480 implanted PICC-ports: A GAVeCeLT project. *The Journal of Vascular Access*, 24 (5): 1114-1120
- Berry et al. (2023) The effects of mechanical force on fibroblast behaviour in cutaneous injury. *Frontiers in Surgery*, doi: 10.3389/fsurg.2023.1167067
- Brescia et al. (2023) A GAVeCeLT bundle for PICC-port insertion: The SIP-Port protocol. *The Journal of Vascular Access (online)* <https://doi.org/10.1177/11298231209521>

