



Complications Related to Pseudo-Tunneled Peripherally Inserted Central Catheters in Onco-Hematological Patients: A Quasi-Experimental Comparative Study

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Introduction & Aim

Pseudo-tunneling is a modified insertion technique using the ZIM™ method to create a stable exit site. This technique facilitates the selection of the optimal catheter location, allowing for the use of larger-caliber veins.

Aim: To compare the incidence of complications associated to pseudo-tunneled versus non-tunneled PICCs.

Methods



Target Population: Adult onco – hematological patients (n = 169).



Intervention: Quasi-experimental comparative study. Ultrasound guided insertion.



Statistical Analysis: Incidence per 1000 catheter – days. Evaluated via Chi-Square / Fisher test. Significance at $p < 0.05$.

Results

Comparison of complications

Non- Tunneled PICC (n = 65)

Tunneled PICC (n = 104)

Total complication Rates: **13.8%**

Total complication Rates: **16.3%**

No significant difference was found in overall complications ($p = 0.661$).

Complication	Traditional Non-Tunneled PICC (n=65)	Pseudo-Tunneled PICC (n=104)	p-value
Thrombosis	9.2% (6)	6.7% (7)	p=0.553
Migration	4.6% (3)	1.9% (2)	p=0.374
Bacteremia	1.5% (1)	2.9% (3)	p=1.000
Occlusion	1.5% (1)	2.9% (3)	p=1.000
MARSI	1.5% (1)	1.8% (3)	p=1.000
Hematoma	1.5% (1)	1.0% (1)	p=1.000
Accidental partial removal, Lymphatic drainage, Catheter rupture, Kinking	0%	1.0% (1)	p=1.000

Low incidence of Bacteriemia and Thrombosis



The results of pseudo-tunneled PICC didn't show a statistically significant reduction in bacteremia or thrombosis compared to the non-tunneled.



Obesity is strongly associated with catheter occlusion ($p = 0.004$).

Conclusions

- ✓ **Safe & Feasible:** While not showing a statistically significant reduction in complications, pseudo-tunneling remains a highly safe alternative.
- ✓ **Anatomical Advantage:** Facilitates the use of larger caliber veins and creates stable exit sites.
- ✓ **Identified Risk:** Obesity must be considered a relevant risk factor for catheter occlusion.
- ✓ **Future Outlook:** Further studies with larger sample sizes are warranted to clarify long-term benefits.

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references

