

Survival of PTFE grafts vs. Tunneled Cuffed Catheters (TCCs) for Hemodialysis

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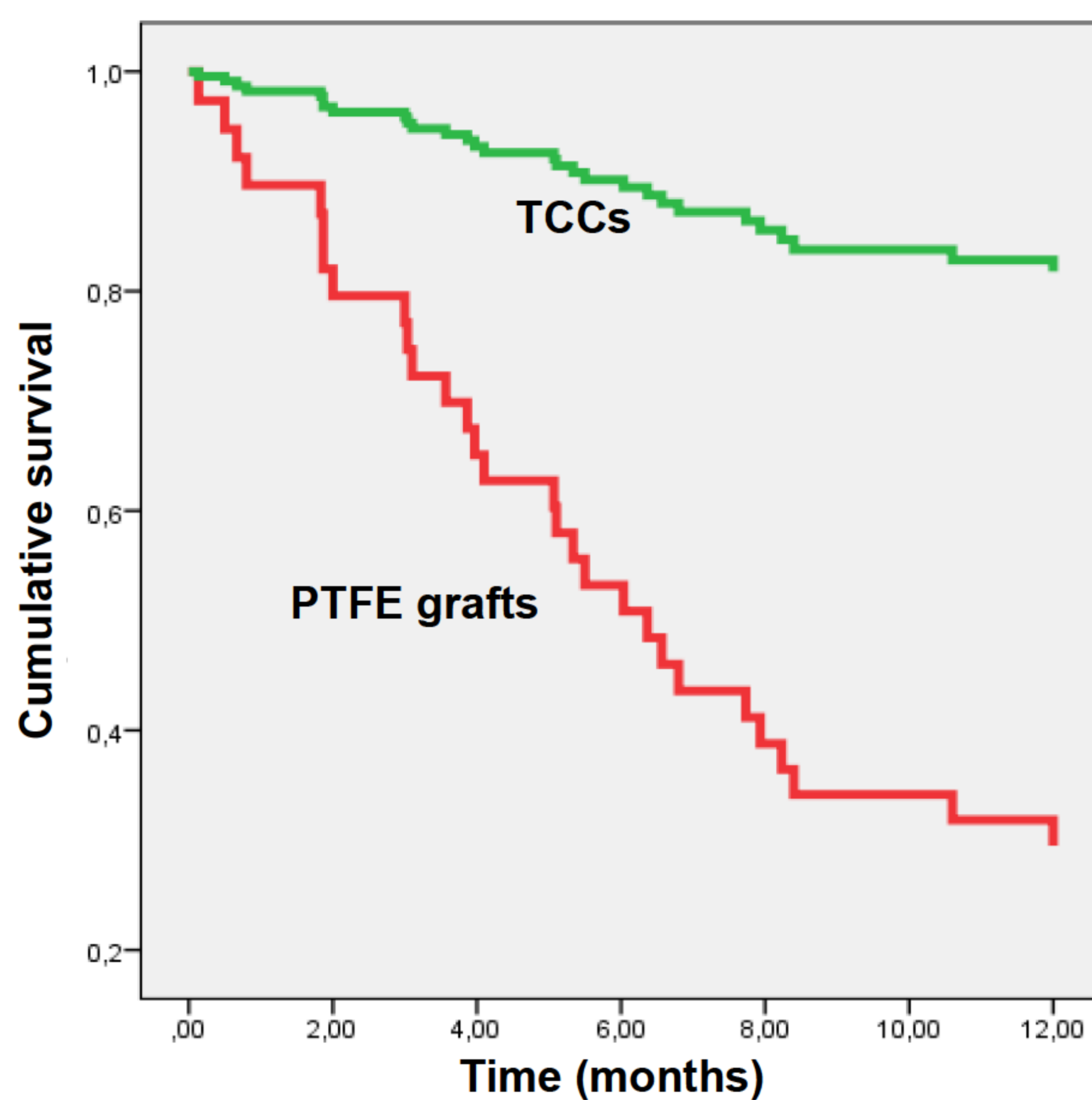
OBJECTIVES

Vascular access related complications are still one of the most important causes of morbidity in hemodialysis patients. The aim of this study is to compare the survival of PTFE grafts vs. TCCs by means of an observational study during a 1-year follow-up period.

METHODS

Ninety two chronic hemodialysis patients were enrolled: 28 (males/females = 16/12) with PTFE graft as vascular access for hemodialysis vs. 64 (males/females = 33/31) with a TCC. All the patients underwent antithrombotic or anticoagulant prophylaxis. The mean age of the patients was 65.2 ± 13.2 (grafts) vs. 73.7 ± 10.9 years ($p < 0.01$). The vascular access survival was assessed as the difference between the vascular access placement and its removal or substitution.

Figure 1: Kaplan Meier survival analysis between PTFE grafts and TCCs, long-rank=23.1, $p < 0.01$



RESULTS

The number of vascular accesses before graft implant was 1.4 ± 1.0 vs. 2.1 ± 1.3 vascular accesses before the TCC placement ($p < 0.05$). The two groups did not differ as regards gender, LDL cholesterol, smoking, diabetes, hypertension, ischemic cardiac injury, cerebral and peripheral arteriopathy, Charlson score. Patients with TCC were significantly more affected by atrial fibrillation in comparison with patients with graft (28.1% vs. 7.1% , $p < 0.05$).

During a 12-month follow up, 19 cases of PTFE graft loss were observed (67.8%) vs. 10 cases of TCC loss (15.6%). 64.2% of the PTFE grafts was affected by thrombosis, 3.6% by infections; 12.5% of TCCs was affected by infections, 3.1% by thrombosis.

The comparison of the survival of the two groups by means of the Kaplan Meier analysis showed a significant difference favoring TCCs use (long-rank=23.1, $p < 0.01$, Figure 1).

The groups differed in age, number of previous vascular access and atrial fibrillation: these three variables, gender and Charlson score were considered as probable risk factors for vascular access survival in a Cox regression analysis. The adjusted risk of vascular access loss was 6.07 times higher for patients with PTFE grafts in comparison with patients who used TCCs (Table 1).

Table 1: Cox regression analysis for vascular access survival

| | B | SE | Wald | df | Sig. | Exp(B) | IC 95,0% per exp(B) | |
|--------------------------------------|-------|------|--------|----|------|--------|---------------------|--------|
| | | | | | | | Min | Max |
| VASCULAR ACCESS | 1.804 | .466 | 14.953 | 1 | .000 | 6.073 | 2.434 | 15.151 |
| GENDER | .275 | .395 | .484 | 1 | .487 | 1.317 | .607 | 2.857 |
| AGE | .010 | .016 | .386 | 1 | .534 | 1.010 | .979 | 1.042 |
| NUMBER OF PREVIOUS VASCULAR ACCESSES | -.026 | .187 | .019 | 1 | .891 | .975 | .676 | 1.405 |
| CHARLSON SCORE | -.001 | .215 | .000 | 1 | .996 | .999 | .656 | 1.521 |
| ATRIAL FIBRILLATION | .170 | .215 | .372 | 1 | .421 | 1.120 | .710 | 1.724 |

CONCLUSIONS

When an arteriovenous fistula for hemodialysis with the native veins is not possible, TCCs can be considered as the vascular access of second choice especially in elderly patients, with a high number of previous vascular accesses and with atrial fibrillation.

References

- 1) Lacson E jr, Lazarus JM, Himmelfarb J, et al. Balancing fistula first with catheter last. *Am J Kidney Dis* 2007; 50(3): 379-395.
- 2) Tordoir J, Canaud B, Haage P, et al. EBPG on Vascular Access. *Nephrol Dial Transplant* 2007; 22(suppl 2):ii88-ii117.
- 3) Coli L, Cuna V, Capelli I, et al. When native arteriovenous fistula is not possible: the permanent catheter is better. *G Ital Nefrol* 2009; 26 (2):154-157.

