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# Clinical Outcomes of Tunneled Central Venous Hemodialysis Catheter in Very Elderly Patients

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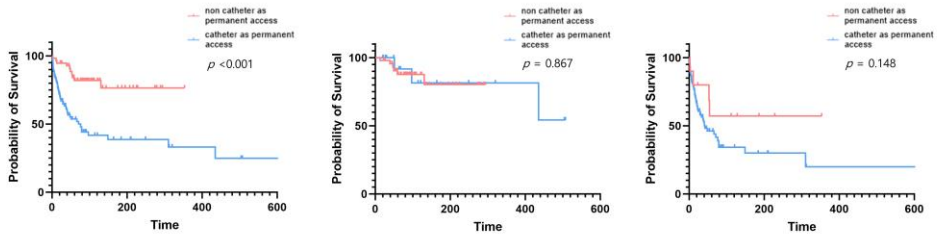
**Objectives :** Following the 2019 KDOQI guideline, hemodialysis vascular access decisions should consider the individual conditions of patients. With Korea's life expectancy at 82.7 years, the utilization rate of tunneled central venous hemodialysis catheters (Tunneled HD catheter) is also expected to increase in the elderly. We investigated Tunneled HD catheter clinical outcomes in those above 80.
**Methods :** This single-center retrospective study, spanning December 2018 to August 2023, analyzed patients initiating hemodialysis with Tunneled HD catheters. It examined catheter maintenance, vascular access change rates, and mortality. Mortality was further assessed in subgroups based on initiation causes, comparing those who retained Tunneled HD catheters to those switching to alternative vascular access.
**Results :** During the study, 183 patients, 48.1% male, aged 84 years (range 80 to 101 years), initiated hemodialysis with tunneled hemodialysis catheters. Vascular access changes included catheter to arteriovenous fistula (AVF) in 40 patients (21.9%), arteriovenous graft (AVG) in 12 patients (6.6%), and peritoneal dialysis (PD) in 4 patients (2.2%). The total group mortality was 37.7%, 69 patients composed of 9 CKD progression patients (4.9%) and 60 AKI patients (32.8%) In the AKI group, septic conditions, observed in 35 patients (19.1%), were the leading cause of death. Mortality revealed significant differences ($p < 0.001$) comparing patients maintaining Tunneled HD catheter with patients shifting to AVF, AVG, or PD (Figure 1A). However, analysis by hemodialysis initiation cause (CKD progression and AKI) showed no significant differences in mortality between catheter as permanent access and non-catheter (AVF, AVG or PD) as permanent access in both CKD progression subgroup ($p = 0.867$) (Figure 1B) and AKI subgroup ($p = 0.148$) (Figure 1C).
**Conclusions :** In conclusion, the tunneled HD catheter stands as a viable permanent hemodialysis access option for elderly patients above 80 years with CKD progression, taking into account the high mortality and life expectancy.

Figure 1.jpg

**Figure 1. Mortality in The Very Elderly Patients**




(A) Total group (B) CKD progression group (C) AKI group

CKD; chronic kidney disease, AKI; acute kidney injury
* Non catheter as permanent access: patients who exchange tunneled HD catheter to AVF, AVG or PD

Figure 1.jpg

| | Patients (n=183) |
|---|---|
| Age, year | 84.40 ± 3.60 |
| Sex (n, %) | |
| Men | 88 (48.09%) |
| Women | 95 (51.91%) |
| Comorbidity (n, %) | |
| Hypertension | 140 (%) |
| Diabetes | 96 (%) |
| CAD | 44 (%) |
| PAD | 9 (%) |
| HF | 101 (%) |
| CVA | 46 (%) |
| Liver disease | 11 (%) |
| COPD | 13 (%) |
| Cancer | 57 (%) |
| Anticoagulant agent | 83 (%) |
| CCI | 9.09 ± 2.22 |

| Cause of Hemodialysis (n, %) | Patients (n=183) |
|---|---|
| CKD progression | 64 (34.97%) |
| AKI | 119 (65.03%) |
| Cardiogenic | 22 (12.02%) |
| Hypovolemic | 9 (4.92%) |
| Septic | 52 (28.42%) |
| Others/Unknown | 36 (19.67%) |
| Change Vascular Access | |
| AVF | 40 (21.86%) |
| AVG | 12 (6.56%) |
| PD | 4 (2.19%) |
| Catheter stay (days) | 76.19 ± 103.62 |
| Mortality | |
| Total | 69 (37.70%) |
| CKD progression patients | 9 (4.92%) |
| AKI patients | 60 (32.79%) |
| Cardiogenic | 11 (6.01%, *50.00%) |
| Hypovolemic | 5 (2.73%, *55.56%) |
| Sepsis | 35 (19.13%, *67.31%) |
| Other/Unknown | 9 (4.92%, *25.00%) |

**Table 1. Patients Baseline Characteristics and Clinical Outcomes**

CAD; coronary artery disease, PAD; peripheral artery disease, HF; heart failure, CVA; cerebrovascular accident, COPD; chronic obstructive pulmonary disease, CCI; Charlson Comorbidity Index
*percentage of mortality according to each cause of hemodialysis initiation