



Catheter-Related Complications Among Undocumented Immigrants on Dialysis

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Objectives

- Dialysis care for undocumented immigrants is limited to emergency-only dialysis after the patient is deemed critically ill.
 - Significant delays in access creation.
 - Higher rates of dialysis initiation with central venous catheters (CVC).
- Objective:** Study the experience of undocumented immigrants on hemodialysis.

Hypothesis

- CVC-dependent patients will experience a higher rate of catheter-associated complications and require more hospitalizations.

Methods

- Design:** Retrospective review of all undocumented patients who initiated dialysis between 2010–2021.
- Categories:** Patients who received dialysis via tunneled catheters (CVC) vs. those who received dialysis via tunneled CVC followed by functional AV access (CAV).
- Outcomes:**
 - Primary:** Catheter-associated complications
 - Defined as mechanical malfunction, infection, or central venous stenosis.
 - Secondary:** Hospitalizations (≥ 48 h hospital stay), Time to vascular surgery referral; Time to vascular surgery evaluation.
- Analysis:** Generalized linear models for association calculations and Student's t- or Wilcoxon-tests for central values comparisons.

Results

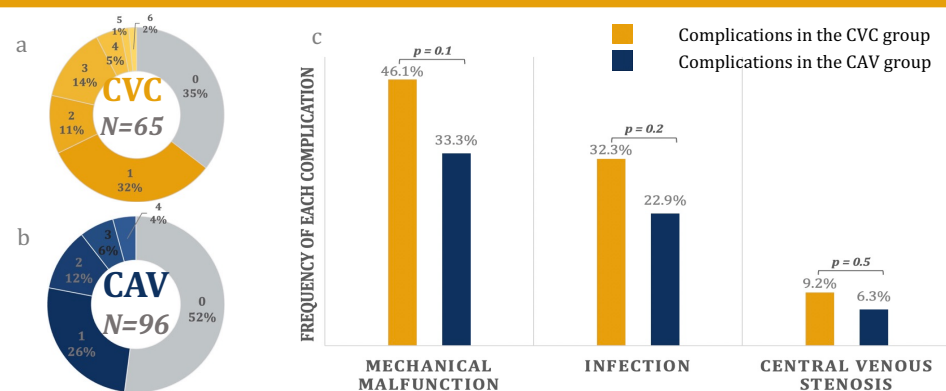


Fig. 1: Distribution of catheter-related complications in CVC (a), CAV (b) patients. Distribution of types of complications by patient group (c).

- CVC patients are more likely to experience catheter-associated complications (OR = 1.55, 95% CI 1.14 – 2.10, p = 0.005).
- CVC patients are more likely to be hospitalized due to catheter-associated complications (OR = 1.67, 95% CI 1.08 – 2.57, p = 0.02).

Table 1: Mean number of complications and timing to first occurrence of each complication.

	Mean Number of Complications			Mean Number of Days before 1 st complication		
	CVC	CAV	P-value	CVC	CAV	P-value
All complications	1.31	0.844	0.029	515	282	0.012
Mech malfunction	0.739	0.479	0.079	669	371	0.018
Infection	0.462	0.292	0.13	581	496	0.58
CVC	0.108	0.0729	0.52	962	770	0.73

- In CAV patients, increased catheter duration is associated with:
 - Increased number of all complications (p < 0.01)
 - mechanical malfunctions (p < 0.01)
 - infections (p = 0.03).
 - Increased number of hospitalizations (p = 0.03).
- Compared to time of HD initiation, no difference was observed in median time to vascular surgery referral (CVC 51 days vs. CAV 110 days, P=0.78) and evaluation (CVC 234 days vs. CAV 337 days, P = 0.64).

Discussion

- Catheter-related complications are frequent in CVC-only patients and avoidable with earlier creation of AV access.
- Current reactive (rather than proactive) approach in addressing these catheter-related complications.
- Clinically significant gap between referral to and evaluation by vascular surgery.

Conclusion

- This study highlights the importance of timely evaluation by vascular surgery for dialysis access in undocumented patients with ESRD.
- Future work aiming at analyzing barriers to evaluation by vascular surgery after referral and optimizing healthcare outcomes in this patient population is necessary.

References

- Rodriguez, R. A., Angulo, M., Finke, D., et al. (2016). The Illness Experience of Undocumented Immigrants With End-stage Renal Disease. *JAMA Internal Medicine*, 176(4), 529-535.
- Rodriguez, R. A., Wallenstein, S., Ayers, C., et al. (2018). Association of Emergency-Only vs Standard Hemodialysis With Mortality and Health Care Use Among Undocumented Immigrants With End-stage Renal Disease. *JAMA Internal Medicine*, 178(2), 188-195.