Outcomes Associated with Embedded Peritoneal Dialysis Catheters

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Introduction and Objective

- The Moncrief-Popovich catheter—more commonly known as an embedded PD catheter—is placed preemptively while a patient has non-dialysis dependent chronic kidney disease (NDD-CKD), thus facilitating urgent initiation of peritoneal dialysis (PD).[1]
- The catheter is buried in subcutaneous tissue and exteriorized when the need for PD arises.
- There is little data about clinical outcomes associated with its use.
- The purpose of this study was to compare outcomes in patients initiating PD after exteriorization of a previously embedded catheter versus those initiating PD after traditional catheter placement.

Methods

- Using internal electronic health record data, we identified all PD patients who initiated PD training for the first time in 2014-2025 with a previously embedded catheter.
- The cohort comprised two eras, reflecting available data: 2014-2021 (Era 1) and March 2024-Feburary 2025 (Era 2).
- Exposure in Era 1 was embedded catheter use during the first treatment at home; exposure in Era 2 was embedded catheter use at first PD training initiation.
- Outcomes included training graduation, peritonitis episodes, conversion to hemodialysis, death, and cumulative hospitalizations.
- After pooling and stratification by era, and adjustment for demographic characteristics, associations were derived from Cox proportional hazards and Poisson regressions.

Results

Table 1: Demographic characteristics of incident PD patients, with or without embedded catheter, by era

	Era 1 Embedded	Era 1 Not embedded	Era 2 Embedded	Era 2 Not embedded
Sample size (N)	809	61,082	231	11,227
Age, years, mean (SD)	58.3 (15.3)	58.6 (15.6)	62.4 (14.8)	60.4 (15.9)
Sex, %				
Female	39.8%	41.0%	41.1%	40.6%
Male	60.2%	59.0%	58.9%	59.4%
Race, %				
White	62.7%	54.7%	56.3%	54.1%
Black	21.1%	22.5%	19.0%	15.0%
Other	5.7%	6.8%	14.3%	15.6%
Unknown	10.5%	16.0%	10.4%	8.7%
Hispanic ethnicity, %	9.3%	13.8%	17.7%	17.6%
Diabetes as primary ESKD cause, %				
Unknown	14.0%	15.4%	16.0%	10.9%
No	51.1%	48.7%	51.0%	55.8%
Yes	35.0%	35.9%	32.9%	33.3%
ESKD vintage, years, mean (median)	0.5 (0.0)	0.6 (0.0)	0.4 (0.0)	0.5 (0.0)

ESKD, end stage kidney disease; PD, peritoneal dialysis; SD, standard deviation

Table 2: PD prescription parameters at initiation of treatment in the home

	Era 1 Embedded	Era 1 Not embedded	Era 2 Embedded	Era 2 Not embedded
Sample size (N)	809	61,082	215	10,261
Treatment frequency				
<7 days	2.2%	3.3%	9.3%	7.0%
7 days	97.8%	96.7%	90.7%	93.0%
Type of PD				
CAPD	46.4%	30.1%	13.5%	9.8%
APD	53.7%	69.9%	86.5%	90.2%
Cumulative dialysate volume, L/d, mean (SD)	8.87 (3.86)	8.81 (3.71)	7.92 (2.64)	8.21 (2.36)
Last fill, % (in APD patients)	30.2%	28.6%	9.1%	12.4%

APD, automated peritoneal dialysis; CAPD, continuous ambulatory peritoneal dialysis; PD, peritoneal dialysis; SD, standard deviation

- Era 1 mean follow up duration in patients without embedded catheter (24.1 months) was longer than those with embedded catheter (23.5 months).
- Era 2 mean follow up duration in patients without embedded catheter (9.9 months) was similar to those with embedded catheter (10.0 months).

Table 3. Time since catheter placement, era 2

	Embedded	Not embedded
Sample size (N)	229	11,183
Time, month, mean (SD)	4.2 (6.2)	1.0 (3.0)
Time, month, quantile		
10th percentile	0.4	0.2
25th percentile	0.7	0.4
50th percentile	2.0	0.6
75th percentile	4.6	0.9
90th percentile	10.0	1.7

Figure 1. Cumulative incidence of conversion to hemodialysis and death, by era

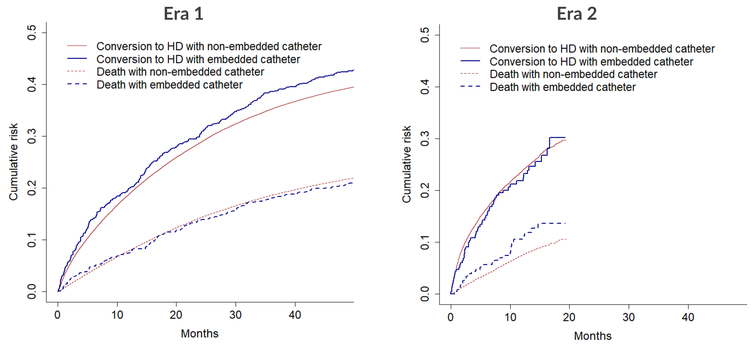


Table 4. PD training graduation in era 2

	1 week	2 weeks	3 weeks	4 weeks	5 weeks	6 weeks	7 weeks	8 weeks
Not embedded	3.4%	34.1%	57.5%	70.0%	77.5%	82.0%	84.8%	86.7%
Embedded	6.1%	39.0%	61.5%	72.3%	76.2%	81.8%	84.8%	87.9%

Figure 2. Relative rates of clinical outcomes with embedded catheter, by era

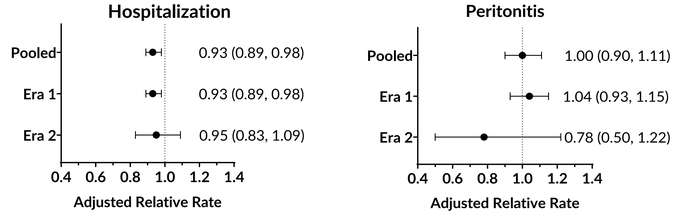
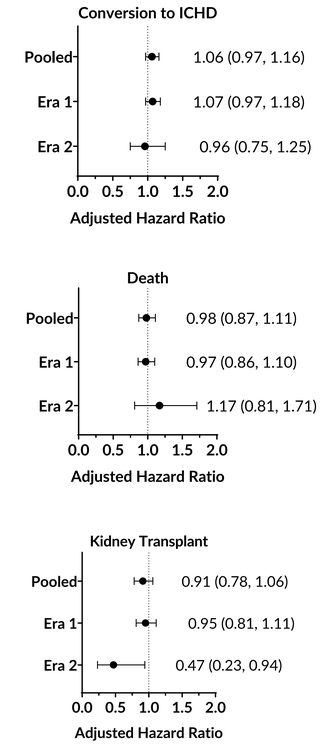


Figure 3. Relative rates of PD outcomes, by era



Conclusions

- Patients who initiated PD with a previously embedded catheter had similar rates of peritonitis, conversion to hemodialysis, and death, relative to those with traditional catheter placement.
- Training was completed more rapidly, and hospitalizations were modestly less likely in patients with a previously embedded catheter than those without.

References & Acknowledgments

1. Moncrief JW, Popovich RP, et al. The Moncrief-Popovich catheter. A new peritoneal access technique for patients on peritoneal dialysis. ASAIO J. 1993 Jan-Mar;39(1):62-5..

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