

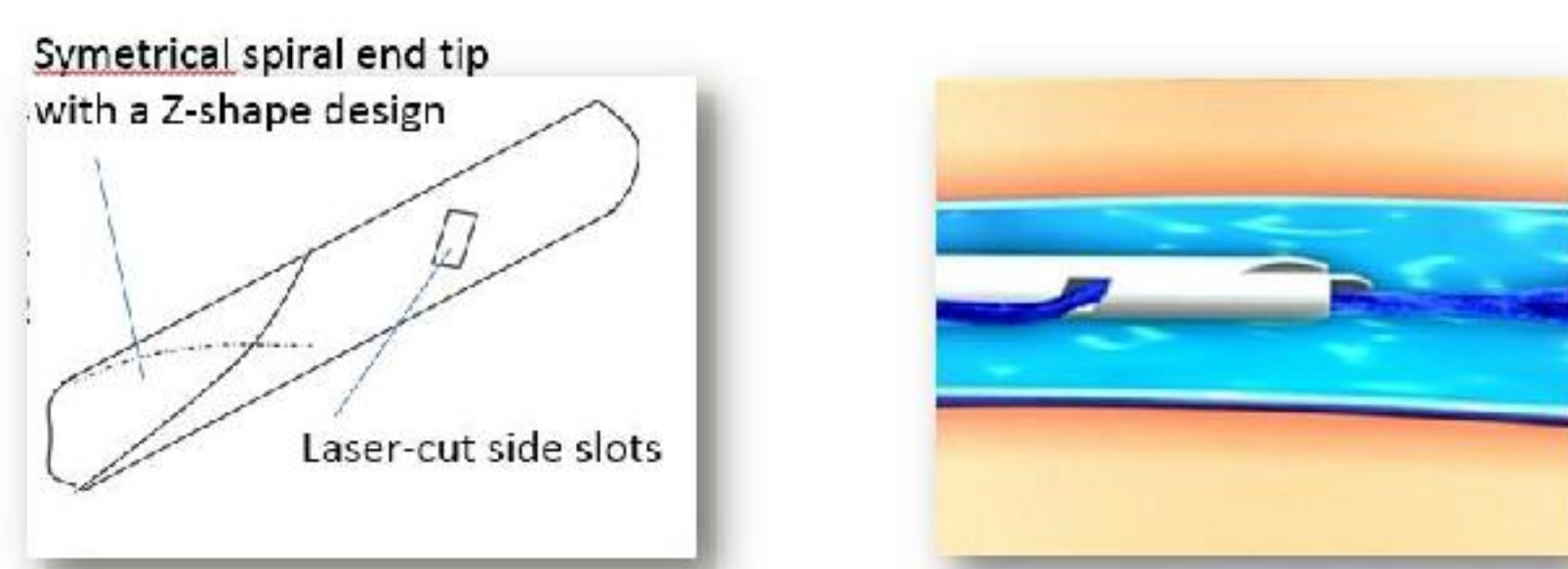
EFFECTIVENESS OF THE PALINDROME TUNNELED CATHETER IN ACHIEVING ADEQUATE DIFFUSIVE AND CONVECTIVE DIALYSIS DOSES: A SINGLE-CENTER PROSPECTIVE STUDY



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OBJECTIVES

Poor function of hemodialysis (HD) catheters due to flow and recirculation problems commonly leads to increase the length of dialysis sessions for achieving adequate dialysis dose, being one of the leading causes of unplanned catheter removal in HD patients. As opposite to commonly used HD catheters with a staggered tip design, Palindrome catheters have a symmetric tip design, providing better flow rates and lower risk of recirculation even if reversal of the lumens is performed to correct inadequate inflow.



The present study assessed the effectiveness of the Palindrome catheter compared to arteriovenous (AV) fistula in achieving adequate dialysis dose in a 4-hour thrice weekly in center HD regimen.

METHODS

Single-center, prospective, observational, noninferiority study, comparing 4-hour HD sessions performed with Palindrome catheter Vs AV fistula.

INCLUSION CRITERIA.

- All HD subjects with Palindrome catheter or arteriovenous (AV) fistula, attending our Unit from January 2012 to December 2014 with a 4-hour thrice weekly HD regimen.
- Informed consent.

EXCLUSION CRITERIA

- Patients with other tunneled cuffed catheter or other HD regimen were excluded.

PRIMARY OUTCOMES

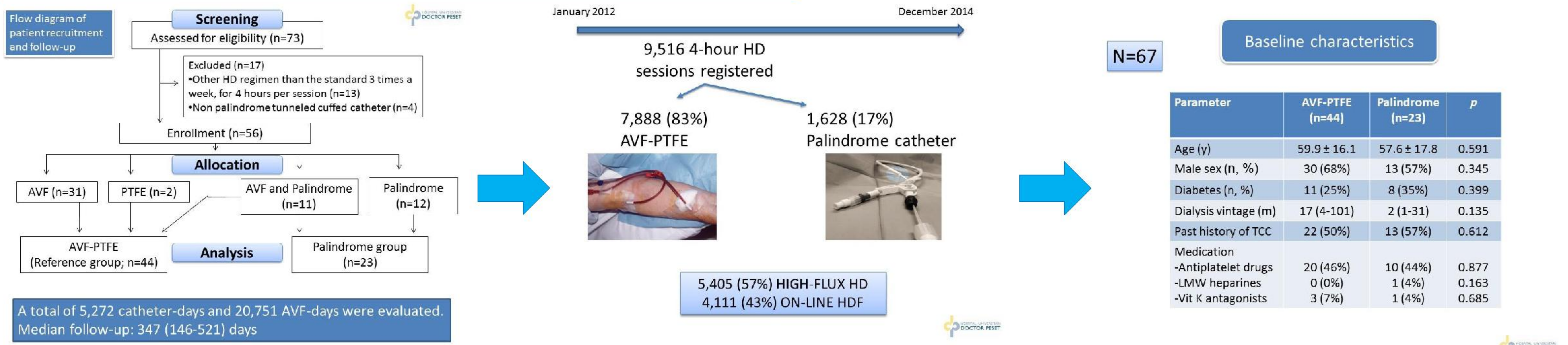
Recirculation rate, Kt and convective volumen assessed in each HD session by thermodilution and the conductivity-based online clearance measurement (5008 dialysis machine, Fresenius).

Proportion of HD sessions which obtained a Kt of at least 45L, and an effective convective volume of at least 18L.

A target blood flow rate of 400 ml/min and a FX100 Helixone dialyzer (Fresenius) were prescribed in all the sessions.

All sessions were registered with .

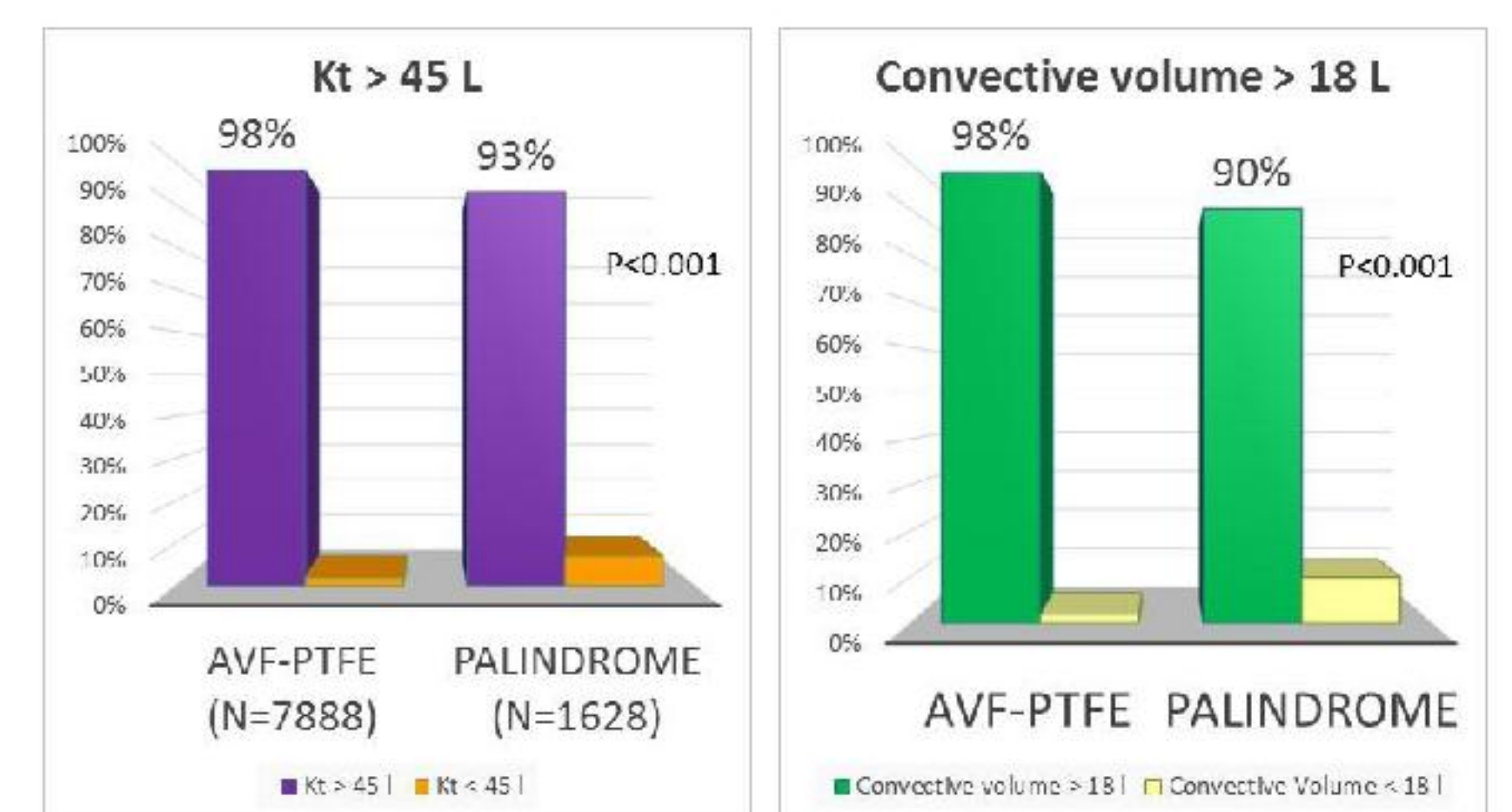
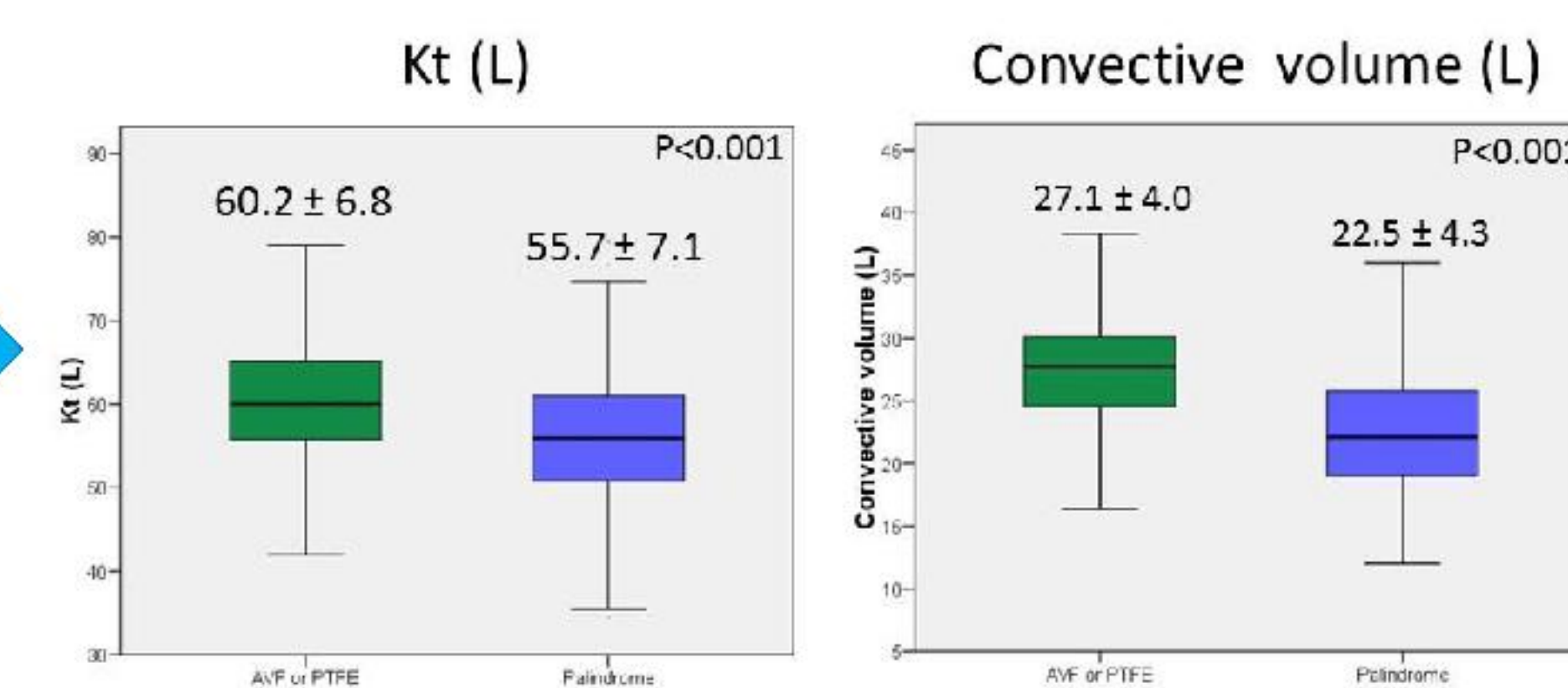
RESULTS



Dialysis parameters

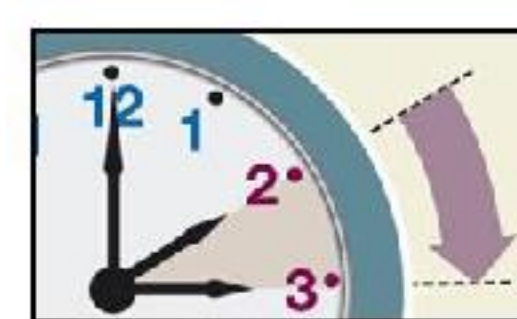
Characteristics	AV Fistula (n=7,888)	Palindrome Catheter (n=1,628)	p
Blood flow rate (ml/min)	368 ± 33	338 ± 39	<0.001
Arterial pressure (mm Hg)	-183 ± 49	-221 ± 36	<0.001
Venous pressure (mmHg)	154 ± 35	176 ± 33	<0.001
Dry weight (kg)	68.5 ± 14.2	68.2 ± 11.6	0.300
UF volume (l)	2.1 (1.3-2.9)	2.3 (1.2-3.1)	0.143

Primary Outcomes



...more than 90% of the sessions performed with Palindrome catheter achieved adequate diffusive and convective dialysis doses.

- Lumen reversal occurred in the dialysis sessions of 9 (39%) patients with Palindrome catheter, with no effect on dialysis dose.



How much should dialysis time be increased when Palindrome catheters are used?

With a mean Kt of 55.7 liters in 240 min, the estimated K is 240 ml/min.

With a Qb prescribed of 400 ml/min, the additional time to 240 min required to achieve a Kt of...

Target	Connection	Additional time
45 L	Normal or reversed	Not required
55 L	Normal or reversed	Not required (44 min were spared!)

Palindrome Group Outcome (n=23)

- Median follow-up: 153 (64-366) days
- Catheter survival censored for elective removal
- Total infection rate 0.19
- Definite CRBSI rate 0.19
- Thrombosis rate 0
- Incidences rates are given as number/1,000 catheter days. CRBSI = Catheter-related bloodstream infections
- In 8 patients, the catheter was removed electively (transfer to PD, transplantation, AVF maturation)
- In 2 patients, catheter removal was due to catheter design-unrelated causes (leak to brachiocephalic vein and accidental removal)
- No removal for infection or thrombosis.

CONCLUSIONS

Although arteriovenous fistula should remain the first choice of vascular access:

- Palindrome catheters provided a low risk of recirculation.
- In 4-hour thrice weekly HD patients, the use of a Palindrome catheter could avoid increasing the length of the dialysis sessions in majority of patients, even when convective therapies are performed and the lines connection are reversed.
- Randomized trials with dialysis dose as primary endpoint are warranted to confirm these findings.

