

The Saudi Peritoneal Dialysis Catheter: Modified Catheter and New Technique: Farewell to Catheter Migration

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OBJECTIVE

To introduce our new, three-cuff peritoneal dialysis (PD) catheter with the low-entry technique and to study its impact on catheter survival and mechanical and infectious complications.

METHODS

This is a prospective randomized study which was carried out in a University Hospital over a period of 18 months. The new catheter and technique were used in thirty-six incident PD patients, while the conventional double-cuff PD Tenckhoff catheter with the classic approach was used in 37 patients.

RESULTS

Significantly higher survival rate ($p < 0.01$) in the new catheter as compared to the conventional 2-cuff Tenckhoff catheter. The difference in catheter survival was due to a lower incidence ($p < 0.01$) of catheter-tip migration and a lower incidence ($p < 0.01$) of peritonitis with our new 3-cuff catheter with the low entry technique as compared to the 2-cuff Tenckhoff catheter. Dialysis fill and drain times were significantly shorter and Kt/V was better with our new catheter. At 18 months, catheter survival was 91.7% and 73% for the new 3-cuff and the conventional 2-cuff Tenckhoff catheters respectively ($p < 0.01$).

Table 1: Baseline demography of patients

	Group 1 n= 36	Group 2 n= 37	p
Age, median (IQR)	54 (42-63)	50 (45-61)	> 0.05
Gender (female/male)	11/25	13/24	> 0.05
Diabetes mellitus, n (%)	23 (63.9)	21 (58.3)	> 0.05
BMI, median (IQR)	29.6 (28.1-32.0)	30.1 (27.9-31.5)	> 0.05
GFR, ml/min [median (IQR)]	8.2 (8.0-9.5)	8.5 (7.8-9.6)	> 0.05
Serum Cr, $\mu\text{mol/L}$ [median (IQR)]	945.9 (742.6-990.1)	857.5 (733.7-945.9)	> 0.05
Serum albumin, gm/dl [median (IQR)]	3.5 (2.8-3.7)	3.5 (3.0-3.6)	> 0.05
Hgb, gm/dl, median (IQR)	8.6 (8.1-10.4)	9.0 (8.4-9.9)	> 0.05

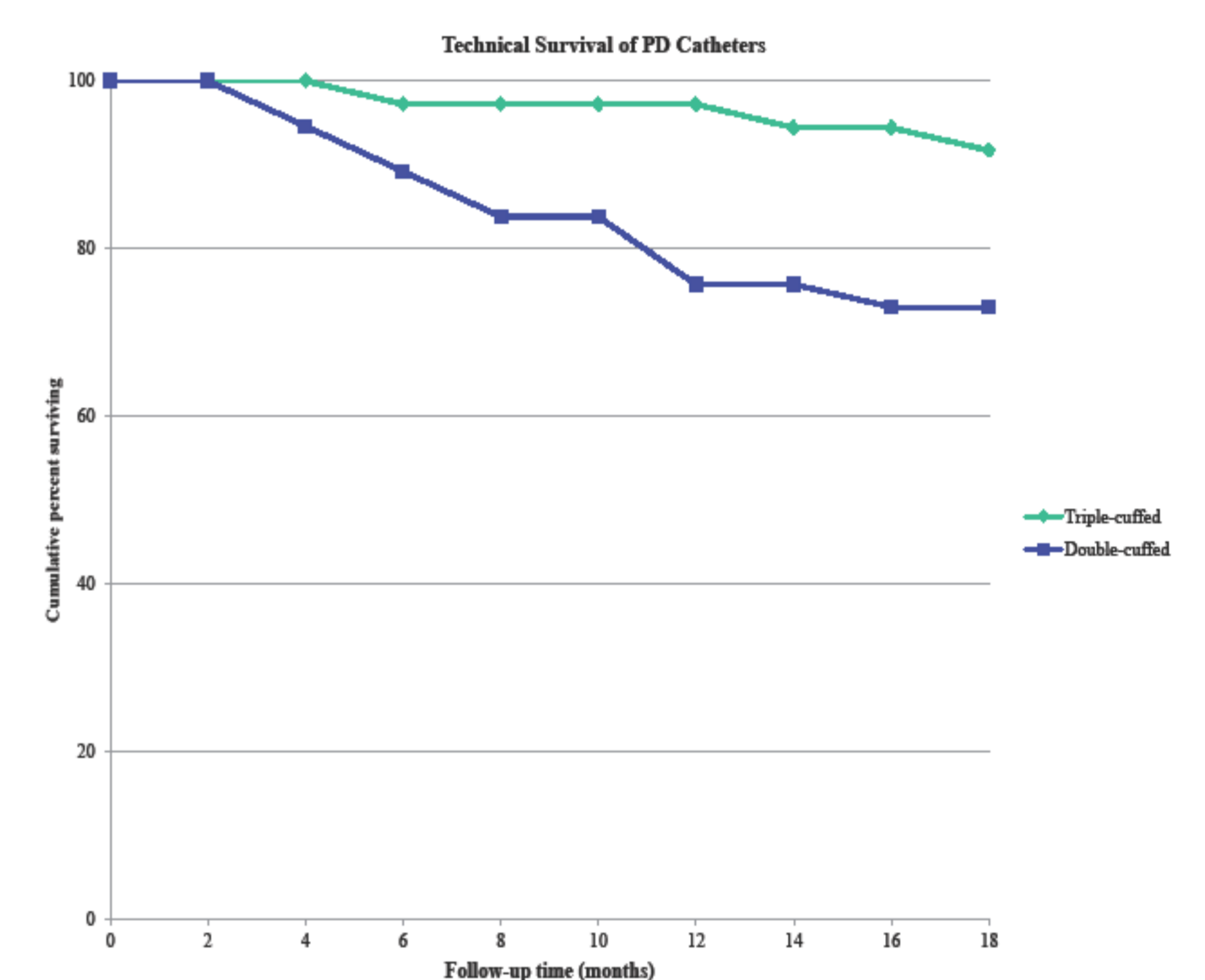
BMI= body mass index, GFR= glomerular filtration rate, Cr= creatinine, Hgb=hemoglobin, IQR= interquartile ratio

Table 2: Fill time, drain time and Kt/V in the 2 groups

	Conventional double-cuff Tenckhoff catheter	Triple-cuff PD catheter	p
Fill time, min (Mean + SD)	13.2 \pm 2.2	7.1 \pm 1.2	< 0.01
Drain time (min) (Mean + SD)	14.4 \pm 2.1	7.3 \pm 1.4	< 0.01
Kt/V [median (IQR)]	1.78 (1.71-1.84)	2.2 (1.93-2.24)	< 0.01

Table 3: Technical complications at the end of study

	Triple-cuff n= 36	Double-cuff n= 37	p
Bowel perforation [n (%)]	0 (0)	0 (0)	
Hemorrhage* [n (%)]	0 (0)	0 (0)	
Poor drainage [n (%)]	1 (2.8)	11 (29.7)	< 0.01
Omental wrapping [n (%)]	1 (2.8)	6 (16.2)	< 0.01
Catheter migration [n (%)]	0 (0)	6 (16.2)	< 0.01
Early leakage** [n (%)]	2 (5.6)	3 (8.1)	NS
***Catheter replacement	1 (2.8)	5 (13.5)	< 0.01



CONCLUSION

The study demonstrates the superiority of our new catheter and our new technique over the conventional one in terms of catheter survival. This is due to fewer incidences of catheter tip migration in addition to lower peritonitis rates. Dialysis adequacy was better because of shortened fill and drain time.

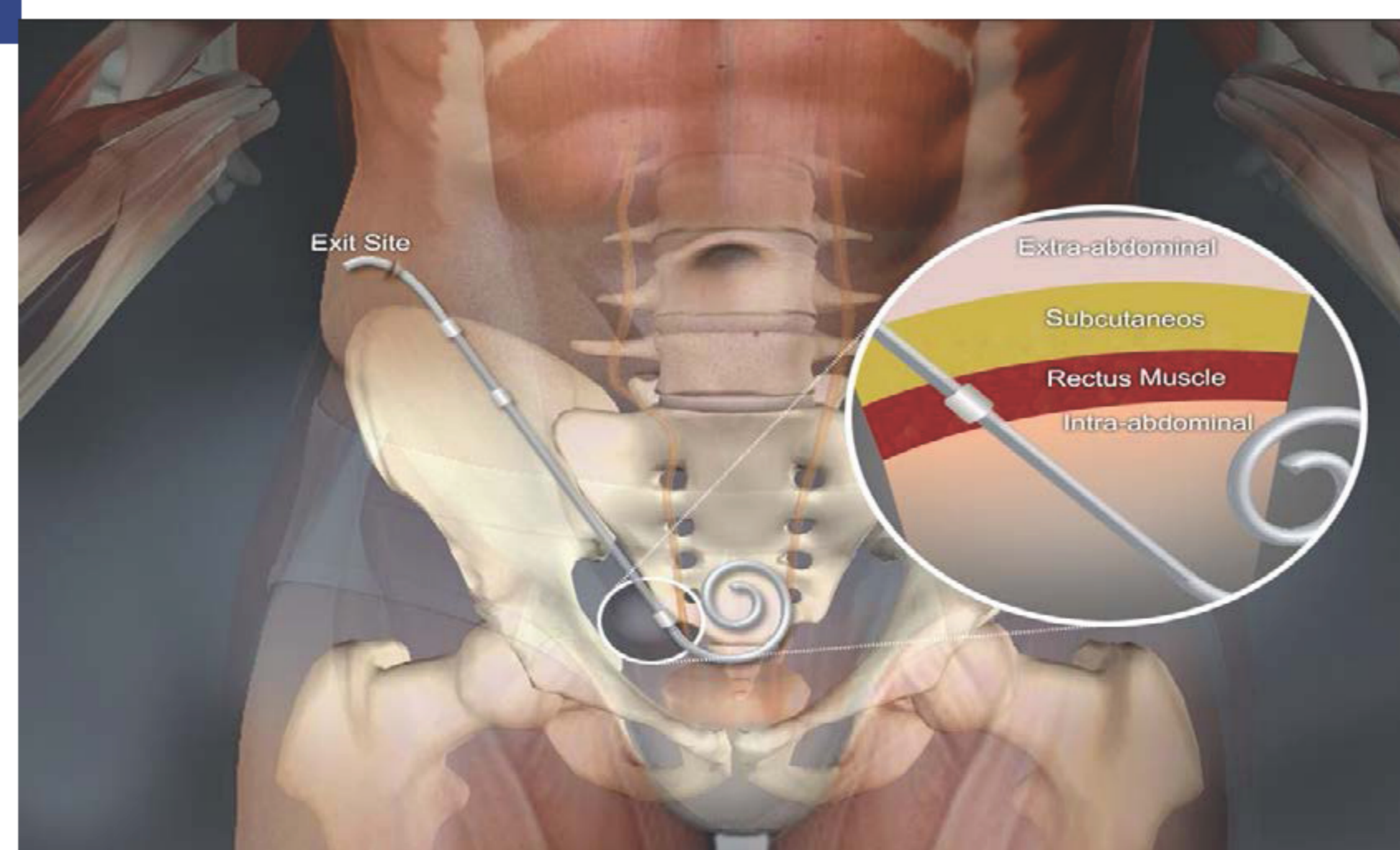
CATHETER DESCRIPTION

The triple-cuff PD catheter is silicone-rubber and about 57 cm in lengths. Details of the Saudi PD catheter are shown in Figure-1. The followings are the specifications of the Saudi PD: 1. Its length of the catheter (from the proximal to the distal end) is 57 cm. 2. The distance from the distal cuff to pores is only 2 cm. 3. The length of coiled segment is 18cm 4. The distance between the second (middle) and third (distal) cuff is 10 cm. 5. The distance between the first (proximal) and second cuff is 5 cm. 6. The distance from the proximal cuff and the proximal end of the catheter is 24 cm. Surgical technique for the triple-cuff catheter insertion:

KEYWORDS

ESRD, PD, PD catheter migration, Tenckhoff catheter

FIGURE



Saudi Peritoneal dialysis catheter

