

Low dose urokinase infusion to restore the patency of tunnelled central vein haemodialysis catheters

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Objectives:

Permanent haemodialysis catheter dysfunction is common, results in inadequate dialysis treatment and remains a significant cause of catheter loss and interrupted haemodialysis sessions. A number of regimes using urokinase infusion have been used but optimum management remains undetermined.

The purpose of this study was to evaluate the West London Renal Transplant Centre's policy of a low dose (12500 units over a period of 3 hours, per lumen) urokinase infusion in the clearance of poorly functioning tunneled haemodialysis catheters (blood flow rate <350ml/min and spkt/v<1.6).

Methods:

We retrospectively analyzed all the cases of poorly functioning catheters that were admitted on our planned investigation unit (PIU) from April 2011 until October 2014.

Table 1

Number of Infusions (male/female)	130 (56/74)
Number of Patients (male/female)	99 (48/51)
Pre Blood Flow rate (ml/min)	262.75 ± 74.0
Pre Kt/V	1.32 ± 0.44

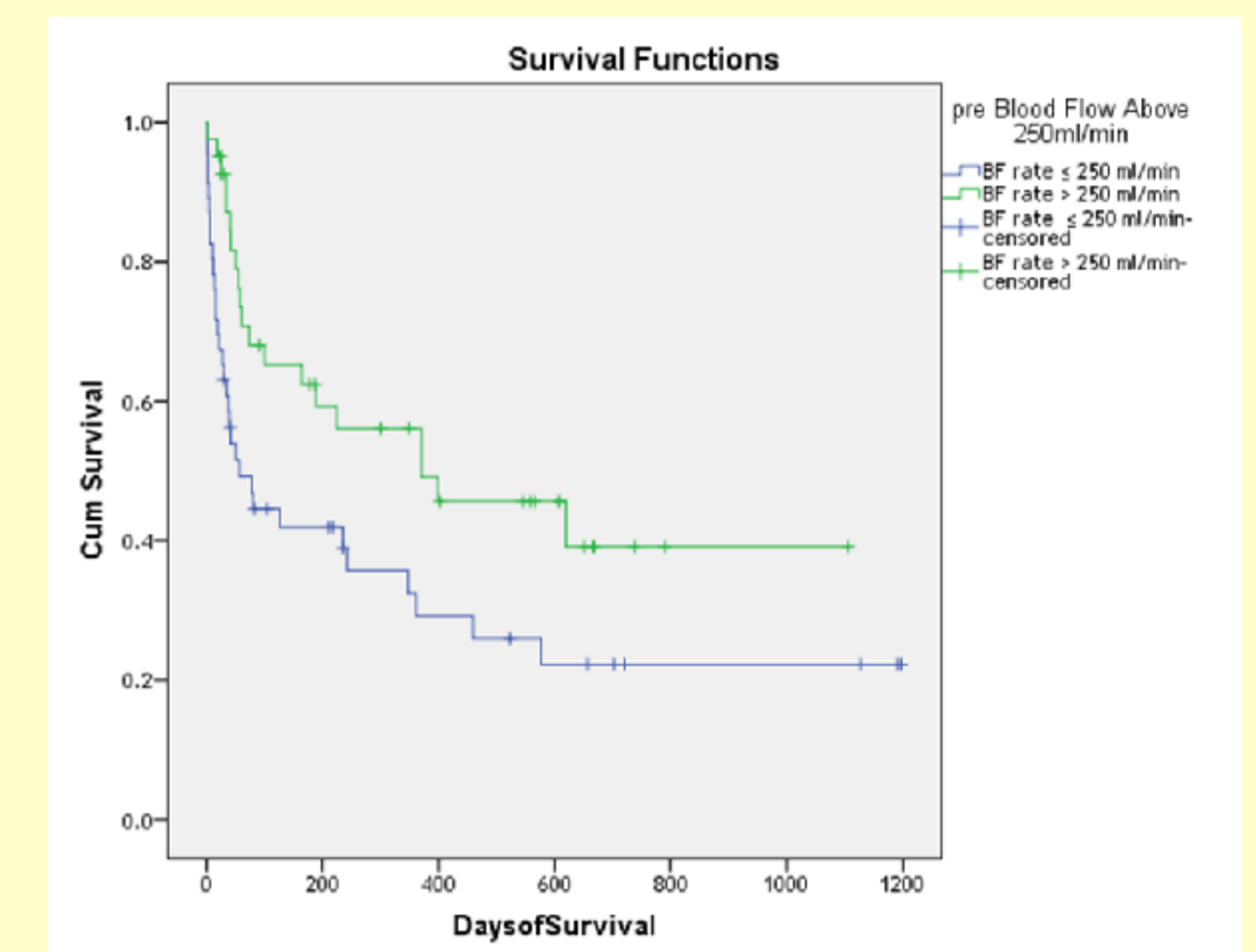
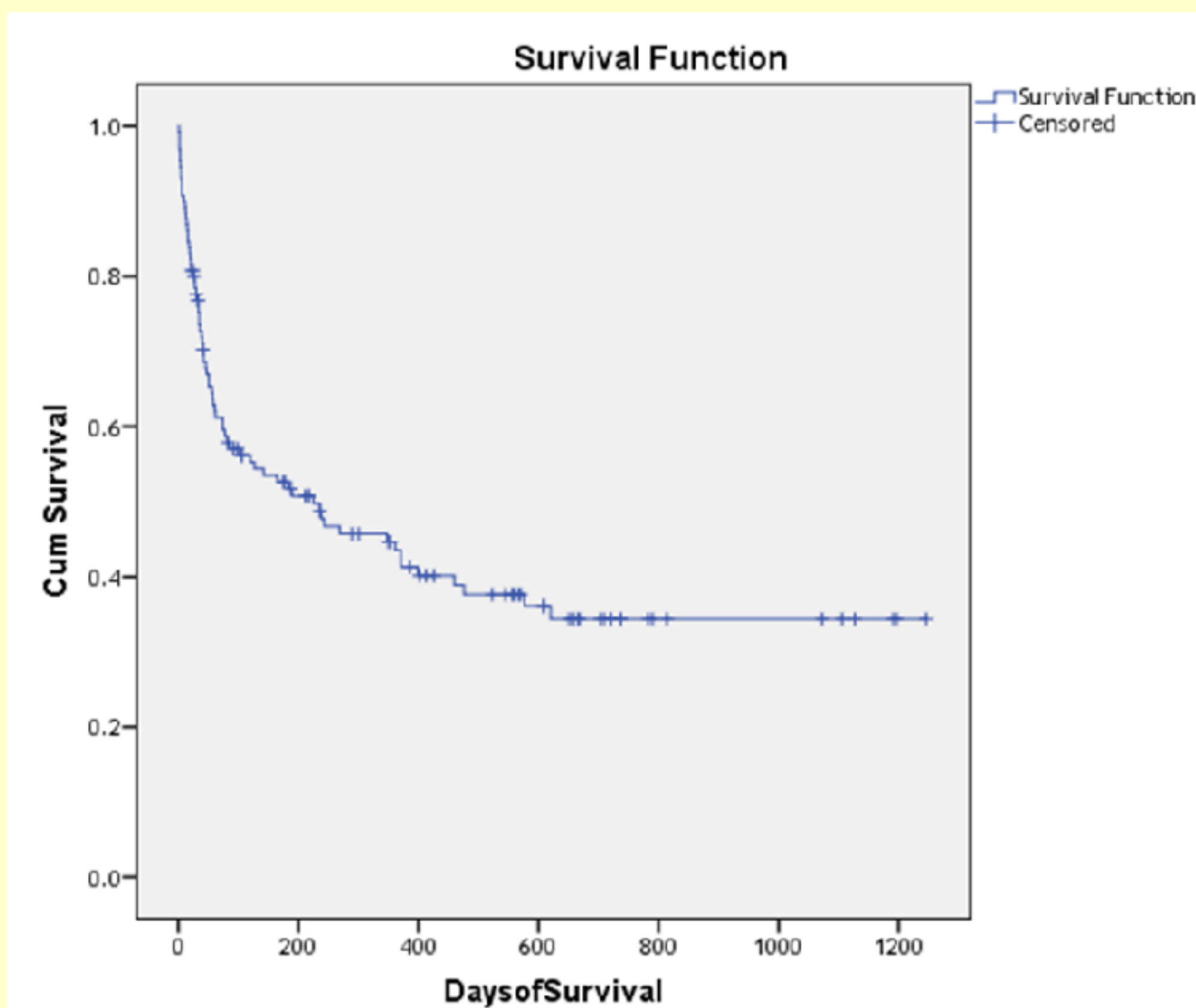
Table 2. Effects of Urokinase infusion in blood flow and Kt/V

	Pre infusion	Post infusion	p value
Blood Flow rate (ml/min)	262.75 ± 74.0	322.2 ± 85.62	<0.001
Kt/V	1.32 ± 0.44	1.57 ± 0.52	<0.001

Table 3. Number of Central venous catheter (CVC) exchanges post urokinase infusion

CVC exchange	61
CVC exchange 0-30 days	29
CVC exchange 31-60 days	16
CVC exchange 61-100 days	5
CVC exchange >100 days	19

Overall Catheter Survival



Comparing patients with BF below and above 250ml/min

Results:

- One hundred thirty PIU admissions, 99 patient (51 female) had urokinase infusion.
- The infusion resulted in an improvement in blood flow rate (262.75 ± 74 vs 322.2 ± 85.6ml/min, p=0.001) and spkt/v (1.32 ± 0.44 vs 1.57 ± 0.52, p<0.001).
- Ten patients needed a second infusion within 6 weeks, (6 of them within a week).
- Sixty patients needed a central venous catheter exchange; median (IQR) 40.5 (16/115) days post urokinase infusion. Ten of those 60 patients had additional indication of catheter removal (catheter related infection or cuff dislocation).
- Thirty-nine patients (39.4%) had fully restored catheter patency after the low dose urokinase infusion, median (IQR) follow-up time 523 (178/709) days or 17.4 (5.9/23.6) months.

No adverse reactions to urokinase were seen, no bleeding nor allergic reactions in any patient.

References:

- Twardowski ZJ, Am J Kidney Dis. 1998 May;31(5):841-7.
- Webb A1. et al Nephrol Dial Transplant. 2001 Oct;16(10):2075-8.
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Conclusions:

A 3-hour low dose urokinase infusion of 12500 units in each lumen can safely salvage function of obstructed catheters that otherwise may require urgent replacement.

