

Predictors of early re-intervention after ureteral Tumorstent insertion for obstructive uropathy



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Background and aims

Ureteral Tumorstents are known for their robustness and can be used for long-term therapy of obstructive uropathy. Manufacturers recommend a maximal dwell time of 6 months. Aim of this study was to evaluate predictors of early re-intervention after first-time Tumorstent insertion.

Material and methods

We analyzed all patients treated with a Tumorstent (Bard® angiomed UROSOFT) between 2010 and 2018. Patients with planned temporary dwell time (e.g. protective insertion before abdominal surgery) were excluded. Primary endpoint was time to re-intervention (Tumorstent exchange or nephrostomy tube insertion) after first-time Tumorstent insertion. Elective Tumorstent exchange was usually undertaken within 1 month prior to maximal dwell time (i.e. between 5 to 6 months after insertion). Therefore, only the first 5 months (150 days) after insertion were considered for analysis of early re-intervention. Proportions were compared with Chi Square tests. Time-dependent variables were evaluated with Kaplan-Meier curves, log-rank tests and Cox-regression analyses.

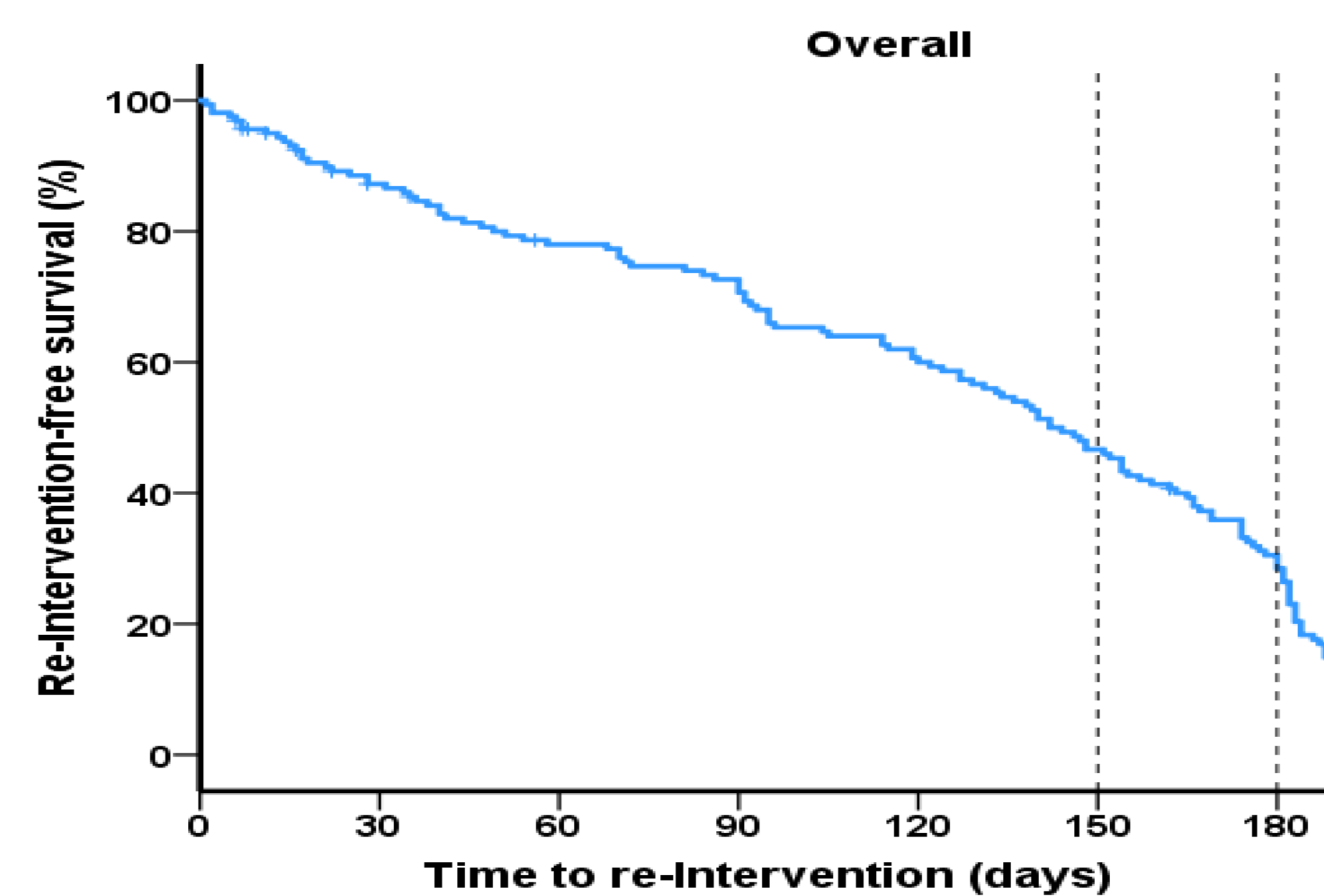
Results

A total of 185 patients were available for analysis. Thereof, 122 (65%) were male and 63 (35%) were female. Mean age was 67 years (SD 14 years). Mean patient height, weight and BMI was 169 cm (SD 10 cm), 75 kg (SD 17 kg) and 26 kg/m² (SD 5 kg/m²), respectively. Left, right or bilateral disease was present in 72 (39%), 63 (34%) and 50 (27%) cases, respectively. Diagnosis leading to Tumorstent insertion was extrinsic or intrinsic ureteral obstruction in 161 (87%) and 24 (13%) patients, respectively (Table 1). No association between Tumorstent diameter and Tumorstent length was found ($p = 0.18$). Patient height and weight were significantly associated with Tumorstent length ($p < 0.05$) (mean 166 cm and 72 kg for 28 cm Tumorstents; mean 172 cm and 77 kg for 32 cm Tumorstents). Re-intervention-free survival at 1, 2, 3, 4 and 5 months was 87%, 78%, 72%, 60% and 47%, respectively. (Figure 1). Of all pre-operative and peri-operative parameters, we found diagnosis leading to Tumorstent insertion, Tumorstent length, postoperative antibiotic therapy and weight as independent significant predictors of early re-intervention (Table 2 and Figure 2-4) (all $p < 0.05$).

Conclusions

Early re-intervention occurs in more than half of all patients after first-time Tumorstent insertion for obstructive uropathy. Diagnosis leading to Tumorstent insertion, Tumorstent length, postoperative antibiotic therapy and patient weight seem to be predictors of early re-intervention. Patients and physicians must be aware that health-related factors may negatively impact on the theoretical maximal dwell time of 6 months recommended by manufacturers.

Figure 1: Overall Re-Intervention-free survival



Days after Tumorstent insertion	30	60	90	120	150
Re-intervention-free survival rate	87%	78%	72%	60%	47%

Table 1: Clinical characteristics of the study cohort

Patients, total	185
Male	122 (65%)
Female	63 (35%)
Age, mean (SD)	67yrs (14yrs)
Height, mean (SD)	169cm (10cm)
Weight, mean (SD)	75kg (17kg)
BMI, mean (SD)	26 kg/m ² (5 kg/m ²)
Disease localisation	
Left	72 (39%)
Right	63 (34%)
Bilateral	50 (27%)
Diagnosis leading to Tumorstent insertion	
Extrinsic ureteral obstruction	161 (87%)
Intrinsic ureteral obstruction	24 (13%)

Figure 3

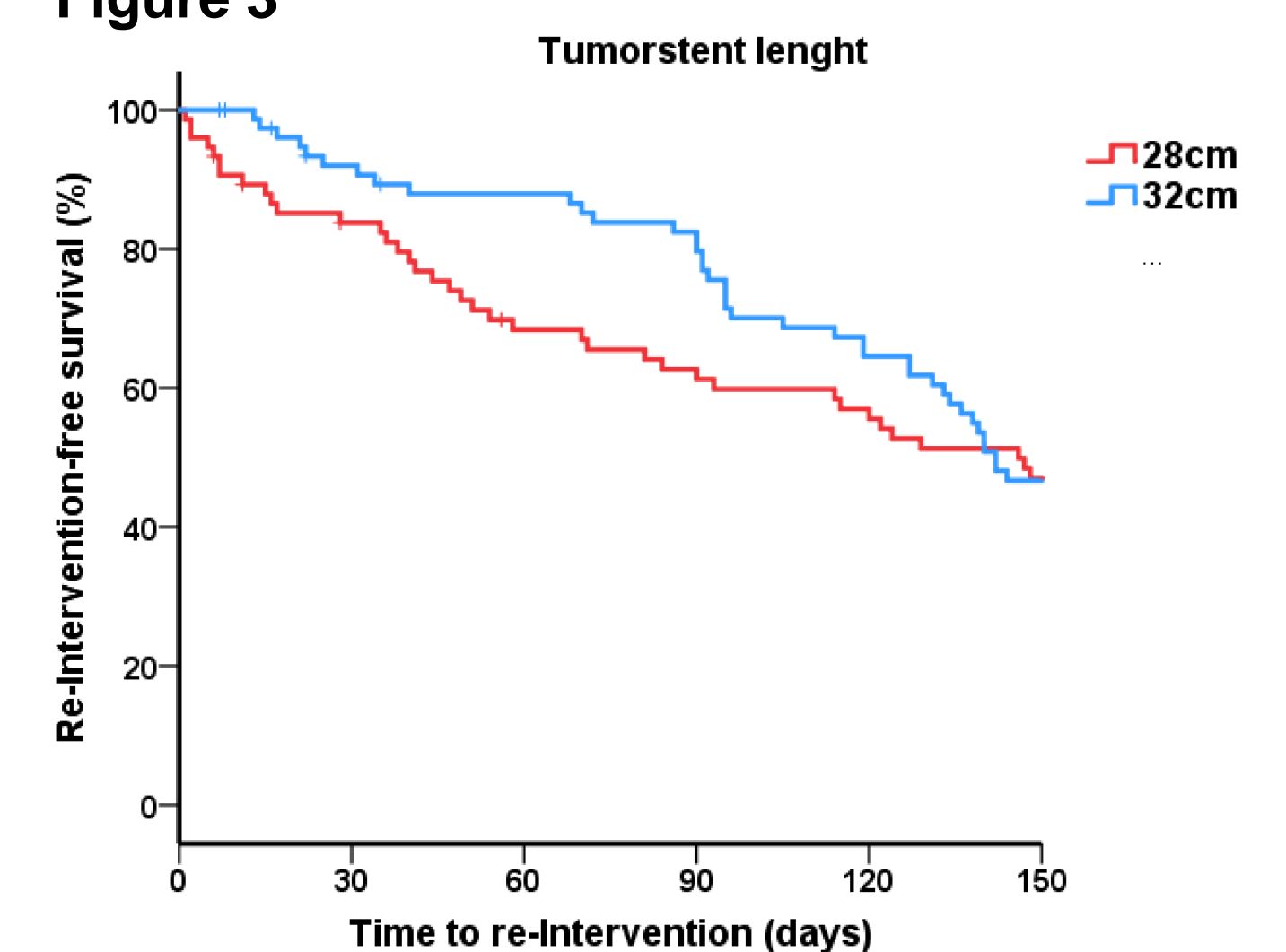


Figure 2: Diagnosis leading to Tumorstent insertion

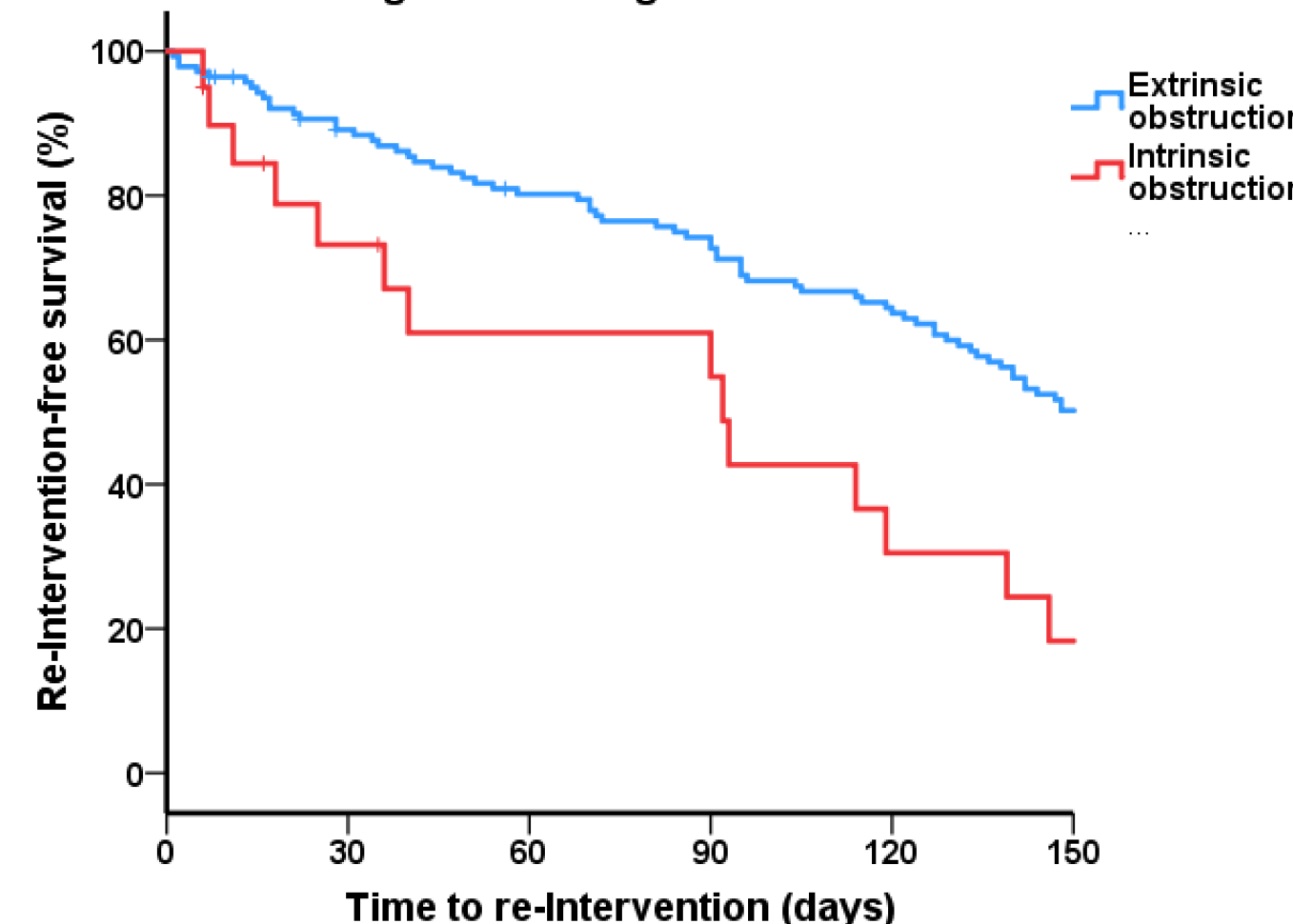


Figure 4

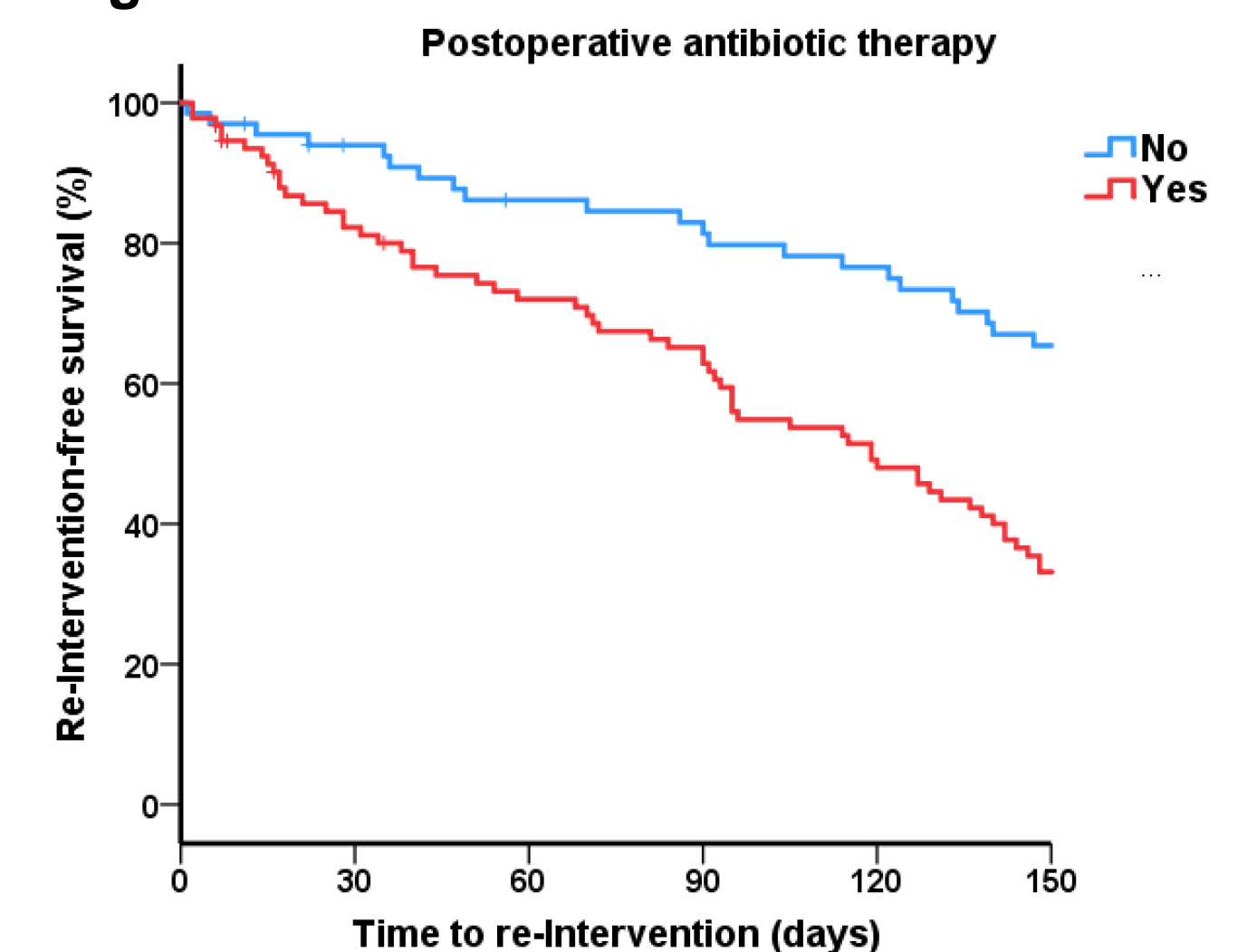


Table 2: Cox regression analysis for predictors of early re-intervention after Tumorstent insertion*

Variable	Univariable		Multivariable**	
	HR (95% CI)	p	HR (95% CI)	p
Diagnosis at operation				
Extrinsic obstruction	1.0 (Ref.)		1.0 (Ref.)	
Intrinsic obstruction	2.21 (1.18 – 4.12)	0.013	2.31 (1.16 – 4.62)	0.017
Tumorstent length				
32 cm	1.0 (Ref.)		1.0 (Ref.)	
28 cm	1.37 (0.84 – 2.22)	0.207	1.65 (1.01 – 2.71)	0.048
Postoperative antibiotic therapy				
No	1.0 (Ref.)		1.0 (Ref.)	
Yes	2.39 (1.39 – 4.00)	0.001	2.64 (1.42 – 4.89)	0.002
Weight (continuous, per 10kg)				
	1.15 (0.99 – 1.32)	0.051	1.17 (1.01 – 1.36)	0.036

* Only variables retained in a conditional backward multivariable analysis with an entry and removal level of 0.05 are shown.
HR = hazard ratio; 95% CI = 95% confidence interval