

Urethroplasty: the primary and redo setting

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Introduction

- Little is known about the differences between primary and redo urethroplasty
- The prognostic significance of prior urethroplasty remains controversial
- Comparative studies with sufficient power are currently lacking

The aim of this study is to explore the differences between primary and redo urethroplasty and to directly compare the according stricture-free survival (SFS).

Methods

- All native male patients undergoing urethroplasty at our center between 2000 and 2018 → database
- Since 2008: prospective data collection
- Exclusion criteria for this study:
 - Age < 18y
 - Follow-up < 1y
- Creation of 2 groups for direct comparison:
 - Primary urethroplasty (PU) group: no prior urethroplasty
 - Redo urethroplasty (RU) group: ≥ 1 prior urethroplasty
- Statistical analyses:
 - Comparison between groups: Mann-Whitney U-test & Fisher's Exact-test
 - SFS: Kaplan-Meier statistics & Log Rank test
 - Definition of failure: need for additional urethral intervention (incl. simple dilation)
 - Uni- and multivariate Cox regression analyses
 - SPSS® 25.0 – Two-tailed testing – Alpha set at 0.05
- Local Ethics Committee approval: EC/2014/0438

Results

	Total (n = 805)	PU (n = 556)	RU (n = 249)	p-value
* Median age (years) (IQR)	51 (36-63)	53 (36-65)	50 (36-62)	0.3
Median follow-up (months) (IQR)	83 (46-135)	87 (50-136)	76 (40-133)	0.1
* Previous interventions n (%)				
None	170 (21)	170 (31)	0 (0)	<0.001
1 DVIU/dilatation	125 (16)	125 (23)	0 (0)	<0.001
> 1 DVIU/dilatation	259(32)	258 (46)	1 (0.40)	<0.001
Urethroplasty	88 (11)	0 (0)	88 (35)	<0.001
Urethroplasty + DVIU/dilatation	159 (20)	0 (0)	159 (64)	<0.001
Endoscopic realignment	3 (0.37)	2 (0.36)	1 (0.40)	>0.9
Open realignment	1 (0.12)	1 (0.18)	0 (0)	>0.9
* Comorbidity n (%)				
Smoking	110 (14)	77 (15)	33 (14)	0.8
Diabetes	55 (7.1)	34 (6.4)	21 (8.7)	0.3
Cardiovascular comorbidity	138 (18)	97 (18)	41 (17)	0.7
* Suprapubic catheter n (%)	192 (24)	147 (26)	45 (18)	0.01
* UTI n (%)	216 (27)	157 (28)	59 (24)	0.2
* Median stricture length (cm) (IQR)	3.0 (1.5-6.0)	3.0 (1.5-6.3)	3.0 (2.0-6.0)	0.5
* Stricture location n (%)				
Penile	207 (26)	121 (22)	86 (35)	<0.001
Bulbar	365 (45)	271 (49)	94 (38)	0.005
Posterior	102 (13)	84 (15)	18 (7.2)	0.002
Multifocal	63 (7.8)	41 (7.4)	22 (8.8)	0.5
Panurethral	59 (7.3)	39 (7.0)	20 (8.0)	0.7
Meatus of perineostomy	9 (1.1)	0 (0)	9 (3.6)	<0.001
* Stricture etiology n (%)				
Idiopathic	276 (34)	178 (32)	98 (39)	0.050
Iatrogenic	336 (42)	247 (44)	89 (36)	0.025
External trauma	111 (14)	83 (15)	28 (11)	0.2
Inflammatory	73 (9.1)	41 (7.4)	32 (13)	0.016
Failed hypospadias repair	75 (9.3)	40 (7.2)	35 (14)	0.004
Tumor	9 (1.1)	7 (1.3)	2 (0.80)	0.7

Table 1. Patient and stricture characteristics

Legend: PU = primary urethroplasty; RU = redo urethroplasty; IQR = interquartile range; DVIU = direct vision internal urethrotomy; UTI = urinary tract infection; cm = centimeters
P-values comparing the PU group and RU group < 0.05 are highlighted in bold.

	Total (n = 805)	PU (n = 556)	RU (n = 249)	p-value
* Urethroplasty technique n (%)				
Transecting anastomotic repair	206 (26)	162 (29)	44 (18)	<0.001
Non-transecting anastomotic repair	115 (14)	91 (16)	24 (9.6)	<0.001
Free graft urethroplasty	264 (33)	196 (35)	68 (27)	0.028
Pedicled flap urethroplasty	42 (5.2)	26 (4.7)	16 (6.4)	0.3
Combined	35 (4.3)	19 (3.4)	16 (6.4)	0.1
Multi-stage urethroplasty	38 (4.7)	13 (2.3)	25 (10)	<0.001
Definitive perineostomy	43 (5.3)	17 (3.1)	26 (10)	<0.001
Other	62 (7.7)	32 (5.8)	30 (12)	0.004
Median operation time (min) (IQR)	105 (82-131)	105 (83-130)	105 (80-135)	0.8
Median hospital stay (days) (IQR)	3 (2-4)	3 (2-4)	2 (2-4)	0.01
Median catheter stay (days) (IQR)	14 (10-15)	14 (11-15)	14 (9-15)	0.5
Significant extravasation at first VCUG n (%)	44 (7.7)	31 (7.2)	13 (8.8)	0.6
Complications (Clavien-Dindo) n (%)				
None	606 (75)	417 (75)	189 (76)	0.9
Grade 1	114 (14)	82 (15)	32 (13)	0.5
Grade 2	61 (7.6)	39 (7.0)	22 (8.8)	0.4
Grade 3	24 (3.0)	18 (3.2)	6 (2.4)	0.7
Stricture-free survival estimates % (SD)				
1y-SFS		94 (1.0)	88 (2.1)	
2y-SFS		91 (1.2)	83 (2.4)	
5y-SFS		86 (1.5)	75 (3.0)	
10y-SFS		79 (2.1)	63 (4.2)	<0.001

Table 2. Surgical characteristics and outcome

Legend: PU = primary urethroplasty; RU = redo urethroplasty; min = minutes; IQR = interquartile range; VCUG = voiding cysto-urethrography; SD = standard deviation; SFS = stricture-free survival
P-values comparing the PU group and RU group < 0.05 are highlighted in bold.

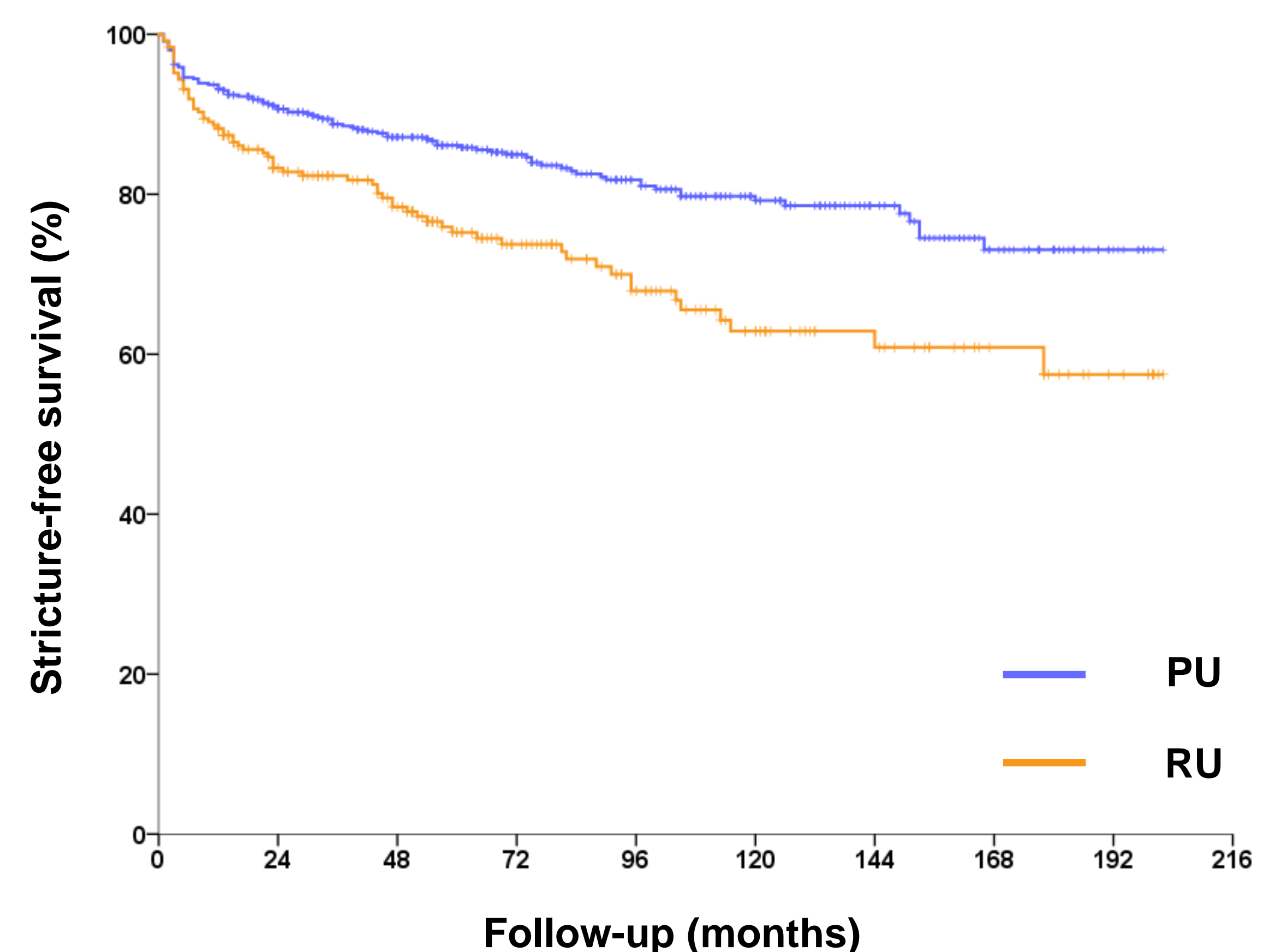


Fig. 1. Kaplan-Meier curve for stricture-free survival in primary and redo urethroplasty
Legend: PU = primary urethroplasty; RU = redo urethroplasty

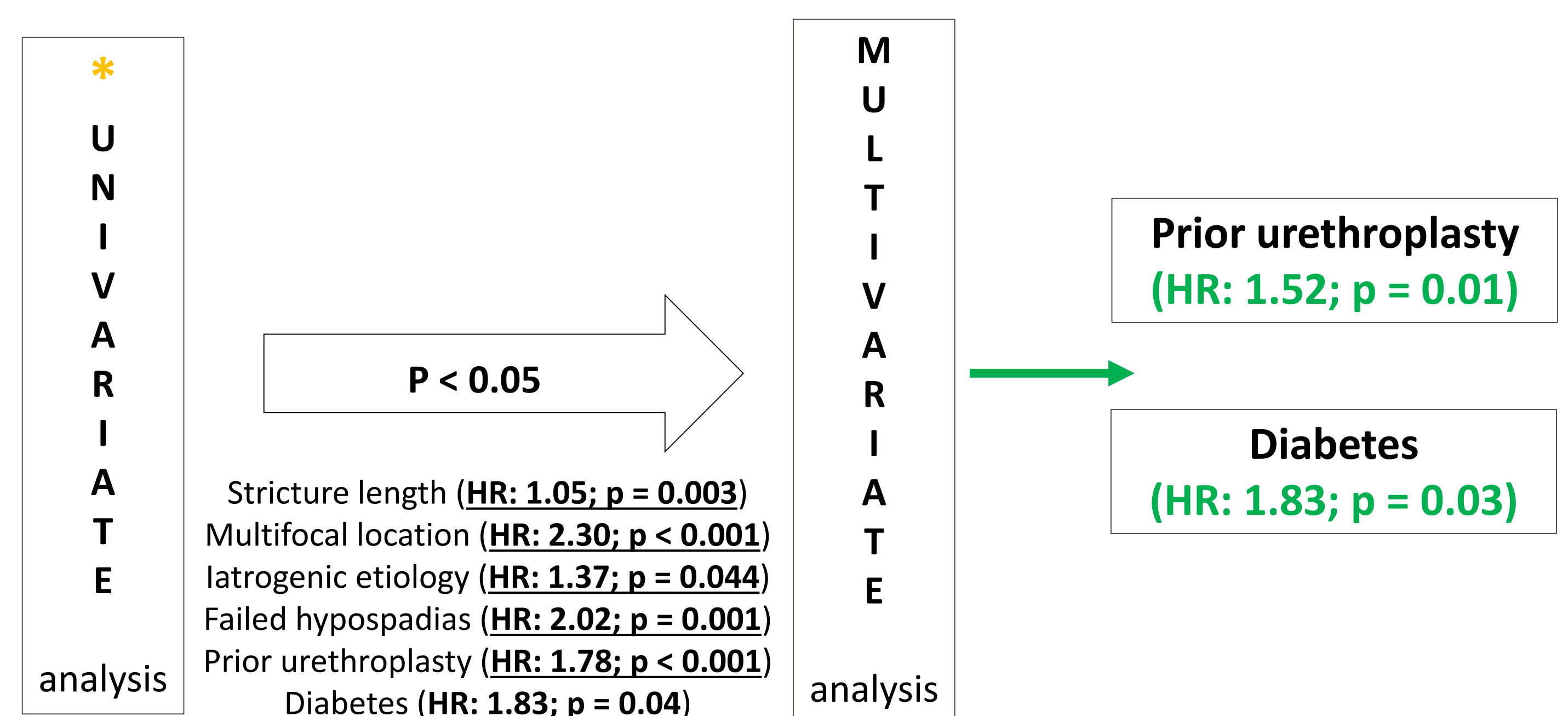


Fig. 2. Uni- and multivariate Cox regression analyses

Legend: HR = hazard ratio

Conclusions

- Several differences between primary and redo urethroplasties
- Redo urethroplasty in general associated with lower stricture-free survival
- More homogeneous series required to corroborate these results
- Prior urethroplasty and diabetes are independent risk factors for urethroplasty failure