

PELVIC LYMPH NODE DISSECTION IN PROSTATE CANCER STAGING



EVALUATION OF MORBIDITY AND THERAPEUTIC EFFECT

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Objectives

- to evaluate the **morbidity** of the different **surgical approaches** for pelvic lymph node dissection (PLND)
- to evaluate the **influence** of morbidity on **radiotherapy (RT) planning**
- to evaluate a **possible therapeutic effect** of the PLND itself

Methods

From 2000-2016, 228 patients received staging PLND before primary RT in a single tertiary care centre.

Nine patients were excluded for the evaluation of morbidity.

Fifty patients were operated in an open approach, 96 laparoscopic and 73 robot-assisted (RA).

Clavien-Dindo classification was used for evaluating complications.

Predictors of biochemical recurrence (BCR), clinical relapse (CR), cancer-specific survival (CSS) and overall survival (OS) were evaluated by regression analyses to determine a possible therapeutic effect.

Results

Minimal invasive surgery (laparoscopic or RA) caused five times less major complications (22% versus 4.3%, $p=0.001$) and a median 3 days shorter hospital stay (5d versus 2d, $p<0.001$). There was less blood loss in the RA compared to the laparoscopic group ($p=0.015$).

Table 1: Patient and tumor characteristics

	Total (n=219)	Open (n=50)	Laparoscopic (n=96)	Robot (n=73)	P-value
age, years (range)	70 (41-84)	68 (54-84)	69.5 (41-80)	73 (52-84)	0.020
BMI, kg/m ² (range)	26.7 (17.2-44.2)	27.1 (18.5-35.6)	26.7 (19.3-44.2)	25.6 (17.2-37.2)	0.454
iPSA, µg/L	16 (1.8-270)	14.3 (3.0-126)	17.4 (1.8-240)	15.5 (2.8-270)	0.896
prostate volume, mL (range)	41 (11-181)	41 (15-181)	38 (11-134)	45 (13-110)	0.396
cT-stage, n (%)					0.192
T1-2	109 (49.8)	27 (54.0)	52 (54.2)	30 (41.1)	
T3-4	110 (50.2)	23 (46.0)	44 (45.8)	43 (58.9)	
cN1, n (%)	31 (14.8)	7 (14.9)	14 (15.1)	10 (14.3)	0.990
cM1, n (%)	4 (2.0)	1 (2.2)	1 (1.1)	2 (3.2)	0.816
Grade group, n (%)					0.226
1	16 (7.3)	3 (6.0)	11 (11.5)	2 (2.8)	
2	43 (19.7)	11 (22.0)	21 (21.9)	11 (15.3)	
3	35 (16.1)	6 (12.0)	17 (17.7)	12 (16.7)	
4	45 (20.6)	12 (24.0)	13 (13.5)	20 (27.8)	
5	79 (36.2)	18 (36.0)	34 (35.4)	27 (37.5)	
Risk group, n (%)					0.317
intermediate-risk	41 (18.8)	9 (18.0)	21 (21.9)	11 (15.3)	
high-risk/Localized	126 (57.8)	27 (54.0)	59 (61.5)	40 (55.6)	
locally advanced	51 (23.4)	14 (28.0)	16 (16.7)	21 (29.2)	

Table 2: (Post)operative characteristics

	Total (n=219)	Open (n=50)	Laparoscopic (n=96)	Robot (n=73)	P-value
operation time, min (range)	130 (43-299)	102 (59-299)	135 (65-246)	130 (43-255)	<0.001
lymph node yield, n (range)	14 (1-54)	11.5 (2-29)	13 (1-52)	18 (7-54)	<0.001
pN1, n (%)	70 (32.0)	22 (44.0)	24 (25.0)	24 (32.9)	0.064
hospital stay, days (range)	3 (0-25)	5 (2-25)	2 (1-18)	3 (0-17)	<0.001
follow-up, months (range)	46 (0-182)	85 (10-170)	56.5 (5-182)	21 (0-42)	<0.001
Clavien-Dindo 0-30d, n (%)					0.004
0	111 (54.7)	19 (46.3)	53 (59.6)	39 (53.4)	0.359
I-II	76 (37.4)	13 (31.7)	31 (34.8)	32 (43.8)	0.348
III-IV	16 (7.9)	9 (22.0)	5 (5.6)	2 (2.7)	0.001
Clavien-Dindo 31-90d, n (%)					0.455
0	173 (80.8)	40 (80.0)	77 (82.8)	56 (78.9)	0.807
I-II	37 (17.3)	10 (20.0)	15 (16.1)	12 (16.9)	0.839
III-IV	4 (1.9)	0 (0.0)	1 (1.1)	3 (4.2)	0.183

Major complications resulted in a **delayed** (23 days) RT start but no oncological effect was seen.

Independent oncological predictors were the **number of positive nodes** (BCR/CR/CSS/OS), a **lower age** (CR), a higher level of initial prostate specific antigen (PSA) (BCR) and post RT PSA (BCR).

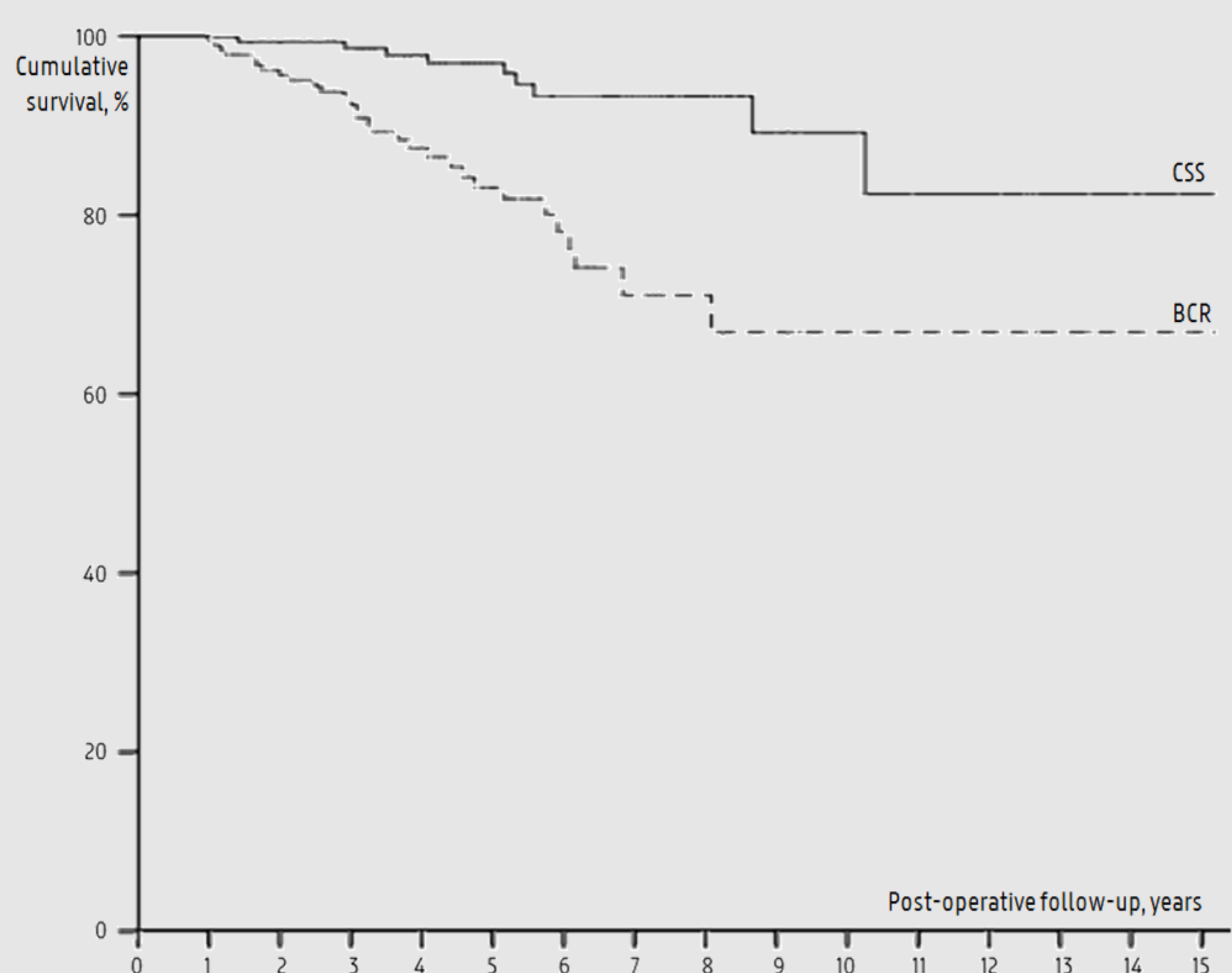


Figure 2: Kaplan-Meier survival plot for BCR and CSS

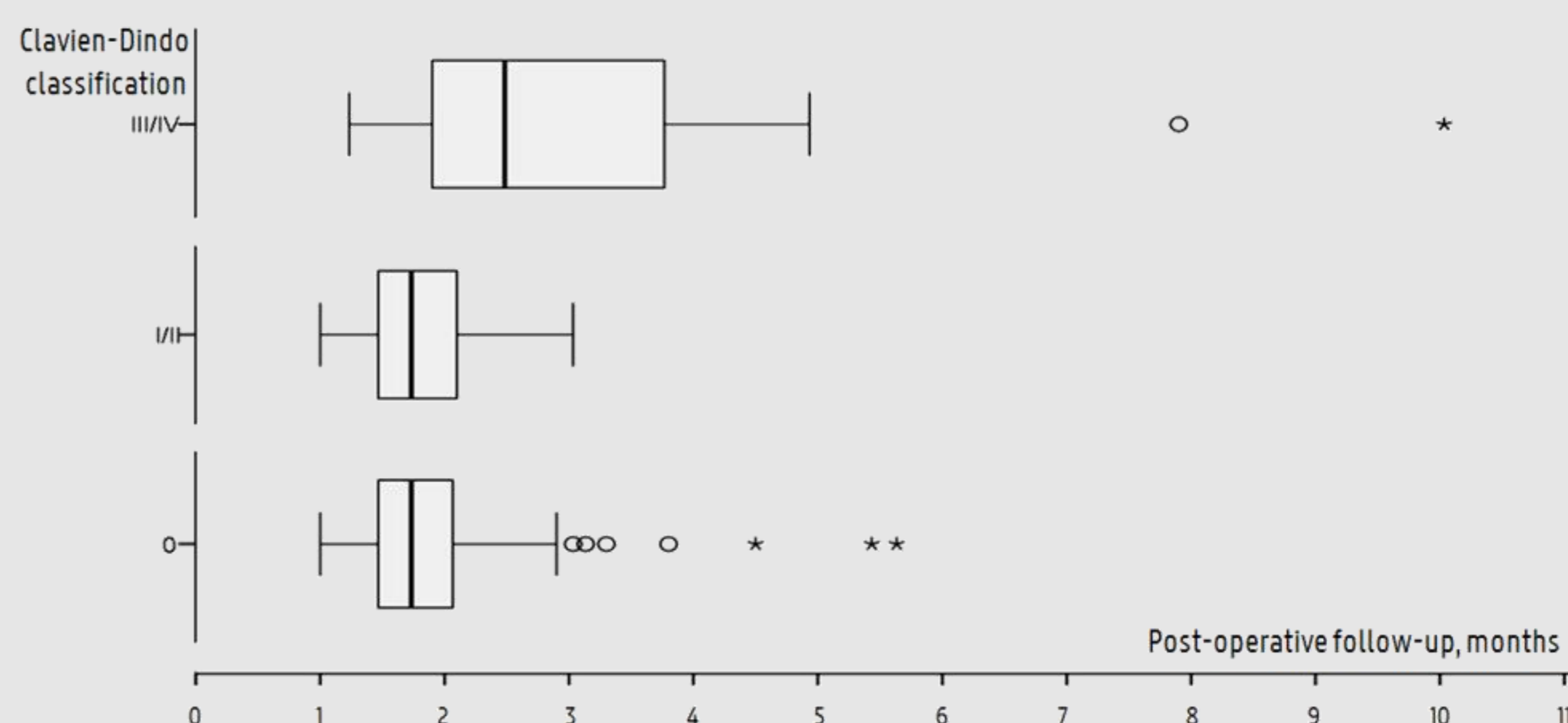


Figure 1: Time to RT start according to early postoperative complications (0-30d)

Table 3: Multivariable Cox regression for BCR and CR; and univariate Cox regression for CSS and OS (HR [95%CI])

	BCR	P-value	CR	P-value
age	-	-	0.911 (0.863-0.961)	0.001
iPSA	1.010 (1.003-1.016)	0.002	-	-
# positive lymph nodes	1.278 (1.064-1.535)	0.009	1.302 (1.120-1.515)	0.001
PSA post RT	1.027 (1.001-1.054)	0.041	-	-
	CSS		OS	
# positive lymph nodes	1.393 (1.145-1.695)	0.001	1.233 (1.071-1.420)	0.004

Conclusions

Minimal invasive surgery can diminish major complications which delay RT start.

Nodal staging proved to be of importance for prognosis but no significant therapeutic effect was seen of performing PLND as such.