

URODYNAMIC EVALUATION OF VESICourethRAL FUNCTION AFTER LAPAROSCOPIC RADICAL PROSTATECTOMY: COMPARISON WITH OPEN RADICAL PROSTATECTOMY

Aims of study

Laparoscopic radical prostatectomy for prostate cancer has been gaining wider acceptance as an alternative procedure to open radical prostatectomy. The laparoscopic surgery have been reported to be less invasive and expected to give more favorable impacts on post-operative urinary continence as compared with the open procedure. However, the precise impacts of the laparoscopic procedure on the vesicourethral function have not been confirmed. In the present study, the impact of laparoscopic radical prostatectomy on the vesicourethral function was assessed and compared with that of open radical prostatectomy.

Materials and methods

Vesicourethral function was urodynamically assessed in 40 patients undergoing laparoscopic radical prostatectomy for prostate cancer before and after surgery (mean 5.1 months). Postoperative findings were also compared to those (mean 4.8 months post-operatively) in 27 patients undergoing open retropubic radical prostatectomy. Urethral pressure profile using a microtip-transducer catheter and filling cystometry were performed. Evaluated urodynamic parameters comprised maximum urethral closing pressure (MUCP), functional profile length (FPL), bladder compliance, maximum cystometric capacity (MCC) and detrusor overactivity. Statistical analysis was made by paired or non-paired the Student's t-test and the chi-square test.

Results

After laparoscopic prostatectomy, MUCP and FPL showed a significant decrease postoperatively (Table 1). Although MCC showed no significant change, bladder compliance significantly decreased postoperatively (Table 1). Postoperative continence rates were 82% in the laparoscopic group and 78% in the open group. Comparison of post-operative data between continent and incontinent patients in both surgical groups (laparoscopic and open surgery) showed significantly lower MUCP, shorter FPL, lower bladder compliance (Table 2, 3) and higher incidence of detrusor overactivity (Table 4) in incontinent patients undergoing either surgical procedure. When the data were compared according to continent status between the open and laparoscopic surgery, although there was no significant difference in post-operative MUCP and FPL between the two surgical procedures both in continent and incontinent groups (Table 2), bladder compliance was significantly lower (Table 3) and incidence of detrusor overactivity was significantly higher (Table 4) in the open surgery than in the laparoscopy.

Table 1. Changes of urodynamic parameters before and after laparoscopic surgery

	Pre-op	Post-op	significance
Maximum Urethral Closing Pressure (cmH ₂ O)	58.4 (18.7)	38.8 (18.0)	P<0.05
Functional Profile Length (mm)	42.9 (11.0)	22.5 (8.5)	P<0.05
Bladder compliance (ml/cmH ₂ O)	66.9 (58.0)	41.0 (41.9)	P<0.05
Maximum Cystometric Capacity (ml)	235.4 (85.7)	226.9 (66.1)	ns

Data presented as mean (SD).

Table 2. Comparison of post-operative urethral function between continent and incontinent patients in laparoscopic and open surgery

	Maximum Urethral Closing Pressure (cmH ₂ O)			Functional Profile Length (mm)		
	continent	incontinent	significance	continent	incontinent	significance
Laparoscopic	42.0 (16.7)	24.3 (17.7)	p<0.05	24.5 (7.9)	13.6 (5.2)	p<0.05
Open	34.6 (10.8)	20.0 (10.7)	p<0.05	21.1 (7.5)	15.3 (8.5)	p<0.05
significance	ns	ns		ns	ns	

Data presented as mean (SD)

Table 3. Comparison of post-operative bladder function between continent and incontinent patients in laparoscopic and open surgery

	Compliance (ml/cmH ₂ O)			Maximum Cystometric Capacity (ml)		
	continent	incontinent	significance	continent	incontinent	significance
Laparoscopic	45.7(44.5)	19.3 (13.4)	p<0.05	233 (66.3)	200 (62.7)	ns
Open	25.8 (21.3)	9.8 (5.9)	p<0.05	212 (89.7)	187 (108.3)	ns
significance	p<0.05	p<0.05		ns	ns	

Data presented as mean (SD)

Table 4. Incidence of post-operative detrusor overactivity: comparison between continent and incontinene patients in laparoscopic and open surgery

	Incidence of detrusor overactivity (%)		
	continent	incontinent	significance
Laparoscopic	9.1	28.6	<0.05
Open	31.1	83.3	<0.05
significance	p<0.05	p<0.05	

Concluding message

Although laparoscopic radical prostatectomy gives an impact against post-operative continence on vesicourethral function, there is no difference in the post-operative urethral function between open and laparoscopic radical prostatectomy. However, laparoscopic surgery might be associated with less impairment of bladder function than open surgery.