

Course of urinary incontinence and comparison of pressure flow studies after Retzius-sparing RARP

Improvement in urodynamic parameters after surgery suggests that functional recovery of lower urinary tract dynamics may contribute to continence recovery in addition to anatomical preservation.

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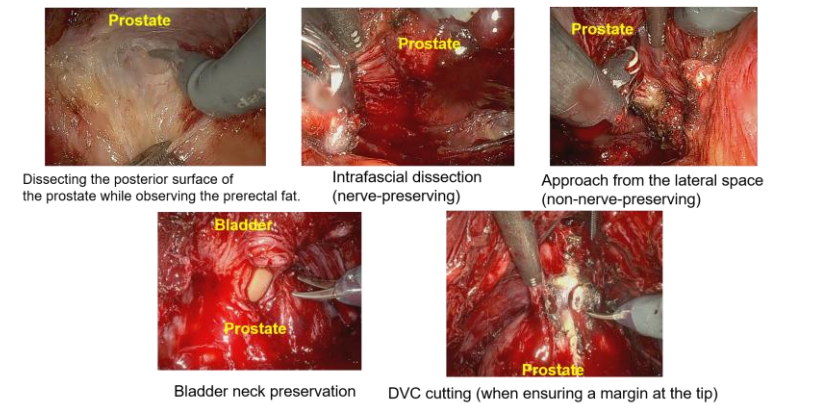
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Hypothesis / aims of study

Retzius-sparing RARP (RS-RARP), which involves a posterior approach to the prostate while preserving the Retzius space, was first reported by Galfano et al. in 2010 and was introduced at our institution in April 2020. Recent studies have suggested that RS-RARP may facilitate earlier recovery of urinary continence than conventional RARP. However, reports from Japan remain limited, and the factors associated with postoperative urinary incontinence after RS-RARP have not been fully elucidated. In particular, few studies have examined the relationship between postoperative continence and pre- and postoperative voiding and storage function assessed by urodynamic studies or MRI findings. Therefore, this study aimed to investigate the factors associated with urinary continence recovery after RS-RARP by comparing the postoperative continence course with pressure-flow study (PFS) findings before and 6 months after surgery.

Study design, materials and methods

This prospective observational study included 40 patients who underwent RS-RARP at Nara Medical University Hospital between June 2020 and July 2025. Clinical and surgical parameters, including age, BMI, PSA, clinical T stage, NCCN risk classification, PV, MUL, console time, nerve preservation, lymph node dissection, and postoperative pad use, were recorded. PFS results before surgery and 6 months postoperatively were also compared. Urinary incontinence was assessed by the number of pads used at 1, 3, 6, and 12 months after surgery, with continence defined as the use of ≤1 pad/day.



Interpretation of results

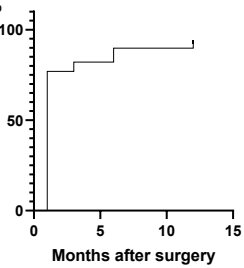
RS-RARP was associated with a high urinary continence rate from the early postoperative period. Urodynamic assessment revealed reduced voiding pressure and outlet obstruction parameters, as well as improved urinary flow and bladder emptying at 6 months postoperatively. Furthermore, DO was resolved in 75% of patients who had DO. These results suggest that postoperative continence recovery after RS-RARP may be related not only to preservation of periurethral supportive structures, but also to favorable changes in lower urinary tract function.

Results

Patient's characteristics

RS-RARP (n = 40)	Median (IQR) or number
Age (year)	71.0 (64.0-74.0)
BMI (kg/m ²)	24.5 (22.7-26.1)
PSA (ng/mL)	6.4 (4.7-9.0)
Clinical T stage cT1 : cT2	13 : 27
NCCN Very low : Low : Intermediate unfavorable : High : Very high	1 : 8 : 25 : 4 : 2 : 0
Prostate volume (mL)	30.7 (24.8-49.2)
Membranous urethral length (mm)	11.4 (9.5-13.6)
Console time (min)	164.0 (134.5-219.3)
Nerve sparing Yes : No	39 : 1
Surgical margin Positive : Negative	13 : 27
Lymph node dissection Yes : No	2 : 38

Continence rate



Detrusor overactivity

	DO+ 6 months after RS-RARP	DO- 6 months after RS-RARP	Total
DO+ before RS-RARP	3	9	12
DO- before RS-RARP	1	27	28
Total	4	36	40

McNemar's exact test, p=0.011

Comparison of urodynamic studies

N = 40	Before RS-RARP	6 months after RS-RARP	P-value
First desire to void (mL)	156.0 (110.5-192.5)	155.0 (120.5-222.0)	0.1930
Normal desire to void (mL)	202.5 (160.3-269.0)	224.5 (168.0-267.5)	0.6021
Maximum cystometric capacity (mL)	303.5 (251.0-341.0)	303.0 (265.3-354.0)	0.9642
Compliance (mL/cmH ₂ O)	25.3 (10.2-36.4)	26.0 (14.1-52.7)	0.1933
Detrusor pressure at maximum flow (PdetQmax) (cmH ₂ O)	51.0 (41.5-71.0)	33.0 (24.8-40.3)	<0.0001***
Maximum urine flow rate (Qmax) (mL/s)	9.0 (5.8-11.3)	14.3 (11.5-17.2)	<0.0001***
Voided volume (VV) (mL)	292.0 (196.0-333.0)	299.0 (262.0-361.0)	0.0404*
Post-void residual urine volume (PVR) (mL)	0.0 (0.0-58.8)	0.0 (0.0-0.0)	0.0005***
Bladder outlet obstruction index (BOOI)	32.7 (21.7-53.7)	6.7 (-7.6-17.2)	<0.0001***
Bladder contractility index	96.5 (81.3-125.6)	104.8 (83.4-125.1)	0.5594
Maximum Watt factor	15.6 (11.6-23.8)	15.2 (9.9-26.3)	0.7093

Concluding message

RS-RARP provided favorable postoperative urinary continence outcomes in our cohort. Improvement in urodynamic parameters after surgery suggests that functional recovery of lower urinary tract dynamics may contribute to continence recovery in addition to anatomical preservation.