Introduction and objective

- Radical prostatectomy is a commonly used treatment option for patients with clinically localized prostate cancer and a life expectancy of at least 10 years.
- Several groups have reported that the nerve-sparing (NS) radical prostatectomy contributes not only to the recovery of erectile function, but also to the improvement of urinary incontinence [1].
- However, there is a relative paucity of data on the impact of the NS procedure on lower urinary tract symptoms (LUTS) with the exception of urinary incontinence, especially in the context of robot-assisted radical prostatectomy (RARP).
- The purpose of this study was to investigate the impact of the NS procedure on LUTS, including urinary incontinence, after RARP.

Study design, materials and methods

- The study protocol was approved by the institutional ethics committee for clinical trials.
- The participants in this prospective, clinical cohort, observational study were 283 consecutive patients who underwent RARP at our institution between October 2010 and January 2016.
- All patients were urinary continent before surgery.
- All patients signed an institutional ethical committee-approved informed consent form, and all patients were informed that data would be used anonymously for the purpose of clinical research. On acceptance, preoperative data were prospectively collected for each participant.
- Data analyses for the purpose of the present study were performed retrospectively.
- All prostatectomies were performed using a similar method according to the four grades of posterolateral resection of the prostate: grade 1, intrafascial dissection; grade 2, interfascial dissection; grade 3, extrafascial dissection; grade 4, wide dissection. In this study, NS was defined as NS grade 1 or 2 and non-NS was defined as NS grade 3 or 4.
- The International Prostate Symptom Score (IPSS), IPSS subscore including voiding and storage, The Overactive Bladder Symptom Score (OABSS), and urinary incontinence were assessed preoperatively (2 days before RARP) and at 1, 3, 6, 9, and 12 months after RARP.
- Postoperative urinary incontinence was assessed at scheduled visits 1, 3, 6, 9, and 12 months after RARP. Patients who used no pads were considered to be urinary continent and those who used one or more security liner pads per day were considered to be urinary incontinent.

Results

- All patients showed increases in the IPSS total score, the IPSS voiding score, the IPSS storage score, and OABSS total score after RARP

**Table 1.** Patient characteristics.

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Mean (SD)</th>
<th>Median</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>68 (6.5)</td>
<td>65</td>
<td>50-79</td>
</tr>
<tr>
<td>BMI (kg/m²)</td>
<td>24.5 (3.2)</td>
<td>24</td>
<td>20-35</td>
</tr>
<tr>
<td>PSA (ng/mL)</td>
<td>9.8 (6.2)</td>
<td>7</td>
<td>0.2-30</td>
</tr>
<tr>
<td>Gleason grade</td>
<td>7.2 (0.9)</td>
<td>7</td>
<td>5-10</td>
</tr>
</tbody>
</table>

The NS procedure did not affect improvement of LUTS, with the exception of urinary incontinence, after RARP.

**Interpretation of results**

- The results of this study indicated that the NS procedure could achieve early improvement of urinary incontinence, although the NS procedure did not affect improvement of LUTS, with the exception of urinary incontinence, after RARP.
- A recent review showed that when performing non-NS surgeries, both somatic and autonomic nerves are at risk of damage, due to either wide excision at the level of the seminal vesicles or the peri-prostatic dissection, or at the level of the apex where convergence occurs and the nerves are within a few millimeters of the dissection plane and suture bites [2].
- The somatic and autonomic nerves travel within the layers of the fascia of the levator ani and could sustain injury if the resection plane is sufficiently wide.
- Therefore, the NS procedure may lead to early improvement of urinary incontinence after RARP.

**Concluding message**

- The NS procedure in RARP has the possibility to improve urinary incontinence after surgery, although the NS procedure in RARP did not ameliorate LUTS, with the exception of urinary incontinence. Therefore, if possible, the NS procedure is recommended from the viewpoint of early improvement of urinary incontinence after RARP.

**References**


**Figure 1.** Effects of nerve-sparing procedure on urinary continence rate after RARP.

**Figure 2.** Effects of nerve-sparing procedure on the IPSS total score, the IPSS voiding score, the IPSS storage score, and OABSS after RARP.