Oncologic results, functional outcomes, and complication rates of transperitoneal robotic assisted radical prostatectomy: Single centre’s experience

A. Ihsan-Tasci, A. Simsek*, M.B. Dogukan-Torer, D. Sokmen, S. Sahin, A. Bitkin, V. Tugcu

Department of Urology, Bakirkoy Dr. Sadi Konuk Training and Research Hospital, Estambul, Turkey

Received 11 August 2013; accepted 2 February 2014
Available online 7 February 2015

Abstract

Background: We report the operative details and short term oncologic and functional outcome of the first 334 Robotic-assisted radical prostatectomy experiences for organ confined prostate cancer.

Methods: From August 2009 to December 2012, details of 334 consecutive patients were retrospectively analyzed. The analyzed parameters included: preoperative, per-operative characteristics, postoperative minor and major complications, positive surgical margin continence, potency, and biochemical progression at the follow-up period.

Results: The classical extrafascial, interfascial, intrafascial and fascia sparing radical prostatectomy were performed in 31, 41, 200, and 62 cases, respectively. The mean operation time was 213.8 ± 90.1 min, and the mean estimated blood loss was 116.1 ± 58.9 cc during operation. A nerve-sparing procedure was performed bilaterally in 198 (59.3%) cases and unilaterally in 126 (37.7%) cases. The catheter was removed on postoperative day 9, 1 ± 1.9. Surgical margin was positive in 36 (10.7%) patients. The overall, pT2, pT3a and pT3b PSM rates were 8 (2.4%), 12 (3.6%), 16 (4.8%) respectively and PSM and BCR rates were not statistically different among four approach (p > 0.05). At the follow-up period, the continence rates were 74.4%, 80.4%, 80.5%, and 96.7% (p < 0.001), and previously potent patients’ potency rates were 64.3%, 66.6%, 68.1%, and 74.5% (p > 0.05), in classic extrafascial, interfascial, intrafascial, and fascia sparing interfascial prostatectomy, respectively.

* Corresponding author.

E-mail address: simsek76@yahoo.com (A. Simsek).
CONCLUSION: RARP is a safe and feasible technique in treatment of localized prostate cancer. Fascia sparing approach has better continence rate. This results need to be supported by new prospective, randomized studies.

© 2013 AEU. Published by Elsevier España, S.L.U. All rights reserved.

PALABRAS CLAVE
Cáncer de próstata; PRAR; Continencia; Potencia; MQP; TRB

Resultados oncológicos, funcionales y complicaciones de la prostatectomía radical transperitoneal asistida por robot

Resumen
Antecedentes: Se presentan los detalles de la intervención y los resultados oncológicos y funcionales a corto plazo de las primeras 334 experiencias de prostatectomía radical asistida por robot para el cáncer de próstata órgano confinado.

Métodos: Entre agosto de 2009 y diciembre de 2012 se analizaron retrospectivamente los datos de 334 pacientes consecutivos. Los parámetros analizados fueron: preoperatorio, características peroperatorias, complicaciones postoperatorias menores y mayores, continencia de los márgenes quirúrgicos positivos y potencia y progresión bioquímica en el periodo de seguimiento.

Resultados: La prostatectomía radical clásica extrafascial, interfascial, intrafascial y de preservación de la fascia se realizó en 31, 41, 200 y 62 casos, respectivamente. El tiempo de operación promedio fue de 213,8 ± 90,1 min y la pérdida de sangre estimada media fue de 116,1 ± 58,9 cc durante la operación. Se llevó a cabo un procedimiento con preservación nerviosa de forma bilateral en 198 (59,3%) casos y de forma unilateral en 126 (37,7%) casos. El catéter se retiró en el día postoperatorio 9, 1 ± 1,9. El margen quirúrgico fue positivo en 36 (10,7%) pacientes. Las tasas globales pT2, pT3a y pT3b de MQP fueron 8 (2,4%), 12 (3,6%), 16 (4,8%), respectivamente, y las tasas de margen quirúrgico positivo y tasa de recurrencia bioquímica no fueron estadísticamente diferentes entre los 4 abordajes (p > 0,05). En el periodo de seguimiento la tasa de continencia fue de 74,4, 80,4, 80,5 y 96,7% (p < 0,001), y las tasas de potencia de pacientes previamente potentes fueron 64,3, 66,6, 68,1 y 74,5% (p > 0,05), en la prostatectomía clásica extrafascial, interfascial, intrafascial y de preservación de la fascia, respectivamente.

Conclusión: La PRAR es una técnica segura y factible en el tratamiento del cáncer de próstata localizado. El abordaje con preservación de la fascia tiene una mejor tasa de continencia. Estos resultados necesitan el apoyo de nuevos estudios prospectivos y aleatorizados.

© 2013 AEU. Publicado por Elsevier España, S.L.U. Todos los derechos reservados.

Introduction

Radical prostatectomy has been established as the most durable treatment option for long-term survival in men with clinically localized prostate cancer.1 At present there are several definitive surgical options for managing clinically localize prostate cancer, including radical retropubic prostatectomy, laparoscopic radical prostatectomy (LRP), and robot-assisted radical prostatectomy.2-5 Retropubic radical prostatectomy remains the gold standard for organ-confined prostate cancer. However, LRP and RARP have become standards of care at many centers worldwide.6

RARP began in 2000, with the first cases performed by Binder et al. and by Abbou et al.7,8 Robotic systems presence of three-dimensional magnification that are able to duplicate hand movements with high accuracy have provided that, despite the absence of tactile feedback, the application of robotic radical prostatectomy might efficiency real advantages, not only in terms of shorter learning curves but also in the ability to improve functional results without impairment of early oncológic outcomes.9 In this study, we evaluated and compared oncológic outcomes, functional results, and complication rates in our initial experience with the first 334 cases.

Materials and methods

Patients

From August 2009 to December 2012, 334 consecutive patients underwent RARP, which was performed at our institution. The database was retrospectively analyzed. The preoperative risks of prostate cancer patients were determined via the D’Amico classification.10 Preoperative clinical data including age, body mass index (BMI), PSA level, Gleason score, and IIEF-5 score were evaluated. Operative
parameters were recorded, including neurovascular bundle (NVB) preservation, pelvic lymph node dissection (PLND), operative time, estimated blood loss (EBL), and surgical approach. The pathologic report included the specimen Gleason score, PSM, and node status. Perioperative complication was recorded according to the modification of the Clavien system.14 Patients were followed up for PSA levels at 6 weeks, 3, 6, 9, and 12 months after RARP. Incontinence was defined as our new classification. Grade 0 incontinence, only post micturition or stress dribbling (only safety pads used), grade I daily urine leakage approximately 50–100 cc, grade II daily urine leakage approximately 200 cc, grade III daily urine leakage approximately half of the total urine, grade IV daily urine leakage approximately the total urine. Full-continent patients and patients with grade 0 incontinence were defined as continent in our study.

Potency was determined from patients’ reports and IIEF-5 form. The biochemical recurrence rate (BCR) was defined as two PSA levels of >0.2 ng/ml after RARP.

**Surgical technique**

**Classical extrafascial, interfascial and intrafascial prostatectomy**

All patients underwent the procedure under general anesthesia. The patient was placed in the Trendelenburg position. A five-port transperitoneal approach using a four-arm da Vinci-SI HD system was used to perform RARP. The first 12-mm trocar was positioned by supra-umbilical skin incision and the others were placed under direct vision by the endoscope. The patient was positioned in the 30° Trendelenburg position. Four EndoWrist (Intuitive Surgical) robotic instruments were used: monopolar curved shears, Maryland bipolar grasper, prograsp forceps, and large needle drivers. Initially entering the Douglas cavity, ductus deferens, and seminal vesicle were dissected. Denovillier fascia was cut and extrafascial or interfascial plane was created between the fascia and the prostate. After posterior dissection, the median and medial umbilical ligaments were incised and the bladder was dissected off the front and side connections and Retzius area were created. All of the fatty tissue on the prostate were carefully cleaned. The endopelvic fascia was opened using cold scissors and the levator ani fibers were swept laterally. Dissection proceeded toward the apex. The puboprostatic ligaments were divided and the notch between the dorsal venous complex (DVC) and urethra was exposed. The DVC was ligated using 0 Vicryl on a CT-1 needle.

The anterior bladder neck was divided using the monopolar scissors and monopolar cautery until the catheter was identified within the bladder. The full thickness of the posterior bladder neck was divided in the midline using monopolar cautery. After entering the previous dissected space, the fourth arm was used to retract the distal end of the vas and seminal vesicles. Dissection of this posterior space allows for a safe plane to develop between prostate and rectum and also exposes the lateral pedicles of the prostate. The pedicle was thinned out using blunt dissection to allow for its ligation using Hem-o-Lok clips. A nerve-sparing dissection was performed to previously potent patients without palpable disease or radiological evidence of extracapsular extension. The interfascial or intrafascial plane in the posterolateral groove was developed using a cautery-free technique until the apex and urethra were visualized. The ligated DVC was then divided using monopolar scissors. The lateral pillars were sharply incised and the anterior wall of the urethra was divided using cold scissors.

The resected prostate was placed in a laparoscopic retrieval bag for later removal. A continuous suture was used for the anastomosis. Two 18 cm 3/0 Monosorb sutures on 26 mm CT-2 needles were tied together with ten throws. Both sides of the sutures were passed through the bladder neck from the outside at 5 and 7 o’clock, respectively. One continued in an anti-clockwise manner while the other suture continued clockwise until the 12 o’clock position was reached. The bladder was filled with normal saline to test the anastomosis.12

**Fascia sparing intrafascial prostatectomy**

After posterior dissection, lateral of medial umbilical ligament was incised down to the ductus deferens junction site. The urachal ligament was excised and the Retzius space was formed by dissecting the bladder from anterolateral bonds. Bladder neck-prostate junction was dissected before the opening of the lateral endopelvic fascia. After the excision of the bladder neck, vesiculo-seminalis and ductus deferens were taken to the forefront. The plane which was previously created between the Denovillier fascia and the prostate was enlarged in all dimensions, and lateral prostate pedicles were exposed. Pedicles were sutured by 4/0 vicryl sutures at both sides. Dissection was continued at the interfascial plane from lateral to anterior. By taking care not to excise dorsal veins, a superficial incision on the endopelvic fascia was performed at the 1-2 mm prostatic side where puboprostatic ligaments were held on the prostate. This incision on both sides was joined at midline in transverse plane. The apex of the prostate was dissected at the interfascial plane. The urethra and the rectourethral tissue were then excised. 3/0 V-Loc suture was used for anastomosis. Two sutures were tied together and each needle was brought out of the longitudinal fibers behind the bladder neck at first and then at the bladder neck at 4 and 6 o’clock positions. These sutures were then passed across the urethra and the rectourethral muscles and tissues behind it. After the anastomosis of bladder neck and urethra, sutures were placed on the anterior excised edge of the endopelvic fascia, and the edges of the endopelvic fascia and the initially excised healthy tissue of the bladder were approximated anterolaterally. Thus, posterior and anterior reconstruction was achieved.

**Statistical analysis**

All data are presented as mean ± standard deviation (SD). The Chi-square test or Fisher exact test was used for
evaluating categorical variables. *p* values of <0.05 were considered statistically significant.

### Results

The preoperative clinical characteristics of all the patients are presented in Table 1. Mean patient age was 60.8 ± 6.5 years and mean BMI was 27.3 ± 1.6 kg/m². Mean preoperative PSA level was 8.6 ± 3.2 ng/ml. Mean preoperative Gleason’s score was 6.4 ± 2.1, mean prostate volume was 41.5 ± 12.4 ml, and IIEF-5 score for no ED, mild ED, mild to moderate ED, moderate ED, and severe ED was 58.3, 20.1, 12.6, 7.2, and 1.8 respectively. According to D’Amico classification, the percentage of low, intermediate, and high-risk cases was 59.0, 32.9, and 8.1%, respectively.

The perioperative data are listed in Table 2. The mean operation time was 213.8 ± 90.1 min, and the mean estimated blood loss was 116.1 ± 58.9 cc. during operation. The classical extrafascial, interfacial, intrafascial, and fascia-sparing radical prostatectomy were performed in 31, 41, 200, and 62 cases, respectively. A nerve-sparing procedure was performed bilaterally in 198 (59.3%) cases and unilaterally in 126 (37.7%) cases. 16 patients underwent pelvic lymph node dissection. During robotic surgery, one patient was completed with laparoscopic surgery due to the robotic malfunction. In five patients (1.5%), postoperative hemoglobin levels were decreased at the beginning of the next night. Ecchymosis on side and posterior walls of the abdomen were detected on the first and second day. This clinical picture was bleeding of the abdominal wall, characterized by the absence of intra-abdominal hemorrhage. Blood and blood products were transfused. Bleeding of the patients was stopped on the third or fourth day and hemogram became stable.

The mean drain extraction time was 2.9 ± 1.1 days and mean hospital stay was 3.8 ± 2.1 days. The catheter was removed on postoperative day 9.1 ± 1.9.

Postoperative histopathologic outcomes, pathological stage, PSM, and biochemical recurrence rates (BCR) are presented in Table 3. Surgical margin was positive in 36 (10.7%) patients. The overall, pT2, pT3a, and pT3b PSM rates were 8 (2.4%), 12 (3.6%), 16 (4.8%) respectively, and PSM and BCR rates were not statistically different among the four approaches (*p* > 0.05).

The mean follow-up was 12.2 ± 3.6 months. Complications were assessed according to the Clavien’s classification system. There were not multi-organ dysfunction or death (grades 4 or 5). One patient had bladder neck contracture (grade 3b), and all the other complications were minor (grades 1 and 2). Two were prolonged paralytic ileus managed conservatively, 10 were fever and pain managed with antipyretics and analgesic drugs, and 5 patients needed blood transfusion. Four patients had urethral stricture requiring urethrotomy and dilatation.

A comparison of continence and potency rates is shown in Table 4. At 12 months follow-up, the continence rate was 74.4%, 80.4%, 80.5%, and 96.7% in classic extrafascial, classic interfacial, classic intrafascial, and fascia sparing intrafascial prostatectomy, respectively. The fascia sparing extrafascial prostatectomy group had a significant higher continence rate than the other groups (*p* = 0.001). Patients who underwent fascia sparing radical prostatectomy surgery had an earlier continence time than other groups. Moreover, different learning curve periods are shown in Fig. 1. Learning curve and operation technique are important for incontinence rates. At 12 months follow-up, previously potent patients’ potency rates were 64.3%, 66.6%, 68.1%, and 74.5% in classic extrafascial, interfacial, intrafascial, and fascia sparing extrafascial prostatectomy, respectively.
Table 3 Pathologic stage, postoperative Gleason score, positive surgical margin and biochemical recurrence rates of patients that underwent a different RARP approach.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Classic extrafascial prostatectomy (n, 31)</th>
<th>Classic interfascial prostatectomy (n, 41)</th>
<th>Classic intrafascial prostatectomy (n, 200)</th>
<th>Fascia sparing intrafascial prostatectomy (n, 62)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pathological stage (n, %)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>pT2a</td>
<td>5 (1.5%)</td>
<td>11 (3.3%)</td>
<td>36 (10.8%)</td>
<td>20 (5.9%)</td>
<td></td>
</tr>
<tr>
<td>pT2b</td>
<td>1 (0.3%)</td>
<td>-</td>
<td>2 (0.6%)</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>pT2c</td>
<td>20 (5.9%)</td>
<td>24 (7.2%)</td>
<td>144 (43.1)</td>
<td>38 (11.4)</td>
<td></td>
</tr>
<tr>
<td>pT3a</td>
<td>2 (0.6%)</td>
<td>3 (0.9%)</td>
<td>2 (0.6%)</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>pT3b</td>
<td>3 (0.9%)</td>
<td>3 (0.9%)</td>
<td>16 (4.8%)</td>
<td>4 (1.2%)</td>
<td></td>
</tr>
<tr>
<td>Post-op Gleason score (n, %)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≤6</td>
<td>16 (4.8%)</td>
<td>25 (7.5%)</td>
<td>117 (35.0%)</td>
<td>47 (14.1)</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>13 (3.9%)</td>
<td>16 (4.8%)</td>
<td>76 (22.8)</td>
<td>12 (3.6%)</td>
<td></td>
</tr>
<tr>
<td>≥8</td>
<td>2 (0.6%)</td>
<td>-</td>
<td>7 (2.1%)</td>
<td>3 (0.9%)</td>
<td></td>
</tr>
<tr>
<td>Positive surgical margin</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.14</td>
</tr>
<tr>
<td>- overall (n)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>pT2</td>
<td>1 (0.3%)</td>
<td>1 (0.3%)</td>
<td>4 (1.2%)</td>
<td>2 (0.6%)</td>
<td></td>
</tr>
<tr>
<td>pT3a</td>
<td>2 (0.6%)</td>
<td>3 (0.9%)</td>
<td>5 (1.5%)</td>
<td>2 (0.6%)</td>
<td></td>
</tr>
<tr>
<td>pT3b</td>
<td>-</td>
<td>4 (1.2%)</td>
<td>9 (2.7%)</td>
<td>3 (0.9%)</td>
<td></td>
</tr>
<tr>
<td>BCR (n, %)</td>
<td>1/31 (3.2%)</td>
<td>2/41 (4.8%)</td>
<td>7/200 (3.5%)</td>
<td>1/62 (1.6%)</td>
<td>0.20</td>
</tr>
</tbody>
</table>

Discussion

The effectiveness of RARP into the radical prostatectomy has been considerable in the past 10 years. RARP is a low morbidity procedure in potency, continence, and PSM rates of 70–80%, 90–95%, and 9.3–20.9, respectively.\(^{11–16}\)

In the literature, there are various operation durations in RARP series. Therefore, it is difficult to compare them because of different reporting variables. Patel et al. reported their single surgeon experience of 1500 RARP procedures.\(^{15}\) The mean operative time from skin incision to fascial closure was 105 min. They also showed a decrease in the duration from 120 min in the first 300 cases to 105 min in the last 300 cases of the series. In the series of Badani et al., they reported their experience with 2766 RARPs.\(^{16}\) The mean surgical (from the Veress needle placement to skin closure) and mean console time were 154 and 116 min, respectively. The authors also reported that surgical time decreased from 160 to 131 min and console time from 121 to 97 min in time. In our first 112 series, mean robotic console time was 174.7 (75–350) min and in the last 222 series mean robotic console time was 128.4 (98–230) min. It was a little longer from the series in the literature.

Postoperative bleeding has been reported 0.5–2.0% according to various definitions after radical prostatectomy.\(^{17–20}\) Vascular injury may involve abdominal wall vessels or large retroperitoneal vessels. Injuries involving inferior epigastric vessel are the most common type of vascular complication. The true incidence is unknown, but Zaki et al. reported that it is likely to exceed 3/1000 operative laparoscopies.\(^{14}\) Bleeding from the inferior epigastric vessels is often obvious during the course of laparoscopic surgery. Occasionally, it may not be apparent until after the trocar has been removed at the end of the operation. In our study, postoperative bleeding complication has been observed in 334 RARP cases very low levels except for five patients. However, in five patients, bleeding in the abdominal wall which had similar features reached severe levels. There was no intraabdominal bleeding in these five patients. In our opinion, abdominal wall hemorrhage during RARP is a technological complication that we can reduce by better understanding robotic arms placement and movements.

The two most commonly reported oncological outcomes after radical prostatectomy were PSM and BCR status. PSM status represents a surrogate marker for surgical quality.

Figure 1 Incontinence outcomes between different learning curve periods.
Table 4  Comparison continence and potency rates in patients with different RARP approach.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Classic extrafascial prostatectomy</th>
<th>Classic interfascial prostatectomy</th>
<th>Classic infratascial prostatectomy</th>
<th>Fascia sparing infratascial prostatectomy</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full continence or Grade 0 continuity</td>
<td>24/31 (74.4%)</td>
<td>33/41 (80.4%)</td>
<td>161/200 (80.5%)</td>
<td>60/62 (96.7%)</td>
<td>0.001</td>
</tr>
<tr>
<td>Grade 1</td>
<td>3</td>
<td>2</td>
<td>20</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Grade 2</td>
<td>1</td>
<td>3</td>
<td>13</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Grade 3</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Grade 4</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Potent- IIEF-5 score</td>
<td>9/14 (64.3%)</td>
<td>10/15 (66.6%)</td>
<td>81/119 (68.1%)</td>
<td>35/47 (74.5%)</td>
<td>0.45</td>
</tr>
<tr>
<td>(Preoperative IIEF &gt; 22 patients' score)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22–25 no ED</td>
<td>9</td>
<td>10</td>
<td>81</td>
<td>35</td>
<td></td>
</tr>
<tr>
<td>17–21 mild ED</td>
<td>2</td>
<td>1</td>
<td>14</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>12–16 mild to moderate ED</td>
<td>2</td>
<td>2</td>
<td>8</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>8–11 moderate ED</td>
<td>1</td>
<td>1</td>
<td>9</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>5–7 severe ED</td>
<td>-</td>
<td>1</td>
<td>7</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

in organ-confined disease and is a risk factor for subsequent BCR. There were several studies that reported surgical margin status after RARP with overall prevalence of PSMs range from 6.5% to 32% with a mean value of 15%. Smith et al. analyzed the results of 1747 patients undergoing radical prostatectomy (RARP in 1238, ORP in 509), selected the last 200 consecutive patients in each group. The overall incidence of PSM was significantly lower in RARP compared with ORP (15% vs. 35%). However, Parsons et al. showed that there are no significant differences in overall risk or incidence of PSM rates between ORP and LRP or RALP. In our first 100 and last 234 cases, the PSM rate was 11.5%, and 9.8%, respectively. This result shows that the low PSM rates were correlated with increased surgeon’s experience and high incidence of the low-risk patients.

Biochemical recurrence after radical prostatectomy is defined as a rising PSA level. Following radical prostatectomy, two consecutive values of PSA > 0.2 ng/ml appear to represent an international consensus defining recurrent cancer. Menon et al. reported 1384 patients who had undergone RARP, adopting 0.2 ng/ml as the definition of PSA recurrence, at a median follow-up duration of 60.2 months, the authors found 3.5, and 7 years BCR-free survival rates as high as 90%, 87%, and 81%, respectively, with 95.5% cancer-specific survival. 14 Barcos et al. compared BCR-free survival of 1904 patients who underwent radical retropubic prostatectomy and RARP in median follow-up 10 months. The RARP was slightly lower risk with lower median PSA. Our short-term follow-up and BCR rate were observed similar in different approach RARP.

The main objective of performing RARP is cancer control; however, an important secondary target is the protection of the quality of life, like erectile ability and continence. In most series that potency with the ability to achieve intercourse rates is 20%-40%. However, Walsh et al. reported a 73% intercourse rate with or without PDE5 inhibitors. With bilateral extended nerve sparing, the called Veil of Aphrodite, 80–90% of patients can reach intercourse. The outcomes of intrafascial versus interfascial bilateral NVB preservation have been considered for RARP. Potdevin et al. reported that erectile function recovery rates at 3, 6, and 9 months in the interfascial group were 24%, 82%, and 91%, respectively, whereas in the interfascial group, there were 17%, 44%, and 67%, respectively. In our present study, the erectile function outcomes that we achieved using different techniques are 64.3%, 66.6%, 68.1%, and 74.5%, respectively. To our knowledge, all approaches are the same resulted for the erectile function outcomes, however, intrafascial RARP has a higher potency rate but not statistically significant at the same follow-up time points.

Continence rates between radical prostatectomy series have many variations because of differences of data collection methods and follow-up periods. This is related to improved apical dissection, avoiding the use of monopolar coagulation, anatomic dissection along the levator, preservation of the bladder neck, puboprostatic ligaments, and prostatic fascia. Tewari et al. described an anterior and posterior reconstruction technique during RARP. They concluded that the total reconstructive procedure is a safe and effective way to achieve an early return to continence after RARP. In our series, continence was defined as grade 0 to grade IV and our continence rates were 74.4%, 80.4%, 80.5%, and 96.7% after classic extrafascial, classic interfascial, infratascial and fascia sparing infratascial prostatectomy at one year after surgery, respectively. The
preservation of neurovascular bundles are an important factor to the recovery of urinary continence. Poel et al. demonstrated that preservation at the lateral prostatic fascia was a predictor of the urinary continence after RARP. In the present study, the NVB and fascia preservation procedure were a significant factor for recovery of urinary continence.

There were some limitations to the present study. First, the study was retrospective but used a RARP database of prospectively followed patients. Secondly, our follow-up period was relatively short. Thirdly, new incontinence classification was devised by our department but it has not been validated.

Conclusion

RARP is a safe and feasible technique in treatment of localized prostate cancer. However, learning curve and fascia preserving technique appears to be effective for recovery to continence in our patients. New prospective, randomized studies with larger sample sizes are needed to support our results.

Conflict of interest

The authors declare that they have no conflict of interest.

References

