Laparoscopic Radical Prostatectomy, Siriraj Resident Experiences: The First Resident Series in Thailand

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Objective: *To evaluate laparoscopic radical prostatectomy (LRP) performed by urological residents trained from Siriraj Hospital.*

Material and Method: *Twenty-four laparoscopic radical prostatectomies were performed by 12 urological residents between April 2007 and October 2009 (23 intraperitoneal approaches and one extraperitoneal approach). We used five to six ports. Vesico-urethral anastomosis was sutured by interrupted stitches in two cases and continuous technique in 22 cases. Bilateral pelvic lymphadenectomy were performed in all cases. Demographic data, operative outcome, and pathological outcomes were analyzed. Pathological reports were used with TNM stage following AJCC 2002. The peri-operative parameters and follow-up data were studied.*

Results: *Mean age was 71.3 years and mean serum PSA level was 18.34 ng/ml. Eighty seven percent was clinical localized disease. Most Gleason score was 7. Mean operative time was 208.9 minutes and mean blood loss was 295.8 ml. Blood transfusion rate was 16.7%. Mean hospital stay was 6.1 days and surgical drain was removed at mean time of 3.9 days. Mean catheter time was 12.5 days. Pathological report shows pT1, pT2, and pT3 at 4.2%, 20.8% and 75.0%, respectively. No patients had lymph node metastasis. Positive surgical margin rate was 20.0% and 88.9% in pT2 and pT3, respectively. Ten cases received adjuvant hormonal therapy because of pT3. Twenty-three cases were followed at the mean time of 14.8 months and mean serum PSA level was 0.03 ng/ml. At the mean time of follow-up, patients had urinary incontinence in 10 cases. This group had only two cases that used pads, which were more than two pads per day. Two cases had anastomotic stricture that was treated by urethral dilatation.*

Conclusion: *Laparoscopic radical prostatectomy is a difficult operation. Training from an experience surgeon is an important step to shorten the learning curve.*

Keywords: *Prostate cancer, Laparoscopy, Prostatectomy, Resident*

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Nowadays, prostate cancer diagnosis tends to increase in Thailand. Between 2007and 2009, 823 prostate cancer patients received radical prostatectomy in Siriraj Hospital. Of 823 patients, 322 patients have undergone laparoscopic approach. Presently, laparoscopic radical prostatectomy (LRP) is an operation that requires high experience in laparoscopic surgery. Of 322 patients, 24 had undergone operation from urological residents that were trained in Siriraj Hospital. This research's objective was to study the results of surgery and postoperative data from experienced urological residents who had assisted in laparoscopic radical prostatectomy.

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Material and Method

The present study was a retrospective and descriptive study. The data was gathered from 24 prostate cancer patients who underwent laparoscopic radical prostatectomy in Siriraj Hospital between April 2007 and October 2009. The operations were performed by 12 urological residents. Twenty-three used the intraperitoneal approach and one used the extraperitoneal approach. All operations were performed by resident-surgeons from beginning to end. However, all procedures were performed under instructor staff controls. The process was done through

5-6 instrument ports. Interrupted stitch anastomosis was performed in two patients and continuous running anastomosis was performed in 22 patients. All patients had pelvic lymphadenectomy.

The pathologic report was used with TNM stage of American Joint Committee on Cancer in 2002.

Results

The 24 patients whose average age was 71.3 years (51-79) presented with lower urinary tract symptoms. The measure of serum PSA level on average was 18.34 ng/ml (2.30-74.00). All patients were diagnosed with prostate cancer by a pathological prostate tissue. The process was done through transrectal ultrasound guided biopsy prostate (TRUS Bx) in 22 patients (91.7%) and transurethral resection prostate (TURP) in two patients (8.3%). All patients had adenocarcinoma that classified into Gleason score 6, 7, 8, and 9 in three (12.5%), 11 (45.8%), seven (29.2%), and three (12.5%) patients, respectively. All patients had no bone metastasis by using bone scan. When dividing the patients by clinical T stage into T1, T2, and T3, the number of patients in each stage was 11 (45.8%), 10 (41.7%) and three (12.5%), respectively. No patients received neoadjuvant therapy (Table 1).

Table 1. Characteristic data of patients prior to laparoscopic radical prostatectomy

Preoperative evaluation	No.	%
Range of PSA (ng/ml)		
0-4.0	1	4.2
4.1-10.0	8	33.3
10.1-20.0	7	29.2
20.1-30.0	4	16.7
30.1-50.0	2	8.3
> 50.0	2	8.3
Preoperative section		
TRUS Bx	22	91.7
TUR-P	2	8.3
Gleason score		
6	3	12.5
7	11	45.8
8	7	29.2
9	3	12.5
Preoperative clinical stage		
T1	11	45.8
T2	10	41.7
T3	3	12.5

Of 24 patients, 23 patients received an intraperitoneal approach while one patient obtained an extraperitoneal approach. Four patients (16.7%) had a bilateral nerve sparing. The mean operative time was 208.9 minutes (125-280). The average estimated blood loss was 295.8 ml (100-700). Blood transfusion rate was 16.7%. Hospital stay was 6.1 days (3-14) on average. The average duration of drainage tube retaining was 3.9 days (2-10) and the average duration of urinary catheter was 12.5 days (7-21) (Table 2).

Table 3 shows the pathological result. All prostate cancers were adenocarcinoma with pathological stage T1, T2 and T3 in one (4.2%), five (20.8%) and 18 (75.0%) patients, respectively. All patients required bilateral pelvic lymphadenectomy for accurate staging. Nevertheless, none was diagnosed with lymph node metastasis. In all 18 patients with pT3, 16 patients had positive surgical margin and nine patients among them received adjuvant hormonal therapy.

Table 4 shows marginal status according to pathological stage. In all 17 patients who had positive surgical margin (70.8%), 16 patients had pT3 disease. Meanwhile, only one patient had pT2 disease, which had a positive surgical margin of 20%.

The duration of a follow-up period of 23 out of 24 patients after surgery was 14.8 months (2.7-32.6) and an average serum PSA level was 0.03 ng/ml (0.00-0.27). Ten patients of 23 who had follow-up data

Table 2. Operative data of laparoscopic radical prostatectomy

Parameters	Mean	Minimum	Maximum	SD
Operative time (min)	208.9	125.0	280.0	41.0
Estimated blood loss (ml)	295.8	100.0	700.0	148.8
Hospital stay (day)	6.1	3.0	14.0	2.7
Catheter time (day)	12.5	7.0	21.0	3.5
Drain time (day)	3.9	2.0	10.0	1.8
Blood transfusion rate	16.7%			

Table 3. Pathological results and number of patients received adjuvant hormonal therapy

Pathology	No.	%
Pathological stage		
T1	1	4.2
T2	5	20.8
T3	18	75.0
Lymph node metastasis		
No	24	100.0
Adjuvant hormonal therapy		
No	14	58.3
Yes		
Surgical castration	9	37.5
Medical castration	1	4.2

Table 4. Surgical margin in pT stage

Stage	No.	Positive surgical margin	Negative surgical margin
pT1	1	0 (0%)	1 (100.0%)
pT2	5	1 (20.0%)	4 (80.0%)
pT3	18	16 (88.9%)	2 (11.1%)

still had lower urinary tract symptoms of incontinence. Among 10 patients, two patients used more than two diapers per day. Anastomotic stricture was detected in two patients that were treated by urethral dilatation (Table 5).

Discussion

The register data of cancer patients in Siriraj Hospital shows that prostate cancer was the most common diagnosed cancer among male patients[1]. At the beginning, open radical prostatectomy was used. In 2001, laparoscopic radical prostatectomy was introduced and replaced the prior procedure. It became the standard method. Urological residents at Siriraj Hospital have accumulated more opportunities and experiences in assisting in operations, an average of 40 patients per one person. This resulted in an effective performance in laparoscopic radical prostatectomy.

In the present study, all residents who performed LRP were the fourth year resident who had an experience of not only radical prostatectomy but also had laparoscopic skill. Before performing as a surgeon, all residents needed to practice the laparoscopic skill in the laparoscopic box. The most difficult part for training was suturing of anastomosis. However, all procedures performed were under experienced staff that performed LRP regularly. These factors could shorten the learning curve, according to the operative parameter in the present study. The mean operative time was only three-and-half-hours. The mean blood loss was only 300 ml and maximal blood loss was 700 ml. Four patients needed blood transfusion, which was 16.7%. Twelve residents performed the operation on 24 patients. The data indicated that the variation among surgeon skill was not significantly affected by this short learning curve approach.

According to a study by Vassilis P in 2004[2], 50 surgeons who only had operated open radical prostatectomy were trained in laparoscopic radical prostatectomy. In 18 months and 11 onwards, the study showed that surgeons could obtain surgery result and operative time that was equal to open radical prostatectomy. Moreover, it showed that surgeons after 31 onwards could operate laparoscopic radical prostatectomy more productively than open radical prostatectomy with statistical significance. In order to do urethrovesical anastomosis, it required a lot of training and practice. A study by Thomas F in 2004[3]

Table 5. Treatment and follow-up result

Parameters	Mean	Minimum	Maximum	SD
PSA level at diagnosis (ng/ml)	18.34	2.30	74.00	16.51
Follow up time (months)	14.80	2.70	32.60	9.10
PSA level at last follow-up (ng/ml)	0.03	0.00	0.27	0.06
Urinary incontinence	No.	%		
No pad	13	56.5		
1-2 pads/day	8	34.8		
> 2 pads/day	2	8.7		

aimed to study differences of laparoscopic radical prostatectomy in four generation of surgeons who had various experiences in open radical prostatectomy and laparoscopic radical prostatectomy. The result of the study revealed that new generation surgeons could improve their operation process, shorten duration of operation and provide similar pathological outcomes.

Conclusion

For laparoscopic radical prostatectomy, new generation surgeons require training from surgeons who have prior experience in laparoscopic radical prostatectomy. This can lead to a fast and effective development of their skills in laparoscopic radical prostatectomy.

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Potential conflict of interest

None.

References

1. Bhothisuwan W. Tumor registry. Bangkok: The Siriraj Cancer Center; 2006: 28.
2. Poulakis V, Dillenburg W, Moeckel M, de Vries R, Witzsch U, Zumbe J, et al. Laparoscopic radical prostatectomy: prospective evaluation of the learning curve. Eur Urol 2005; 47: 167-75.
3. Frede T, Erdogru T, Zukosky D, Gulkesen H, Teber D, Rassweiler J. Comparison of training modalities for performing laparoscopic radical prostatectomy: experience with 1,000 patients. J Urol 2005; 174: 673-8.

การผ่าตัด radical prostalectomy ผ่านกล้องส่อง: ประสบการณ์ในการผ่าตัดของแพทย์ประจำบ้านศัลยศาสตร์ ยูโรวิทยา โรงพยาบาลศิริราช

ภควัฒน์ ระมาตร์, สุนัย ลีวันแสงทอง, ธีระพล อมรเวชสุกิจ, ธวัชชัย ทวีมั่นคงทรัพย์, ไชยยงค์ นวลยง, พิชัย ศุจิจันทรรัตน์

วัตถุประสงค์: *เพื่อศึกษาผลการผ่าตัด laparoscopic radical prostatectomy (LRP) โดยแพทย์ประจำบ้านศัลยศาสตร์ ยูโรวิทยา*

วัสดุและวิธีการ: *ผู้ป่วยมะเร็งต่อมลูกหมากจำนวน 24 ราย ได้รับการผ่าตัด laparoscopic radical prostatectomy โดยแพทย์ประจำบ้านศัลยศาสตร์ยูโรวิทยา 12 คน ระหว่างเดือนเมษายน พ.ศ. 2550 ถึงเดือนตุลาคม พ.ศ. 2552 ผู้ป่วย 23 ราย ได้รับการผ่าตัด laparoscopic radical prostatectomy ผ่านทาง intraperitoneum และอีก 1 ราย ได้รับการผ่าตัด ผ่านทาง extraperitoneum ใช้จำนวน ports ในการผ่าตัดทั้งหมดประมาณ 5-6 ports การเย็บ vesico-urethral anastomosis จะใช้วิธีการเย็บแบบ continuous จำนวน 22 ราย และอีก 2 ราย เย็บแบบ interrupt ผู้ป่วยทั้งหมดจะได้รับ การทำผ่าตัด bilateral pelvic lymphadenectomy ข้อมูลทั้งหมดจะนำมาวิเคราะห์เพื่อหาผลลัพธ์ของการผ่าตัด และผลลัพธ์ทางพยาธิวิทยา*

ผลการศึกษา: *ผู้ป่วยมะเร็งต่อมลูกหมากที่เข้ารับการผ่าตัด LRP มีอายุเฉลี่ย 71.3 ปี ระดับ PSA ในเลือดเฉลี่ย 18.34 ng/ml มีผู้ป่วยที่เป็น clinical localized disease ร้อยละ 87 ผลจากการ biopsy ส่วนใหญ่เป็น adenocarcinoma Gleason score 7 ใช้ระยะเวลาในการผ่าตัดเฉลี่ย 208.9 นาที เสียเลือดเฉลี่ย 295.8 มิลลิลิตร มีผู้ป่วยที่จำเป็นต้องได้รับเลือด คิดเป็นร้อยละ 16.7 โดยจะพักรักษาตัวในโรงพยาบาลภายหลังผ่าตัดเฉลี่ย 6.1 วัน สามารถถอดสายระบายออกเฉลี่ย 3.9 วัน และถอดสายปัสสาวะออกได้เฉลี่ย 12.5 วัน ผลทางพยาธิวิทยาพบว่า เป็นระยะ pT1, pT2 และ pT3 คิดเป็น ร้อยละ 4.2, 20.8 และ 75.0 ตามลำดับ ผู้ป่วยทั้งหมดไม่พบการกระจาย ไปที่ต่อมน้ำเหลืองใน pT2 และ pT3 มีอัตราการเกิด positive surgical margin เท่ากับ ร้อยละ 20.0 และ 88.9 ตามลำดับ มีผู้ป่วยที่ได้รับ adjuvant hormonal therapy จำนวน 10 ราย ซึ่งทั้งหมดเป็นระยะ pT3 มีผู้ป่วยจำนวน 23 ราย ที่ยังมารับการติดตามการรักษา โดยระยะเวลาในการติดตามการรักษาเฉลี่ย 14.8 เดือน และระดับ PSA ในเลือดล่าสุดเฉลี่ย 0.03 ng/ml มีผู้ป่วยจำนวน 10 ราย ที่มีปัญหาเรื่องการกลั้นปัสสาวะ ในขณะที่มาตรวจ ติดตามการรักษาล่าสุด โดยมีจำนวน 2 ราย ที่ต้องใช้ผ้าอ้อม มากกว่า 2 ผืนต่อวัน หลังผ่าตัดมีผู้ป่วย 2 ราย ที่เกิด anastomosis stricture และได้รับการรักษาโดยการ ขยายท่อปัสสาวะ*

สรุป: *LRP เป็นการผ่าตัดที่ยาก และต้องใช้เวลาในการฝึกสูง การเรียนรู้และฝึกโดยศัลยแพทย์ที่มีประสบการณ์มีความสำคัญในการช่วยลด learning curve ได้*