

Laparoscopic Extraperitoneal Simple Prostatectomy for Benign Prostate Hyperplasia

A Two-Year Experience

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Purpose: To evaluate the feasibility of laparoscopic simple prostatectomy for large volume prostates.

Materials and Methods: Between October 2007 and July 2009, laparoscopic simple prostatectomy was performed on 16 patients with the prostates over 80 mL. All the patients were operated with transvesical method. Peri-operative and 3rd postoperative month data were recorded and evaluated.

Results: The mean prostate volume was 147 mL (range, 80 to 200 mL). The mean operation time, blood loss, duration of hospitalization, and duration of drain placement was 133 minutes (range, 75 to 210 minutes), 134 cc (range, 50 to 300 cc), 3.9 days (range, 2 to 7 days), and 2.1 days (range, 2 to 3 days), respectively. Only one patient required blood transfusion due to postoperative bleeding and clot obstruction in the catheter lumen. Postoperative infection was not seen and recatheterization was not needed in any of the patients. All the patients' pathology reports were noted as benign. Pre-operative and postoperative International Prostate Symptom Score were 9.2 and 25.4, respectively. Maximum urinary flow rate was 4.0 mL/sec pre-operatively, but 24.7 mL/sec postoperatively.

Conclusion: Laparoscopic simple prostatectomy is a feasible method with low morbidity and improved postoperative outcomes.

Keywords: prostatic hyperplasia, laparoscopy, prostatectomy

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INTRODUCTION

Benign prostatic hyperplasia (BPH) is one of the serious health problems of the aging men. Around 60% of men manifest clinical symptoms of the disease by the 60 years of age⁽¹⁾ and nearly 3 out of every 10 men may undergo surgery.⁽²⁾

Prostate volume is principally considered in determination of the operation technique. For the prostates smaller than 30 mL, Transurethral Incision of the Prostate (TUIP) technique is found

to be as effective as Transurethral Resection of the Prostate (TURP).^(3,4) Although an upper limit for the TURP technique is not reported, it is recommended for the prostates smaller than 80 to 100 mL; however, for the larger volumes, open prostatectomy is the preferred operational technique.^(5,6)

On the other hand, with the successful results achieved recently, bipolar TURP technique has become an alternative to the standard technique.⁽⁷⁾ Holmium Laser Enucleation of the Prostate

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(HoLEP)^(8,9) and Photoselective Vaporization of the Prostate (PVP) using potassium titanyl phosphate (KTP)^(10,11) are also successfully used techniques as alternatives to the open prostatectomy of the large volume prostates. Similarly, laparoscopic simple prostatectomy (adenomectomy) is also in successful use since its very first introduction and a steady therapy alternative for the enlarged prostates today.⁽¹²⁾

In this study, we evaluated the consequences of the extraperitoneal laparoscopic adenomectomy performed with transvesical approach.

MATERIALS AND METHODS

Between October 2007 and July 2009, laparoscopic adenomectomy was performed on 16 patients having symptomatic bladder outlet obstruction as well as 80 mL or more enlarged prostates that had been detected by transrectal ultrasonography.

All of the procedures were performed by the same urologist (B.O.). Duration of operation, total amount of blood loss during operation, duration of hospitalization, duration of catheter placement, blood transfusion needs, and other complications were all noted. International prostate symptom score (IPSS) and maximum urinary flow rate (Q_{max}) of all the operated patients were reassessed at the 3rd postoperative month.

SURGICAL TECHNIQUE

Operations were performed via extraperitoneal and transvesical approach using 5 ports. As a standard pre-operative management, rectal enema was applied just one night before the surgery to prepare the intestines. Furthermore, antibioprophyllaxis and also anticoagulant therapy to prevent venous thromboembolism were both administered to all the patients.

On the operating table, in the modified Trendelenburg position of the patient, a 20-F Foley catheter was inserted. Approximately, a 2-cm long transverse incision was made just under the umbilicus for the camera port placement. Preperitoneal space was exposed by gentle blunt finger dissection and dilated with approximately 700 mL air, using a balloon dissector.

Subsequently, other ports were inserted under direct view. Second and third ports, 10 mm each, were placed at McBurney point and on the left symmetry. Forth and fifth ports, 5 mm each, were inserted at around 2 fingers long superomedial of the spina iliaca anterior superior, both on the right and on the left sides (Figure 1). Using a harmonic scalpel, a transverse incision was made at the vesicoprostatic junction of the bladder (Figure 2). After the bladder was opened and the prostate was approached, a mucosal incision was performed between surgical capsule and adenoma. Adenoma was enucleated with the assistance of a harmonic scalpel, an aspiration cannula, and a claw grasper (Figure 3). Following a 2-0 polyglactin trigonisation application, three-way 22 F Foley catheter was inserted and the bladder



Figure 1. The prepared extraperitoneal space and replaced trocars.

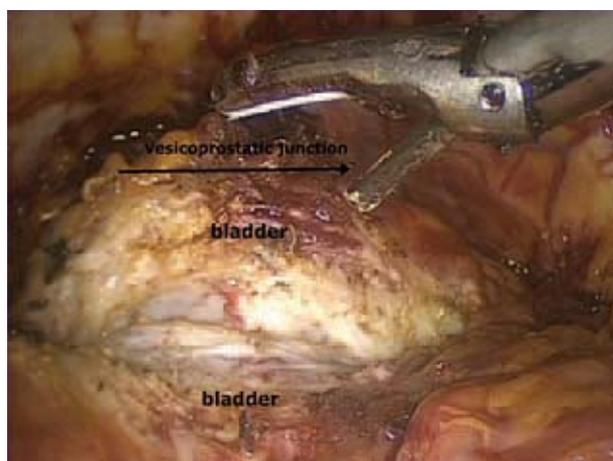


Figure 2. Transverse cystostomy near the vesicoprostatic junction.



Figure 3. Adenoma dissection with harmonic scalpel and suction-irrigation cannula.



Figure 4. One-layer closing of the bladder.

was closed with a 2-0 polyglactin CT-1 needle in one layer suture, in a running continuous fashion (Figure 4). Operation was finalized after the retropubic placement of one Hemovac drain.

RESULTS

The mean prostate volume was 147 mL (range, 80 to 200 mL). The mean operation duration, blood loss, duration of hospitalization, and duration of drain placement was 133 minutes (range, 75 to 210 minutes), 134 cc (range, 50 to 300 cc), 3.9 days (range, 2 to 7 days), and 2.1 days (range, 2 to 3 days), respectively.

Only one patient required blood transfusion due to postoperative bleeding and clot obstruction in the catheter lumen (Table). Postoperative infection was not seen and recatheterization was

Demographic characteristics and clinical data of the patients.

	Mean	Range
Age, y	63	52 to 73
Prostatic weight, mL	147	80 to 220
Operation time, mins	133	75 to 210
Blood loss, cc	134	50 to 300
Foley catheter duration, d	6.3	6 to 7
Hospital stay, d	2.11	2 to 3

not needed in any of the patients. All the patients' pathology reports were noted as benign. Pre-operative and postoperative IPSS were 9.2 and 25.4, respectively. Maximum urinary flow rate was 4.0 mL/sec pre-operatively, but 24.7 mL/sec postoperatively.

DISCUSSION

Despite decreased surgical therapy rates and improved medical therapy methods,⁽¹³⁾ extraperitoneal laparoscopic adenomectomy is still the second major operation technique widely performed in the elderly men.⁽¹⁴⁾

For the patients with symptomatic BPH who are decided to be operated, the prostate volume is the most important factor in determining the operation method. Transurethral incision of the prostate is the recommended method for the prostates smaller than 30 mL,^(3,4) while TURP is recommended for more enlarged prostates. However, when operation lasts more than 90 minutes, morbidity risk increases for the patients with acute urinary retention history and for the elderly patients over the age of 80 years.

For the patients with the prostates greater than 80 to 100 mL with accompanying inguinal hernia, big bladder diverticulum, or bladder stones, open prostatectomy is the recommended operation method.^(5,6) Open prostatectomy accounts for 14% to 32% of all invasive procedures performed for BHP today in all European countries.^(6,15) However, transfusion rate of 0% to 57% has been reported due to excessive bleeding.^(5,6,16) Therefore, even for the big prostates, minimal invasive procedures gain more importance today.

Recently, HoLEP, PVP performed with KTP, and laparoscopic simple prostatectomy are the subjects that are highly concentrated on. Kuntz and colleagues compared HoLEP and open

prostatectomy in patients with 100 gr or more enlarged prostates during the 5-year follow-up period. They reported that almost similar results were obtained with HoLEP as open prostatectomy, and HoLEP is a confident method to be performed.⁽⁸⁾ In another study comparing HoLEP and open prostatectomy in patients with enlarged prostates over 70 gr, Naspro and associates found that operation duration was shorter in the open prostatectomy group while hospitalization and catheterization duration as well as blood loss were significantly less in the HoLEP method. The overall operation success was almost similar to open prostatectomy method in the 2-year follow-up period.⁽⁹⁾

Skolarikos and coworkers compared PVP and open prostatectomy in patients with 80 gr or more enlarged prostates and detected shorter operation duration in the open prostatectomy group; however, catheterization period, hospital stay, and transfusion need were all much less in the PVP group. After 18-month follow-up, the similar operation success rates were reported in both groups.⁽¹⁷⁾

It has been reported that laparoscopic prostatectomy requires shorter hospital stay, less amount of blood transfusion, and less analgesia, and yields better cosmetic results.⁽¹⁸⁾ According to the less operational trauma, shorter time is required by the patient to return to the normal social life.

Despite hopeful results in the recent literature dealing with both robot-assisted transvesical⁽¹⁹⁾ and transcapsular (Millin)⁽²⁰⁾ operations as well as single port adenomectomy,^(21,22) because of the limited number of subjects, extraperitoneal approach with five ports is the preferred method in use today.

Transvesical and the Millin are two different techniques of the open adenomectomy operation. In the literature, there is one single study comparing these two techniques. In that study, transvesical and the Millin techniques were not found predominant to each other in terms of pre-operative data and postoperative results.⁽²³⁾ Therefore, practical habits and preferences of the surgeon gain importance in this respect

for the operation technique to be perceived. Furthermore, duration of the open prostatectomy was evaluated shorter than laparoscopic method and total blood loss, irrigation, and catheterization duration as well as hospital stay were found considerably less in the laparoscopic group.

In another study comparing laparoscopic Millin method and open prostatectomy, Porpiglia and colleagues reported that total amount of blood loss was considerably less in the laparoscopy group, but operation duration, analgesia need, catheterization duration, and hospital stay were almost the same in these two groups.⁽²⁴⁾ They also compared the first ten laparoscopic operations with the next ten in terms of operation duration and found it significantly shorter, but did not observe any differences in terms of other parameters.

McCullough and associates compared laparoscopic Millin technique with open prostatectomy. They reported significantly longer operation duration, but shorter catheterization and hospitalization duration in the laparoscopy group. They did not find any difference between bleeding and irrigation periods.⁽²⁵⁾ Similarly, successful consequences of the laparoscopic adenomectomy with Millin technique was reported in many different studies.^(26,28)

Data regarding transvesical adenomectomy are scarce. Sotelo and coworkers reported a significant improvement in the postoperative IPSS and Qmax values of the 17 patients, but five (29%) of their patients needed blood transfusion.⁽²⁹⁾ In present study, IPSS and Qmax values significantly improved in the 3rd postoperative month. Despite the long learning curve in the laparoscopic surgery praxis, the operation duration of 133 minutes in our study is compatible with the literature. In addition, duration of catheterization and hospital stay were also similar to literature. Our mean blood loss was 134 cc, which was reasonably less. Sotelo and colleagues reported the blood loss of approximately 660 cc in their first five patients, which decreased to 165 cc in their last 12 subjects, in parallel to the learning curve. In our study, only 1 patient needed transfusion due to the obstruction of the catheter with

bleeding. We achieved optimal minimum risk of transfusion with the effective utilization of harmonic scalpel in adenomectomy procedures.

The most important drawback of laparoscopic adenomectomy seems to be the long duration of the operation. However, the number of subjects studied in the literature is very few. We believe that if the number of patients studied increased, operation duration would be shorter and possible complications faced in the operations would also decrease.

CONCLUSION

Laparoscopic adenomectomy is an appropriate operation method for the big prostates. In our study, with our low rate of morbidity and considerably successful operation results, we showed that laparoscopic adenomectomy is a reasonable alternative to the open prostatectomy, which has been widely accepted as the major procedure. However, it seems that laser prostatectomy procedures, like HoLEP and PVP, are also suitable alternative methods to the open prostatectomy, especially for the enlarged prostates. However, the most effective way to decide on the operation method is to compare laser prostatectomy and laparoscopic adenomectomy with more subjects in various studies.

CONFLICT OF INTEREST

None declared.

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