Laparoscopic simple prostatectomy (adenomectomy): Experience in 59 consecutive patients

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Abstract

Objective: Laparoscopic adenomectomy is a minimally invasive alternative to open surgery in large prostates. Our aim is to discuss our series of 59 patients treated by means of laparoscopic adenomectomy with precise vascular control.

Materials and methods: Between June 2003 and June 2006, a total of 59 patients with a mean age of 65.5 years (51–82), underwent laparoscopic extraperitoneal adenomectomy. All the patients had a history of lower urinary tract symptoms (LUTS) and benign prostatic hyperplasia (BPH). The mean International Prostate Symptom Score (IPSS) was 20 points (16–22). The information was collected prospectively in a database. The analysis was performed subsequently.

Results: All 59 adenomas were completely removed laparoscopically without conversion to open surgery. The mean preoperative prostate volume by ultrasound was 108.5 cc (75–150). The average operating time was 123 min (90–180). The mean loss of blood was 415 ml (50–1500) and 4 patients (14.8%) required a blood transfusion. Two (7.4%) of the patients presented perioperative complications. The mean hospital stay and the bladder catheterization time were 3.5 (2–7) and 4.2 (3–7) days, respectively.

Conclusions: Laparoscopic extraperitoneal simple prostatectomy is an effective procedure for the treatment of large prostatic adenomas. There seems to be less perioperative morbidity and, in our experience, this technique seems to be feasible and reproducible; however, its learning curve is a complicated matter to deal with.

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Introduction

Benign prostatic hyperplasia (BPH) is a common disease in men, and lower urinary tract symptoms (LUTS) occur in 30% of men over 65.1 Currently, transurethral resection of prostate (TURP) remains the gold standard for the surgical treatment of benign prostatic hyperplasia for adenomas with a volume of more than 80 cc (guidelines). There is a group of patients (10%) that does not benefit from TURP, and its main limitation is related to the size and shape of the prostate, which determines the surgical time for resection and may have an impact on the form of treatment. Comorbidities such as lithiasis, bladder diverticula, inguinal hernia and ankylosis of the hip may also limit the use of TURP.2–7

The development of laparoscopic surgery caused interest in simple prostatectomy as an option for the treatment of BPH. The laparoscopic experience gained in the treatment of prostate carcinoma improves surgical possibilities in simple prostatectomy.8,9 Several authors10–13 have reported the advantages in the patients treated with laparoscopic simple prostatectomy. In order to determine the real clinical applicability of simple laparoscopic prostatectomy, we present our initial experience with this surgery.

Materials and methods

From June 2003 to June 2006, 59 extraperitoneal laparoscopic simple prostatectomies were performed by the same surgeon (OAC). Inclusion criteria were the presence of lower urinary tract symptoms (LUTS) due to BPH and formal indications for surgery, such as refractory urinary retention, renal insufficiency due to BPH, bladder stones, recurrent urinary tract infections and recurrent hematuria.

In summary, the surgical technique included vascular control with 2-0 Vicryl stitches on a CT-1 needle of the lateral pedicles and dorsal venous complex. A longitudinal incision of the bladder and prostatic capsule was performed, and after the adenoma enucleation, a trigonization with 3-0 Vicryl separated stitches from the edge of the bladder mucosa to the urethra, between 3 and 9 o’clock was carried out. The vesicoprostatic incision was sutured in a Monocryl 3-0 plane.

All the patients had a clinical history of cardiovascular parameters, evaluation of prostate symptoms through IPPS, physical examination, prostate specific antigen (PSA), creatinine, and urinalysis. Transabdominal ultrasound was performed in all the patients to determine the size of the prostate, the upper urinary tract dilation and the post-mictorial residue. Preoperative flowmetry was advised in selected patients. PSA values did not indicate a prostate biopsy in any case.

The data were collected prospectively in a database and the analysis was performed retrospectively. The variables analyzed were surgical time, external blood loss, transfusion rate, conversion rate, perioperative period, bladder catheterization, postoperative complications, continence, and potency.

Results

The mean operative time was 123 min (90–180). The average blood loss was 415 cc (50–1500). Four patients (14.8%)...
received heterologous transfusions; each of them received 2 units. There were no intraoperative complications. Postoperative complications occurred in two patients. The first one experienced a urinary fistula and was reoperated laparoscopically on the fourth day after the first operation to resuture the cervical capsular incision. The other patient had urinary retention after the bladder catheter removal, which was solved with catheterization for three days. The mean hospital stay was 3.5 days (2–7). There were no conversions to open surgery in the series.

The final pathological study reported BPH in all the cases. The average weight of the pieces was 95.2 g (40–150). The functional results in terms of continence and potency were dealt with in consultation with the surgeon. The mean preoperative IPSS was 18 (range 12–26), decreasing in the postoperative to an average of 2 (2–5). There were no cases of postoperative urinary incontinence, and 100% of the patients with EJFF greater than 25 maintained it in the postoperative period.

No patient had late complications or mortality. With a median follow-up of 30 months (16–60) all the patients remain free of symptoms.

Discussion

Our results indicate that laparoscopic simple prostatectomy is a viable option for the surgical treatment of BPH. Current clinical series evidence that in patients with BPH and surgical criteria, this technique, if performed correctly, can improve accuracy in vascular control.14

Mariano et al.15 reported the first simple laparoscopic prostatectomy with vascular control of an adenoma of 120 g with a blood loss of 800 cc and operative time of more than 3 h. Nadler et al.16 also presented a case of BPH treated with preperitoneal laparoscopic simple prostatectomy. The surgical technique has evolved since then. Van Velthoven et al.17 reported 18 laparoscopic simple prostatectomies in which the lateral pedicle vascular control was performed. In this series, the mean operative time was 145 min and the mean blood loss was 192 cc. The average weight of the piece was 47.6 g.

The largest published series on laparoscopic simple prostatectomy has been presented by Mariano et al.14 They conduct a transperitoneal technique with vascular control; in their experience, the transfusion of the patients was not necessary and the average prostate weight was 144 g, with an operative time of 139 min and blood loss of 330 cc. There were three cases of ileus, probably due to the transperitoneal approach. This series presents a shorter hospital stay and early return to normal activities.

Sotelo et al.18 reported a series of 17 laparoscopic simple prostatectomies with a mean operative time of 156 min, blood loss was 516 cc and the mean sample volume was 72 g. More recently, the Venezuelan group have updated their series and presented 71 patients treated with laparoscopic simple prostatectomy that confirmed their preliminary results.19

A series of 10 patients has recently been published by Fata et al.,20 a series in which they analyzed 10 patients who were treated with the same technique. The results of operative time are similar to ours, of 112.5 min (80–135) versus 123 min (90–180) in our series. Notably, the average prostatic volume in our series by far outweighs 108.5 cc (75–150) versus the one published in the aforementioned series of 62 g (40–93).

We believe that the feasibility of laparoscopic simple prostatectomy for high-volume adenomas depends essentially on a thorough vascular control, as reported by Rehman et al.21 in their series. In our series, we treated 20 patients (34%) in whom the prostate volume exceeded 75 cc suggesting the possible reliability of the technique when this is performed with a precise vascular control.

Meanwhile, a group of minimally invasive innovative techniques have emerged for the surgical treatment of BPH.14,19,20 Among them, Holmium laser enucleation has proven superior to other therapeutic options.22 Open simple prostatectomy has the advantage of the complete enucleation of high volume adenomas; however, it remains a surgical procedure with high morbidity due to the significant blood loss and long hospital stay.22,23

It would be of great importance to establish an objective comparison between laparoscopic and open simple prostatectomy, but prospective randomized trials to compare these two techniques are unlikely to be conducted when there is a wide range of minimally invasive procedures to treat BPH, and comparison efforts at this time tend to seek the efficacy of techniques such as HoLEP.13,21 However, Baumert et al.24 have recently presented an interesting comparative study between laparoscopic and open simple prostatectomy that showed advantages in terms of lower blood loss (average 367 cc), requirement for bladder washings, bladder catheterization and hospital stay in the laparoscopy group. An average weight of the piece of 74 and 81 g was reported in the Millin group and in the transvesical one, respectively. In laparoscopy, operative time was higher compared with open surgery. Porpiglia et al.25 have also presented a prospective non-randomized and comparative study on extraperitoneal transcapsular adenectomy (Millin) versus open surgery. They compared two groups of 20 patients each, and concluded that the techniques are comparable, showing the advantages of the laparoscopic group in terms of perioperative bleeding.

In 2008, Sotelo et al.26 contributed for the first time to the use of robotics in simple prostatectomy in 7 cases, which was performed through transperitoneal approach. This minimally invasive treatment allows for an enucleation of the adenoma without special devices due to the advantages provided by the EndoWrist® of the robotic instrument. It also facilitates the control of hemostasis, resulting in a lower intraoperative blood loss.27 Since May 2010, 14 robot-assisted simple prostatectomies were performed at our center, pending the start of the analysis of our results.

We believe that advances in minimally invasive surgery, such as an articulated robot, might enable a greater precision imitating open surgery.

The limitations of our study might be the lack of preoperative and postoperative flowmetry, which would improve the assessment of functional outcomes. On the other hand, the use of transrectal ultrasound (TRUS) is preferable when establishing the prostate volume, although transabdominal ultrasound has been used because, in addition to measuring the size of the gland, it allows us to evaluate the upper urinary tract dilation and the residual urine, as well as to perform the diagnosis of concomitant bladder lithiasis.
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It is important to remember that medical therapy and minimally invasive techniques are still very expensive and unavailable worldwide procedures. There are ways in which open prostatectomy remains the most widely used technique, so the laparoscopic version might represent a good option for surgery in these cases.

Conclusions

Extraperitoneal laparoscopic simple prostatectomy with vascular control is an effective procedure for the treatment of large prostate adenomas. In our experience, this surgical technique proved to be feasible and reproducible. It seems to have less perioperative morbidity; however, its important learning curve is an issue necessary to address.

Conflict of interest

The authors have no conflicts of interest to declare.

References