

Combined transurethral prostatectomy and inguinal hernioplasty

I. Othman · A.-F. Abdel-Maguid

Received: 19 June 2009 / Accepted: 9 October 2009 / Published online: 1 November 2009
© Springer-Verlag 2009

Abstract

Aim Evaluation of combined transurethral resection of the prostate (TURP) and inguinal hernia repair with Vyprom II mesh in comparison with patients undergoing TURP and hernioplasty sequentially.

Methods Thirty patients were randomly categorized into two groups through a computer randomization program. Group I included 15 patients operated by TURP and inguinal hernioplasty in the same session. Group II included 15 patients operated by TURP followed by inguinal hernioplasty in separate sessions.

Results The mean operative time was 84.6 ± 23.4 min in group I versus 95.5 ± 15.3 min in group II. The mean hospitalization time was 3.07 ± 0.46 days in group I and 4.07 ± 0.59 days in group II. No significant increase in the complication rate was seen when the TURP and inguinal hernioplasty operations were performed together. Hernia recurrence did not occur in either group. Hospitalization cost was reduced by 26% when performing the two operations in the same session. The numerical patient satisfaction score 3 months after surgery was 8.87 ± 0.99 for group I patients versus 7.80 ± 0.94 for group II patients.

Conclusion Combined TURP and inguinal hernioplasty is a practical, safe, and effective operative procedure that can

reduce hospitalization cost. It allows patients to undergo only one anesthetic procedure, hospital admission, and convalescence.

Keywords Combined operations · TURP · Inguinal hernioplasty

Abbreviations

BOO	Bladder outlet obstruction
BPH	Benign prostatic hyperplasia
TURP	Transurethral resection of the prostate
UTI	Urinary tract infection
IHD	Ischemic heart disease
HTN	Hypertension
DM	Diabetes mellitus
COPD	Chronic obstructive pulmonary disease

Introduction

The prevalence of inguinal hernia and bladder outlet obstruction (BOO) caused by prostatic disease in adult men increases with age [1, 2]. The incidence of inguinal hernia in men undergoing prostatic surgery for BOO is 15–25% [3, 4]; furthermore, 11–30% of patients undergoing hernia repair have symptoms of BOO which can precipitate postoperative retention requiring urological intervention [5]. Uncorrected BOO may contribute to recurrence [6].

Although the current trend of the treatment options for benign prostatic hyperplasia (BPH) is toward minimally invasive therapies, transurethral resection of the prostate (TURP) has become the ‘gold standard’ in the last half-century. Lichtenstein’s mesh repair for the treatment of

I. Othman
Department of General Surgery, Tanta University, Tanta, Egypt

A.-F. Abdel-Maguid
Department of Urology, Al-Azhar University, Cairo, Egypt

I. Othman (✉)
Department of General Surgery, Ghodran General Hospital,
P.O. Box 14, Baljurashi 22888, Kingdom of Saudi Arabia
e-mail: ibrahimothman000@yahoo.com

inguinal hernia is a well-documented technique with extremely low recurrence and complication rates [7, 8].

The results of simultaneous open surgery for prostatic disease and inguinal hernia repair are well documented [3–5, 9, 10]. However, despite the not infrequent practice of combining TURP with hernioplasty, there are few published results of the outcome.

The aim of this prospective randomized trial is to evaluate combined TURP and inguinal hernia repair with Vypro II mesh in order to assess its safety, reliability, and effectiveness in comparison with patients undergoing TURP and hernioplasty in separate sessions during the same period.

Patients and methods

This study was performed at the Ghodran General Hospital, Kingdom of Saudi Arabia, during the period from October 2005 to June 2008 on 30 patients with BPH and inguinal hernia. Patients with bilateral or recurrent hernias were excluded from the study. Full explanation of the procedures, possible complications, and patient consent were assured before inclusion into the research study. The study protocol was approved by the Ethics Committee of Ghodran General Hospital, Kingdom of Saudi Arabia.

Patients were randomly categorized into two groups through a computer randomization program (<http://www.randomization.com>). Group I included 15 patients operated by TURP and inguinal hernioplasty in the same session. This group was compared to 15 patients undergoing TURP alone followed by inguinal hernioplasty in a separate session (group II).

All patients underwent detailed medical history, clinical examination, urine analysis with urine culture, and sensitivity, in addition to routine hematological and biochemical investigations for the diagnosis of BPH. An appropriate course of antibiotics was given to patients with urinary tract infection. The urine cultures of all patients were sterile before surgery. The demographic characteristics of the patients studied are summarized in Table 1.

Patients were hospitalized on the day of surgery. All procedures were performed under general or spinal anesthesia. Patients in group I underwent inguinal hernioplasty first using Lichtenstein's mesh repair technique [7] applying Vypro II mesh (Ethicon, Edinburgh, UK) in the supine position. After that, the TURP operation was performed using a 26 F continuous-flow resectoscope at the lithotomy position in the same session. The urethral catheter was removed 2–4 days (mean 3.07 ± 1.75 days) postoperatively.

For group II patients, TURP was performed first and after a convalescence period hernioplasty was done (mean interval 33.4 ± 4.14 days). After TURP in group II, we

Table 1 Clinical characteristics of the patients studied

	Group I (n = 15)	Group II (n = 15)	P-value
Age (years)			
Mean $\pm$ SD	65.7 $\pm$ 6.95	65.8 $\pm$ 6.54	0.980*
Prostate volume (cc)			
Mean $\pm$ SD	45.4 $\pm$ 13.2	47.4 $\pm$ 12.7	0.680*
Hernia side			
Right side	6 (40%)	10 (66.67%)	0.272*
Left side	9 (60%)	5 (33.33%)	
Hernia type			
Direct	8 (53.33%)	4 (26.67%)	0.263*
Indirect	7 (46.67%)	11 (73.33%)	
Co-morbidities			
IHD	1 (6.67%)	0 (0.0%)	0.752*
HTN	2 (13.33%)	2 (13.33%)	
DM	2 (13.33%)	2 (13.33%)	
COPD	0 (0.0%)	1 (6.67%)	

* Statistically insignificant ($P > 0.05$)

IDH ischemic heart disease; *HTN* hypertension; *DM* diabetes mellitus; *COPD* chronic obstructive pulmonary disease

followed the same protocol in group I and the urethral catheter was removed 2–4 days (mean 2.97 ± 0.98 days) postoperatively. After hernioplasty in group II, most patients were discharged on the first postoperative day. All TURP and hernioplasties were done by the same urologist and general surgeon.

Patients were followed in visits at 1-week intervals for a month and then every 3 months. Patients were encouraged to visit the clinic at any time if they had any problem. The mean length of follow-up was 30.2 ± 14.3 months in group I patients and 31.4 ± 13 months in group II patients.

Statistical analysis

Quantitative variables were expressed as mean $\pm$ SD. Qualitative variables were expressed as frequency and percentage. Quantitative parametric variables were compared between the two groups using the unpaired Student *t*-test and quantitative non-parametric variables were compared using the Mann–Whitney test. Qualitative variables were compared using the Chi-square test or Fisher's exact test when the criteria for using the Chi-square test were not sufficient. The power used was 0.80, while the level of significance was 5%.

Results

Operation time

In group I, the operative time ranged from 50 to 116 min (mean operative time 84.6 ± 23.4 min). In group II, the

collective operative time ranged from 70 to 120 min (mean operative time 95.5 ± 15.3 min). The difference between the two groups was proved to be statistically non-significant ($P = 0.14$).

Hospitalization time

The hospitalization time ranged from 2 to 4 days in group I (mean hospitalization time 3.07 ± 0.46 days). In group II, the collective hospitalization time ranged from 3 to 5 days (mean hospitalization time 4.07 ± 0.59 days). The difference between the two groups was proved to be statistically significant ($P < 0.0001$).

Cost

The hospitalization cost ranged from \$2,040 to \$3,500 per patient in group I (mean cost: $\$2,988 \pm \$348$). In group II, the cost ranged from \$3,670 to \$4,700 (mean cost $\$4,048 \pm \$255$). The decrease in cost was 26% when performing the two operations in the same session. The difference between the two groups was proved to be statistically significant ($P < 0.0001$). The mean operation time, length of hospital stay, and cost are summarized in Table 2.

Complications

One patient in each group (6.67%) suffered from bleeding during TURP that required blood transfusion. The patient in group I developed clot retention. He was managed conservatively. One patient (6.67%) in group I and two patients (13.33%) in group II developed urinary tract infection (UTI) in the early post operative period. They were managed by a proper course of antibiotics according to culture and sensitivity results. Wound infection with delayed wound healing occurred in one patient (6.67%) in group I. The wound healed by secondary intervention. Reoperation was needed in only one patient (6.67%) in group II who developed urethral stricture 7 months post-operatively. He was managed endoscopically. Neither mesh infection nor hernia recurrence was seen in the two groups. There was no statistically significant difference

between the two groups regarding complications. The postoperative complication rates are summarized in Table 3.

Patient satisfaction

Patients were asked to express their satisfaction as a numerical score from 0 to 10. This was done twice, once at 3 months and again at 1 year after surgery. After 3 months, the mean patient satisfaction score for group I patients was 8.87 ± 0.99 versus 7.80 ± 0.94 for group II patients. The difference between the two groups was proved to be statistically significant ($P = 0.005$). After 1 year, the mean patient satisfaction score for group I patients was 8.73 ± 1.22 versus 8.00 ± 1.07 for group II patients. The difference between the two groups was proved to be statistically non-significant ($P = 0.091$).

Discussion

The incidence of inguinal hernia is 15–25% in patients undergoing prostatectomy, in comparison to around 5% in the general population [11]. It has been suggested that the effort involved in micturition, which is accompanied by a chronic increase of intraabdominal pressure, is the main reason for the more frequent occurrence of inguinal hernia. Weakness of the inguinal canal tissues with advanced age facilitates hernia formation [12]. Other authors consider their occurrence together as a chance co-existence rather than cause and effect [13].

There are some reports regarding combined inguinal hernioplasty and open or transurethral prostatectomy [3, 11, 13]. Combined operative procedures under a single anesthetic session for concomitant pathologies have the advantages of greater patient satisfaction, quick convalescence, decreased hospitalization, and cost-effectiveness. However, increased early postoperative morbidity is a concern in such situations. Indeed, in the previous reports, it has been suggested that combined hernioplasty and open prostatectomy may increase the risk of infection as a result of combining clean and contaminated procedures. On the other hand, the infection rates have been reduced

Table 2 Comparison of operation time, length of hospital stay, and cost

	Group I ($n = 15$)	Group II ($n = 15$)	<i>P</i> -value
Mean operative time (min)	84.6 ± 23.4	95.5 ± 15.3	0.140*
Mean length of hospital stay (day)	3.07 ± 0.46	4.07 ± 0.59	0.0001**
Total cost per patient (\$)	$2,988 \pm 348$	$4,048 \pm 255$	0.0001**

* Statistically insignificant ($P > 0.05$)

** Statistically significant ($P < 0.05$)

Table 3 Perioperative complications

	Group I (<i>n</i> = 15)	Group II (<i>n</i> = 15)	<i>P</i> -value
Early			
Bleeding required transfusion	1 (6.67%)	1 (6.67%)	0.524*
Clot retention	1 (6.67%)	0 (0.0%)	
UTI	1 (6.67%)	2 (13.33)	
Wound infection	1 (6.67%)	0 (0.0%)	
Late			
Urethral stricture	0 (0.0%)	1 (6.67%)	

* Statistically insignificant ($P > 0.05$)

dramatically by advancing TURP [14]. González-Ojeda et al. [15] compared patients undergoing combined TURP and inguinal hernia repair and TURP or hernioplasty alone. They did not report any wound infections or recurrences in the combined procedure group.

Our study, being prospective and randomized in design, had some advantages over the previous studies. All operations were done by the same urologist and general surgeon. We used only one technique for hernia repair. Recurrent and bilateral hernias were excluded from the study.

In our study, no significant increase in the complication rates was seen when the TURP and inguinal hernioplasty operations were performed together. We did not encounter any mesh infection or hernia recurrence in either of the groups. Our results are in concordance with those of previous studies [11, 13–16].

Khiari et al. [17] studied inguinal wound infection and hernia recurrence after open suprapubic prostatectomy and transurethral prostatic resection. The incidence of wound infection was 5 and 4%, respectively. The incidence of hernia recurrence was 6%. They concluded that the simultaneous repair of inguinal hernias and surgery of prostatic disease is effective and technically feasible, and their results compared favorably to herniorrhaphy and prostatectomy performed separately.

Bawa et al. [13] reported the results of simultaneous TURP and mesh hernioplasty. They separated the genital and inguinal area using a sterile drape and performed the combined procedure simultaneously. They also did not encounter any wound or mesh infection during their follow-up.

In our study, the TURP and hernioplasty were done sequentially in the same session. We did not prefer simultaneous techniques; even though this method may shorten the operation time, the surgeons may disturb each other. The manipulations of hernia repair may blur the

vision of the resectionist or the filling of the bladder during the resection may restrict the area of hernioplasty.

One of the advantages of the combined procedures is the cost-effectiveness of a single hospital admission, anesthesia session, and convalescence. The decrease in cost in our study was 26% (an average of \$1,060) per patient when carrying out the two operations in the same session. The decrease in treatment cost is beneficial to patients paying their own medical expenses, to medical insurance companies, and to countries that still offer free treatment to their citizens. Cimentepe et al. [16] calculated the economical advantage of combined procedures as an average of \$700 per patient.

We conclude that combined TURP and inguinal hernioplasty is a practical, safe, and effective operative procedure that can reduce hospitalization cost. It allows patients to undergo only one anesthetic procedure, hospital admission, and convalescence.

References

1. Thompson IM, Wesen CA (1982) Prostatism and inguinal hernia. *South Med J* 75:1342–1344
2. Abramson JH, Gofin J, Hopp C, Makler A, Epstein LM (1978) The epidemiology of inguinal hernia. A survey in western Jerusalem. *J Epidemiol Community Health* 32:59–67
3. Dickey LD (1961) Simultaneous retropubic prostatectomy and inguinal herniorrhaphy. *Rocky Mt Med J* 58:34–36
4. Jasper WS Sr (1974) Combined open prostatectomy and herniorrhaphy. *J Urol* 111:370–373
5. McDonald DF, Huggins C (1949) Simultaneous prostatectomy and inguinal herniorrhaphy. *Surg Gynecol Obstet* 89:621–622
6. Martin JD, Stone HH (1962) Recurrent inguinal hernia. *Ann Surg* 156:713–718
7. Lichtenstein IL (1987) Herniorrhaphy. A personal experience with 6321 cases. *Am J Surg* 153:553–559
8. Kark AE, Kurzer M, Waters KJ (1995) Tension-free mesh hernia repair: review of 1098 cases using local anaesthesia in a day unit. *Ann R Coll Surg Engl* 77:299–304
9. Kursh ED, Persky L (1975) Preperitoneal herniorrhaphy. Adjunct to prostatic surgery. *Urology* 5:322–325
10. Riba LW, Apfelbach GL, Uehling D, Logan D (1965) Retropubic prostatectomy and simultaneous intrapelvic hernial repair. *Br J Urol* 37:569–573
11. Devarajan R, Jaganathan RS, Harriss DR, Chua CB, Bishop MC (1999) Combined transurethral prostatectomy and inguinal hernia repair: a retrospective audit and literature review. *BJU Int* 84:637–639
12. Abarbanel J, Kimche D (1988) Combined retropubic prostatectomy and preperitoneal inguinal herniorrhaphy. *J Urol* 140:1442–1444
13. Bawa AS, Batra RK, Singh R (2003) Management of inguinal hernia with benign prostatic hyperplasia: simultaneous inguinal hernioplasty with transurethral resection of prostate. *Int Urol Nephrol* 35:503–506
14. Cramer SO, Malangoni MA, Schulte WJ, Condon RE (1983) Inguinal hernia repair before and after prostatic resection. *Surgery* 94:627–630

15. González-Ojeda A, Marquina M, Calva J, Mendoza A, de la Garza L (1991) Combined inguinal herniorrhaphy and transurethral prostatectomy. *Br J Surg* 78:1443–1445
16. Cimentepe E, Inan A, Unsal A, Dener C (2006) Combined transurethral resection of prostate and inguinal mesh hernioplasty. *Int J Clin Pract* 60(2):167–169
17. Khiari R, Ghazzi S, Hmidi M, Khouni H, Hammami A, Ktari M, Fkih N, Hellel M, Ben Rais N (2006) Association of benign prostatic hyperplasia and hernia inguinale. A report of 55 cases. *Tunis Med* 84(12):790–793