

ONE-STAGE PROSTATECTOMY ACCOMPANIED BY HERNIOPLASTY TO IMPROVE QUALITY-OF-LIFE OUTCOMES OF PATIENTS WITH COMBINED SURGICAL PATHOLOGIES

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ABSTRACT

The aim: To evaluate whether simultaneous inguinal hernioplasty during prostatectomy confers benefits on quality-of-life outcomes.

Materials and methods: 152 patients with prostatic adenoma were observed. The general group included 32 (21%) patients with prostatic adenoma and hernia inguinalis, who underwent one-stage prostatectomy accompanied with hernioplasty. 120 (79%) persons of comparison group underwent a prostatectomy only. The average age of the comparison group was 68.0 ± 7.0 years, the general group - 67.1 ± 6.9 years; the average prostate volume was 94.4 ± 42.3 cm³ and 91.2 ± 32.6 cm³ respectively. Hernia inguinalis was in 32 patients of the general group, in 4 of them - on both sides (36 cases totally).

Results: The average time of retropubic prostatectomy in both groups was the same, and simultaneous hernioplasty took 35.0 ± 17.4 minutes. The frequency of early and late bleeding after prostatectomies in the general group was 6.25% (2 cases) and 7.5% (9 cases) in the comparison group. No deaths were noted in two groups. The quality-of-life outcomes after the one-stage prostatectomy accompanied with hernioplasty in 6 and 12 months were statistically better than before these operations.

Conclusions: Performing one-stage prostatectomy accompanied with hernioplasty does not worsen the immediate and long-term results of operation, instead it helps to eliminate two diseases at the same time from one surgical approach.

KEY WORDS: benign prostatic hyperplasia, inguinal hernia, prostatectomy, hernia repair, prostatectomy complications

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INTRODUCTION

The possibility of simultaneous inguinal hernioplasty during prostatectomy for prostatic adenoma and hernia inguinalis is a topical issue in both urology and abdominal surgery [1 - 3]. In the domestic literature, there are no data on performing simultaneous hernioplasty at the same time as prostatectomy, as well as the results of such type operations. It must be clear that simultaneous hernioplasty is better performed during one-time retropubic prostatectomy (rather than transvesical), when the bladder is not dissected and drained with suprapubic drainage, which significantly reduces the risk of retropubic and retroinguinal spaces infection. Unfortunately, open prostatectomies with retropubic access in Ukraine are performed in single clinics, and therefore there are no results of simultaneous inguinal hernioplasty.

THE AIM

The aim of the research is to evaluate whether simultaneous inguinal hernioplasty during prostatectomy

for prostatic adenoma and hernia inguinalis confers benefits on quality-of-life outcomes.

MATERIALS AND METHODS

This study was conducted at Vinnytsya National Pirogov Memorial Medical University, Vinnytsya, Ukraine, from January 2016 to January 2021. The research included 152 patients with prostatic adenoma who were operated on in the urological department of the Vinnytsya Regional Clinical Hospital named after M. I. Pirogov

Before entering the patient in the study protocol, a written voluntary agreement to participate in this study was obtained in accordance with the WMA Declaration of Helsinki – Ethical Principles for Medical Research Involving Human Subjects. The study protocol was approved by the Local Ethics Committee (LEC) of the Vinnytsya National Pirogov Memorial Medical University, protocol №8 dated 10/17/2019. All patients provided written informed consent. The general group included 32 (21%) patients who suffered from prostatic adenoma

and hernia inguinalis, who underwent one-moment retropubic prostatectomy accompanied with simultaneous pre-peritoneal inguinal hernioplasty. The number of members in the comparison group was 120 (79%) persons with prostatic adenoma who underwent a single retropubic prostatectomy only. The average age of the comparison group patients was 68.0 ± 7.0 years, the general group - 67.1 ± 6.9 years; the average prostate volume was 94.4 ± 42.3 cm³ and 91.2 ± 32.6 cm³ respectively. Urinary retention (acute or chronic) was the reason of urgent admission to the hospital in 44 (36.7%) patients of the comparison group and 4 (12.5%) of the general group. Hernia inguinalis was diagnosed in 32 patients of the general group, in 4 of them - on both sides (36 inguinal hernias totally). The distribution of patients in the general group by type and degree of inguinal hernia according to the EHS classification (2009) [4] is presented in Table I.

The obtained quantitative data were calculated by the variational statistics method using standard Microsoft Excel software packages on a personal computer with the calculation of the arithmetic mean M , the mean error of the mean m and the root mean square deviation σ , the Student's t -test and the difference between the data were considered reliable at a significance level of $p < 0.05$.

RESULTS

The average time of retropubic prostatectomy and simultaneous hernioplasty in general and comparison group is presented in Table II. The average time of retropubic prostatectomy in general and comparison groups was the same, and simultaneous hernioplasty took on an average 35.0 ± 17.4 minutes.

Intraoperative acute bleeding was observed in two patients (1.7%) from 120 of the comparison group, who lost 1.2 and 1.5 liters of blood. There was no intraoperative bleeding from the prostate bed in the general group. Intraoperative blood loss was determined by the gravimetric method [5, 6]. There were no patients in the general or comparison group who required reoperation due to early or late bleeding. The frequency of early and late bleeding after retropubic prostatectomies, which required blood transfusion, in the general group was 6.25% (2 cases) and 7.5% (9 cases) in the comparison group.

Postoperative complications were divided into early and late [5, 7, 8]. Early (immediate) postoperative complications mean complications after prostatectomy during inpatient treatment, late complications after discharge from the hospital (ambulatory period of supervision). The nature of early urological complications after one-stage retropubic prostatectomies in

two groups is presented in Table III. The neurological complications are illustrated in Table IV.

The most frequent complications after prostatectomy, including epididymitis (funiculitis), wound suppuration, chronic pyelonephritis exacerbation, pubic bones osteitis were not observed in both groups. No deaths were noted after the operations in two groups.

Classification of urological complications according to Clavien-Dindo after retropubic prostatectomy in patients of the general and comparison groups is presented in Table V.

As can be seen from Table V, postoperative complications occurred in every third patient of both groups. The majority of complications were presented in the I degree of Clavien-Dindo's classification. The average postoperative bed-day in patients of general group was 9.5 ± 1.7 ; in comparison group - 9.8 ± 2.9 .

DISCUSSION

To unify and systematize postoperative complications, surgeons R.A. Clavien et al. in 1992 proposed a new classification which was improved by D. Dindo et al. in 2004. It became world-famous and also began to be widely used after urological operations [5]. The Clavien-Dindo's classification takes into account not only the quantitative assessment of postoperative complications, but also the qualitative ones depending on the degree of complication severity. It can offer the type and volume of medical measures aimed at eliminating these complications. The Clavien-Dindo's classification determines the quantitative and qualitative assessment of postoperative complications within 90 days after surgery. Because it was recommended for use by the European Association of Urologists (EAU) and urological associations of other countries. Classification of postoperative complications according to Clavien-Dindo allows a better (more detailed) characterization of each complication and the volume of medical or repeated surgical care (under local or general anesthesia); compare and statistically evaluate urological and neurological complications of different urological clinics; more precisely determine the sequence of multimodal treatment; preliminarily change the provision of assistance to avoid or reduce complications; establish criteria for the assistance quality.

Thus, the average duration of retropubic prostatectomy in patients of the both groups was the same, like the postoperative bed-day. Despite the longer duration of the one-stage prostatectomy accompanied with hernioplasty, the frequency of postoperative complications was comparable in general and comparison groups. Long-term results of the one-stage

Table I. Distribution of patients in the general group by type and degree of inguinal hernia according to the EHS (2009) classification

Type of inguinal hernia	Degree of inguinal hernia			Number of patients	
	1	2	3	Absolute	%
Hernias of the lateral inguinal fossa (oblique or L) n=22	1 (L1)	14 (L2)	7 (L3)	19	59,4
Hernias of the medial inguinal fossa (direct or M) n=14	1 (M1)	7 (M2)	6 (M3)	13	40,6
Total: 36	2	21	13	32	100

Table II. The average duration of retropubic prostatectomy and simultaneous hernioplasty in the general group of patients and in the comparison group

Type of surgical intervention	Average duration of surgical intervention	
	General group (minutes)	Comparison group (minutes)
One-moment retropubic prostatectomy	82,8±25,6	80,1±17,4
Simultaneous hernioplasty	35,0±17,4	-

Table III. Early urological complications after retropubic prostatectomy in the general group of patients and in the comparison group

Early urological complications	Patients after retropubic prostatectomy	
	General group (n=32)	Comparison group (n=120)
Bleeding - early	2 (6,25%)	8 (6,7%)
- late	-	1 (0,8%)
- early and late together	2 (6,25%)	9 (7,5%)
Excretion of urine through a suprapubic wound	-	1 (0,8%)
Hyperthermia after removal of urethral drains	1 (3,1%)	7 (5,8%)
Stress incontinence	1 (3,1%)	2 (1,7%)
Acute urine retention	-	1 (0,8%)
Long-lasting (up to 10 days) serous leakage from the retropubic space	1 (3,1%)	-
Paravesical hematoma	-	1 (0,8%)
Wicket swelling	1 (3,1%)	-
Total	6 (18,75%)	21 (17,5%)

Table IV. Early neurological complications after retropubic prostatectomy in the general group of patients and in the comparison group

Early neurological complications	Patients after retropubic prostatectomy	
	General group (n=32)	Comparison group (n=120)
Thromboembolism of minor branches of the pulmonary artery	-	2 (1,7%)
Hypertensive crisis	1 (3,1%)	2 (1,7%)
Acute coronary syndrome	-	1 (0,8%)
Acute psychosis	-	1 (0,8%)
Stomach dyskinesia with pain syndrome	-	2 (1,7%)
Pneumonia	1 (3,1%)	-
Gouty arthritis exacerbation of the knee joint	-	1 (0,8%)
Total	2 (6,25%)	9 (7,5%)

prostatectomy accompanied with hernioplasty were studied by repeated outpatient examination in 1, 3, 6, and 12 months after surgery. Bladder stones, bladder neck and urethra strictures were not discovered in the

patients. One patient with stress urinary incontinence was treated conservatively (Nexetin 40 mg twice a day in combination with Kegel's exercises to strengthen the pelvic floor muscles) for 2 months, after which he

Table V. Classification of urological complications after retropubic prostatectomy according to Clavien-Dindo and their treatment in patients of general and comparison groups

Degree of complication	Complications (number of patients in absolute values and percentages) in the comparison group (n=120)	Complications (number of patients in absolute values and percentages) in the general group (n=32)	Treatment of complications
I	Hyperthermia after removal of urethral drainage (7 - 5.8%)	Hyperthermia after removal of urethral drainage (1 - 3.1%)	Foley Catheter Reinsertion, Antibacterial, Antipyretic, Anti-Inflammatory Therapy
	Urine excretion through the suprapubic wound (1 - 0.8%)	-	Repeated installation of the Foley catheter, antibacterial therapy
	Acute urinary retention (1 - 0.8%)	-	Repeated installation of the Foley catheter, antibacterial therapy
	-	Prolonged (up to 10 days) serous leakage from the retropubic space - 3.1%)	Dressings using local antiseptic solutions
	Paravesical hematoma (1 - 0.8%)	-	Dressings using local antiseptic solutions
	-	Wicket swelling (1 - 3.1%)	Anti-edematous, anti-inflammatory, antibacterial and pain-relieving therapy
	Stress urinary incontinence «d» (2 - 1.7%)	Stress urinary incontinence «d» (1 - 3.1%)	Kegel exercises, duloxetine
	Hypertensive crisis (2 - 1.7%)	Hypertensive crisis (1 - 3.1%)	Hypotensive therapy
	Gastric dyskinesia with pain syndrome (2 - 1.7%)	-	Fibrogastroduodenoscopy, spasmolytic, with painless therapy
	-	Pneumonia (1 - 3.1%)	Antibacterial, anti-inflammatory, antipyretic, detoxification, broncholytic therapy
	Acute psychosis (1-1.71%)	-	Antipsychotic drugs
	Exacerbation of gouty arthritis of the knee joint (1-1.7%)	-	Anti-inflammatory, antipyretic, antibacterial therapy
	II	Early and late bleeding from the prostate bed (9 - 7.5%)	Early and late bleeding from the prostate bed (2 - 6.25%)
Postoperative anemia (4 - 3.3%)		Postoperative anemia (1 - 3.1%)	Blood transfusion
IIIa	-	-	-
IIIb	-	-	-
IVa	Postoperative hypotension (6 - 5%)	Postoperative hypotension (2 - 6.25%)	Treatment in the intensive care unit
	Acute coronary syndrome (1 - 0.8%)	-	Treatment in the intensive care unit
	Thromboembolism of minor branches of the pulmonary artery (2 - 1.7%)	-	Treatment in the intensive care unit
IVb	-	-	-
V	-	-	-
Total	40 (33,3%)	11 (34,2%)	

achieved complete urinary continence. In 3, 6, and 12 months after the operation, he completely retained urine during physical exertion (lifting heavy objects), coughing, sneezing, and brisk walking.

Long-term results of simultaneous hernioplasty and patients' quality of life were evaluated using the questionnaire of the European Society of Herniologists (EHS) - EuraHS -

QoL (European Registry of Abdominal Wall Hernias) [8]. To evaluate the long-term results of simultaneous pre-peritoneal inguinal hernioplasty, the EuraHS - QoL quality of life questionnaire is the most convenient. The SF - 36 Health Survey and its short form, the SF - 12, are not specific to concurrent operations as they assess general physical functioning, role functioning, body pain, general health, vitality,

Table VI. Evaluation of the quality of life after simultaneous pre-peritoneal hernioplasty of inguinal hernias

Type of urinary incontinence	Symptoms before surgery	After 6 months after the operation	Condition 12 months after surgery (urodynamic monitoring)
The total score of the EuraHS questionnaire - Quality of Life scale	64,8±5,7	34,5±5,1*	33,1±4,4*

Note. * - $p < 0.05$ compared with the preoperative indicator

social functioning, emotional state, and mental health. And such a severe surgical intervention as a prostatectomy can affect all domains of questionnaires. The next CCS (Carolina's Comfort Scale), which is popular among herniologists, assesses the impact of a mesh implant (sensation of the mesh, pain, restriction of various movements) on the patient's quality of life after surgery [9]. The evaluation of the pain symptom after simultaneous hernioplasty using the ASS questionnaire (ASS-visual analog school) is also not specific, since the patient underwent prostatectomy and the pain syndrome may be caused by urological surgery. The EuraHS - QoL questionnaire allows patient to assess the pain syndrome no earlier than 3 months after surgery [8].

In patients after retropubic prostatectomy, reparative processes in the area of operation and possible postoperative complications (strictures of the bladder neck or urethra, bladder stones) occur precisely in the period up to 3-6 months [5], and therefore, in the absence of complications after retropubic prostatectomy, pain syndrome after it is advisable to evaluate the placement of the mesh implant no earlier than 6 months after the simultaneous operation. We conducted a survey of patients after simultaneous hernioplasty using the EuraHS - QoL questionnaire in 6 and 12 months after simultaneous hernioplasty. Ukrainian herniologists also use the EuraHS - QoL questionnaire to determine the quality-of-life outcomes after hernioplasty [10, 11]. This questionnaire consists of 3 domains: 1) pain in the area of the hernia; 2) limitation of movements due to pain or discomfort in the area of the hernia; 3) cosmetic discomfort (discomfort due to the appearance of the abdomen and hernia areas). There are a total of 9 questions in the questionnaire, each of which is evaluated on a 10-point

scale with a maximum score of 90 ("0" - no pain, restriction of movement and discomfort; "10" - the most severe pain, restriction of movement and discomfort). The EuraHS - QoL questionnaire is completed before and after surgery at certain time periods determined by the researchers.

The results of the survey of 32 patients after 36 simultaneous hernioplasty are presented in Table VI. When conducting a survey of patients who underwent simultaneous inguinal pre-peritoneal hernioplasty, questionnaires were filled out for each hernioplasty (36 questionnaires were received).

According to Table VI, the quality-of-life outcomes after the one-stage prostatectomy accompanied with hernioplasty in 6 and 12 months were statistically better than before these operations. Thus, after analyzing the long-term (more than 1 month after the operation) postoperative results in patients with benign hyperplasia and inguinal hernia, it was established that the quality-of-life improved. There were no long-term postoperative complications of the main and simultaneous operations too.

Prospects for further development are the screening of benign prostatic hyperplasia in men with inguinal hernias in surgical hospitals followed by the planning of one-time surgical correction of these pathologies with the involvement of a urologist.

CONCLUSIONS

Performing a one-stage prostatectomy accompanied with hernioplasty in patients with benign prostatic hyperplasia and hernia inguinalis does not worsen the immediate and long-term results of operation, instead, it helps to eliminate two diseases at the same time from one surgical approach.

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The Authors declare no conflict of interest.

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