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Original Article

Transurethral Resection of the Prostate and Inguinal Mesh Herniorrhaphy: Does Single Session Surgery Work Better? A Randomized Clinical Trial

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HIGHLIGHTS

- Benign Prostatic Hyperplasia is a common condition in men, especially in elderly. One of the most frequent concomitant conditions is an inguinal hernia.
- Combining the two methods of surgery in one session could reduce the patients' morbidity and cause reduction in costs and days of hospitalization.
- There was not a significant difference in the outcomes of the two methods of surgery. Hence, performing TURP and herniorrhaphy in a single session is recommended.

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ABSTRACT

Introduction
The present study aimed to evaluate the results of doing transurethral resection of the prostate (TURP) and inguinal mesh herniorrhaphy in a single session versus doing them in two separate sessions.

Methods
In a randomized clinical trial from 2017 to 2020, 84 patients with inguinal hernia and BPH (benign prostatic hyperplasia) were selected and categorized randomly into two separated groups. TURP and mesh herniorrhaphy were done in a single operation in group I. In group II, into TURP was done at first, and then, three months later, in another admission, inguinal hernia repair was done.

Results
Mean duration of operation was 63.04±6.8 minutes in group I and 77.2±8.5 minutes in group II (p-value<0.01). The mean duration of hospitalization was 3.8±0.7days in group I and 5.88±1.01 days in group II (p-value<0.001). The average time of Foley catheterization was 4.7±0.73 days in group I and 4.3±0.64 days in group II (p-value<0.01). The mean rate of international prostate symptom score (IPSS) before and after the operation was 25.6±3.8 and 12.3±2.9 (p-value<0.01) in group I, and 26.6±2.6 and 12.7±2.1 in group II (p-value<0.01). There was no correlation between symptoms before the treatment and general satisfaction after the treatment, and there were no differences in other minor complications.

Conclusions
Forasmuch as there are no significant differences in outcomes, TURP and mesh Herniorrhaphy in a single session versus doing them in two separated operations can be recommended. Although, because of the longer duration of catheterization in the patients who have done TURP and mesh Herniorrhaphy in a single session, it is needed to do some more investigations about post-operation catheterizing.

Keywords: Transurethral Resection of Prostate; Herniorrhaphy; Hernioplasty; Benign Prostatic Hyperplasia; Inguinal Hernia

Introduction

Benign Prostatic Hyperplasia (BPH) is a common condition in men, especially in the elderly. The incidence and amount of growth of the size of the prostate are increased with age (1). Clinical BPH is characterized by a prostate adenoma, which can cause bladder outlet obstruction (BOO), which often varies in severity (2). Because of the increasing life expectancy in the last decades worldwide, the rate of BPH and its complications has been augmented (3). Histological studies showed that the prevalence of BPH in the 4th, 6th, and ninth decades of life are 8%, 50%, and 80%, respectively (4). Due to this high prevalence rate, it is essential to pay more attention to BPH treatment in different conditions and its potential concomitant morbidities.

One of the most frequent concomitant conditions is an inguinal hernia. Suffering from both inguinal hernia and BPH is entirely feasible (5). Furthermore, studies showed that inguinal hernia has some connections with urinary symptoms, so patients with inguinal hernia present a higher International prostate symptom score (IPSS) (6). Although some recent studies did not show any significant association between BPH and inguinal hernia (7), the coincidence rate of inguinal hernia and BPH was reported about 15–25% in more studies (8, 9). With this amount of concurrency, the simultaneous treatment of both inguinal hernia and BPH in a single session may be a good choice. Despite some studies on Transurethral simultaneous resection of the prostate (TURP) and herniorrhaphy, some lack documents about comparing their postoperative side effects can be found.

The present study aimed to evaluate the results of doing TURP and inguinal mesh herniorrhaphy in a single session versus doing them in two separate sessions.

Methods

In this randomized clinical trial, 84 patients aged between 51 and 82 came to the urology clinics of Shohada Tajrish Hospital, Tehran, Iran, from March 2017 to May 2020 and were candidates for surgical treatments of both inguinal hernia and BPH were selected. This study was approved by the ethics committee of Shahid Beheshti University of Medical Sciences with the code of Ethics of IR.SBMU.MSP.REC.1396.900. Those who had other kinds of hernia in companion with inguinal hernia were excluded. Another inclusion criterion was the absence of the history of the prostatic surgeries and any inguinal repairs. So recurrent hernias were excluded too.

With these confines, after obtaining informed consent from the patients and the volunteers, they were selected and were separated randomly into two groups (Group I consisted of 44 patients and Group II consisted of 40 patients). TURP and mesh herniorrhaphy was performed in one admission and a single session in group I. In group II TURP was done at first, and then after three months in another operation, their inguinal hernia was repaired. Surgery technique and anesthesia were similar in both groups. There were the same Pre-operation and post-operation protocols in groups I and II. Also, Patients had the same medicine protocols based on the guidelines, and they received antithrombotic prophylactic treatments if needed. Duration of surgery was considered from the time of the induction of the anesthesia to the end of the operation. The TURP and mesh herniorrhaphy periods were counted separately in group II, and their summation was documented in the analysis. After the surgery in both groups, the following data were attained: post-operation fever, inguinal hernia repair wound infection, possible mortalities, duration of hospitalization, post-operation Foley catheterization duration, pain which measured by visual analog scale (VAS, maximum 10 points), before & after treatment IPSS and overall satisfaction.

Two different urology residents who were blinded by the study made a comparison of the data. Quantitative variables were expressed as mean ± SD. Qualitative variables were expressed as frequency and percentage. Quantitative independent variables were compared between groups one and two using the independent sample t-test, and quantitative non-parametric tests were compared using the Mann-Whitney test. Pearson's correlation test evaluated the correlation between two different Quantitative variables. 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 level of significance was 5%.

The research followed the tent of the Declaration of Helsinki. The Ethics Committee of Shahid Beheshti University of Medical Sciences approved this study. The institutional ethical committee at Shahid Beheshti University of Medical Sciences approved all study protocols (IR.SBMU.MSP.REC.1396.900). Accordingly, written informed consent was taken from all participants before any intervention.

Results

The mean age of the patients was 66.8±5.8 (range 54-81 years) in group I and 65.06±5.8 (range 51-78 years) in group II. Mean prostate volume was 38.7±9.3 in group I and 37.8±8.3 in group II. Seven out of 44 patients in group I had a bilateral hernia. In group II, 6 out of 40 patients had a bilateral hernia. The rest of the patients had a unilateral hernia. There was one post-operation mortality in group II in the second admission due to a heart attack among all the patients (Table 1).

Duration time of the operation in group I and group II were 63.04±6.8 mins and 77.2±8.5 mins by respect. The difference between the two groups was proved to be statistically significant (p-value<0.01).

The mean pain score (VAS) was 1.3±4.8 in group I and

Table 1. Demographics and clinical characteristics of the study population

	Group I (n=44)	Group II (n=40)	p-value
Age (years) (Mean± SD)	66.8±5.8	65.06±5.8	0.58
Prostate volume (cc) (Mean±SD)	38.7±9.3	37.8±8.3	0.9
Unilateral Hernia	37(84.1%)	34(85%)	0.677
Bilateral Hernia	7(15.9%)	6(15%)	0.18
IPSS before surgeries	3.8±25.6	2.6±26.6	0.73

*Statistically insignificant (p-value>0.05)

Table 2. Comparison of clinical and pathologic outcomes of the study population

	Group I (n=44)	Group II (n=40)	p-value
Duration of operation(S) (min)	63.04±6.8	77.2±8.5	0.002**
VAS	4.8±1.3	4.3±0.8	0.54
Post operation Fever	7(15.9%)	7(17.5%)	0.2
Post operation UTI	5(11.3%)	8(20%)	0.34
Mortality while admission	0	1(2.5%)	0.4
Hernia site wound infection	3(6.8%)	6(13.6%)	0.45
Duration of hospitalization (day)	3.8±0.7	5.88±1.01	0.0004**
Duration of Foley catheterization (day)	4.7±0.73	4.3±0.64	0.0045**
Post operation IPSS	12.3±2.9	12.7±2.1	0.55
Difference IPSS	-13.29	-13.97	0.67
Post operation Satisfaction	3.8±0.8	3.6±0.5	0.7

*Statistically insignificant (p-value>0.05), **statistically significant (p-value<0.05)

0.8±4.3 in group II. Their difference was not statistically significant (p-value>0.05).

Seven out of 44 patients (15.9%) in group I was suffered from post-operation fever. In group II, the fever was occurred in 7 out of the 40 patients (17.5%). In post-operation three months follow up, five patients in group I (11.3%) and eight patients in group II (20%) caught UTI.

In 3 patients in group, I and six patients in group II, infection of the wound of the hernia repair has happened (6.8 and 13.6%, respectively). Overall, in both groups, 9.8% of patients with unilateral and 15.3% of the patients with bilateral hernia's caught wound infection. There was no statistical correlation between having a bilateral or unilateral hernia and the mesh herniorrhaphy site infection rate. Detailed results are shown in Table 2.

Discussion

In patients who had done prostatectomy, the incidence rate of inguinal hernia is 15-25%. The occurrence rate of inguinal hernia in the general population is about one-third of that, and the amount is 5%. Eight, there are some investigations on the causes of the concurrence of inguinal hernia and prostate issues. Some of them suggested that chronically increase of intra-abdominal pressure due to excessive effort during the micturition is the main reason for the high prevalence of inguinal hernias. In older patients, due to the weakness of the inguinal canal wall, hernia development is facilitating (3, 5). Since the anatomical sites of the prostate and inguinal hernia are nearby, it is possible to treat both in a single session. We have observed some other trials with this subject and all of them had more minor cases versus our study. In the Dahami series on 31 patients, the overall progression rate was 86%, the morbidity rate was 10.7%, and the average hospitalization was 3.6 days (10).

Dhami's mentioned that TURP and mesh herniorrhaphy in a single session does not increase post-operation complications. Our trial confirms these results. Dhami's study has not spoken about Foley catheterization, and their effects on patient progression are not based on IPSS. in our results, duration of Foley catheterization and IPSS in both groups I and II had no statistical difference. In most trials that we had observed with the TURP and mesh herniorrhaphy topic, each of them had spoken about a part of the complications and the post-operation side effects, and none of them collected's post-operation outcomes in a trial as we did. In another study, Cimentepe and colleagues (11) divided patients into three sub-groups. In the first group, they did TURP and mesh herniorrhaphy in a single session as we did. in the second group, they just did TURP, and in the last one, they did mesh herniorrhaphy alone. 91% of their cases were unilateral hernias, and the rest were bilateral.

There is no significant difference in complications

between performing TURP and mesh herniorrhaphy in a single session versus doing them separately in the Cimentepe series. In Othman et al. trials, both groups' measured operation time had no significant differences (12). This result is unlike our estimated data. In our study, the duration of the operation in group I was significantly lower than group II. In Othman et al., study, same as ours, the hospitalization time in both groups was statistically different, and the duration in group I was statistically lower than group II. Othman used a (0-10 scale) in satisfaction issues, and they evaluated overall satisfaction two times after treatment. Unlike our study, three months after surgery, satisfaction in the cases who had done TURP and mesh herniorrhaphy in a single session was significantly better than those who performed TURP and mesh in two separated sessions. After a year of treatment, overall satisfaction in both groups was not significantly different. It shows that the final amount of satisfaction in our study and Othman et al., study is simil It shows that our study's final amount of satisfaction and Othman et al. study is similar. It should be noticed that their use of 10-unit scales for measuring satisfaction and doing one year of follow-up may be an advantage for the Othman series versus of us in satisfaction measuring. In the studies that we had observed, no investigations compared the duration of Foley catheterization. Duration of Foley catheterization in group I was longer compared to group two. There are some possible reasons for that.

In group I, two surgery in different sites were done at once. Although the total length of surgery in this group was lesser than group II, if we consider sessions separately, the duration of operation in one session in group I was higher. Duration of resection is one of the pre-operative factors that can guide effective catheter management after TURP (13). So, it can be a probable reason for a longer duration of catheterization in group I. moreover that chalise et al., and some other studies mentioned that length of hospital stay correlates with days on which catheter was removed. Still, they just evaluated post-TURP catheterization, and its combination with inguinal hernia need to be observed in future studies (3, 13, 14). To determine the way of healing BPH symptoms, we used the IPSS scale. In groups I and II, post-operation IPSS were dramatically lower than the pre-operation state. This showed that both single and separated session surgeries are significantly effective in healing prostatic signs and symptoms. Finally, we indexed the advantage and disadvantages of performing TURP and mesh herniorrhaphy in a single session versus of doing them in separated sessions:

-lesser total time of the surgery
-lesser duration of hospitalization
-no difference in post-operation pain (VAS)
-no difference in mortality
-no difference in post-operation UTI
-no difference in post-operation fever
-no difference in the occurrence of wound infection of the hernia repair site
-more prolonged duration of Foley catheterization
-no difference in the overall satisfaction of the treatment

Because of the absence of a significant difference in the outcome, performing TURP and mesh herniorrhaphy in a single session is recommended. It permits patients to go through only one anesthetic procedure, hospital admission, and rehabilitation, and also it could be more cost-effective. Moreover, based on our results on catheterization, it is good to perform some more clinical trials with special consideration to this matter.

Conclusions

Forasmuch as there are no significant differences in outcomes, TURP and mesh Herniorrhaphy in a single session versus doing them in two separated operations can be recommended. Although, because of the longer duration of catheterization in the patients who have done TURP and mesh Herniorrhaphy in a single session, it is needed to do some more investigations about post-operation catheterizing.

Authors' contributions

All authors contributed equally.

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Conflict of interest

All authors declare that there is no potential competing or conflict of interest.

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Ethics statement

This study was approved by the ethics committee of Shahid Beheshti University of Medical Sciences with the code of ethics of IR.SBMU.MSP.REC.1396.900.

Data availability

Data will be provided on request.

Abbreviations

BOO Bladder outlet obstruction
BPH Benign prostatic hyperplasia
TURP Transurethral resection of prostate

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