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# The Impact of Benign Prostatic Hyperplasia Surgical Treatment with Turp Method on the Quality of Life

Snjezana Milicevic

Clinic of Urology, Clinical Center University of Banjaluka, Bosnia and Herzegovina

## Original paper

### SUMMARY

**Introduction/Objective.** Transurethral resection of the prostate (TURP) is a gold treatment method in older men who develop lower urinary tract symptoms (LUTS) which are caused by benign prostatic hyperplasia (BPH) and benign prostatic obstruction (BPO). **The objective** of the study was to assess the impact of BPH surgical treatment with TURP method on the quality of life, as a consequence of urinary symptoms. **Material and methods.** The research material was based on 40 patients who, due to BPH, were treated with the method of transurethral resection. International Prostate Symptom Score (IPSS) was used in the research i.e. question N° 8 that relates to the quality of life, as a consequence of the urinary symptoms. The criteria for the patients to be selected for this type of BPH surgical treatment were good general status

of the patient, age under 80, the weight of benign prostatic gland hyperplasia tissue 30–80 grams, postvoid residual urine (PVR) higher than 150 ml, IPSS value >19 points, and Index of Quality of Life (IQL) values > 3 points. All patients, first preoperatively, and then postoperatively, gave answers to IPSS IQL in time intervals of 4, 8 and 12 weeks. **Results.** Difference testing of IQL arithmetic means (AM) between results before the operation, then during the first, second and third checkup was performed with the t-test and Wilcoxon test of equivalent pairs, and has shown that there is a highly statistically significant difference between preoperative values and the values during all the postoperative checkups. Taking into consideration the age subgroups (20 patients between 59 and 69 years and 20 patients between 70 and 80 years), difference testing of arithmetic means between results before the operation and first, second and third checkup, isolated,

for each age subgroup, was carried out. It has demonstrated that there is a statistically significant difference between preoperative values and values during all postoperative checkups. Difference testing of arithmetic means between the stated age groups has also been conducted. The t-test and Mann-Whitney test have been used for this purpose and have shown that there is no statistically significant difference between preoperative test results and the results during all postoperative checkups. **Conclusion.** The quality of life, as a consequence of urinary symptoms, has significantly improved after the BPH treatment with TURP method. The impact of TURP on the quality of life is not related to age i.e. TURP is equally efficient regardless of patient's age.

**Key words:** benign prostatic hyperplasia (BPH), transurethral resection of the prostate (TURP), index of quality of life (IQL).

## 1. INTRODUCTION

Transurethral resection of the prostate (TURP), transurethral incision of the prostate (TUIP) and open prostatectomy (OP) are standard, conventional surgical methods of BPH treatment.

Transurethral vaporization of the prostate (TUVP), as an electro-surgical modification of TURP technique, is also a part of BPH surgical treatment. TURP is a gold method of treatment for older men with LUTS, which are caused by BPH and BPO (1, 2, 3, 4, 5, 6). However, rules have been partly changed in the past 20 years by introducing medicament treatment, and also thanks to development of minimum invasive treatment methods (7, 8, 9, 10, 11, 12, 13, 14). TURP is indicated in the prostate volume of 30-80 ml, and in

50-60% of cases is applied after the failure of medicament treatment, although no consensus has been reached on this topic yet (15, 16).

The TURP method has been technically improved in the last decade by introducing video TURP, instruments for continuous flow, various designs of operative electrodes, as well as modification of high frequency generators.

Conventional electrosection underlies the application of monopolar high frequency electricity, with maximum cutting power of 200 W. The depth of coagulation when cutting depends on the electricity voltage, so that degree and coagulation depth can be individually adapted. Better coagulation effect when cutting has been developed thanks to modification of high frequency gen-

erators with an aim of reducing the loss of blood.

The most significant, newer improvement of TURP is the application of bipolar TURP which uses saline as irrigational fluid. High frequency energy up to 160 W goes through irrigational solution (saline) 0,9% NaCl, which results in disintegration of the tissue through molecular dissociation. Such way of tissue disintegration is done at lower resection temperatures unlike conventional monopolar system. In this way, thermal damage of surrounding tissue is reduced. By using physiological solution for irrigation, the risk of having TUR syndrome is almost prevented (17).

Although TUR syndrome is not very common today, it is one of the most dangerous intraoperative

complications. In terms of seriousness and danger, it comes right after bleeding (hemorrhaging) as an intraoperative complication.

It is important to point out that TUR syndrome can be successfully avoided by using bipolar TURP.

The successfulness of TURP treatment means reduced LUTS and improvement the quality of life, as a consequence of the urinary symptom, reduction of postvoid residual urine (PVR) and improvement of maximum urine flow (Qmax).

## 2. OBJECTIVE

The objective of this study is to assess the impact of BPH surgical treatment with TURP method on the quality of life, as a consequence of urinary symptoms.

## 3. MATERIAL AND METHODS

The material in this research is based on 80 patients who, due to BPH, were operated with TURP method at the Clinic of Urology, Clinical Center University of Banjaluka.

The IPSS has been used in the research, i.e. question N° 8 (Index Quality of Life - IQL) which relates to the quality of life, as a consequence of urinary symptoms. The question related to the quality of life as a consequence of urinary symptoms was: "If you had to spend the rest of your life with the voiding situation as it is now, how would you describe it? The answers are numbered in the following way: 0 - fascinated, 1 - satisfied, 2 - mainly satisfied, 3 - semi-satisfied (equally satisfied and dissatisfied), 4 - mainly dissatisfied, 5 - dissatisfied and 6 - desperate. The criteria for the patients to be selected for this type of BPH surgical treatment were:

- good general status of the patient
- age under 80,
- the weight of benign prostatic gland hyperplasia tissue 30–80 grams,
- postvoid residual urine higher than 150 ml,
- IPSS values > 19 points,
- IQL values > 3 points.

The method of work was as

follows:

- Preoperative determination of IQL values (twice), by individual examination of all examinees
- BPH was treated with TURP method
- After the operative intervention, in time intervals of 4, 8 and 12 weeks, all patients were determined the IQL.

Age	Number of patients and %	
50.-59.	1	2,50
60.-69.	19	47,50
70.-79.	19	47,50
80.-89.	1	2,50
Total	40	100,00

**Table 1.** Patients according to their age

The average age of patients was 69,37. The youngest patient was 58, and the oldest was 80 years old, therefore the variation interval was 22 years.

It can be noticed that all the patients were above the age of 58 which implies that BPH develops in older patients. Preoperatively, patients characterized their quality of life, as a consequence of urinary symptoms, by the answer that could be expressed in seven categories.

Taking into account patients' answers, the IQL is presented in the following table.

Index of Quality of Life Values	Number of patients
0	0
1	0
2	0
3	0
4	0
5	22
6	18

**Table 2.** IQL values in observed group of patients.

Note: The question related to quality of life as a consequence of urinary symptoms was: "If you had to spend the rest of your life with the voiding situation as it is now, how would you describe it? The answers are numbered in the following way: 0 - fascinated, 1 - satisfied, 2 - mainly satisfied, 3 - semi-satisfied (equally satisfied and dissatisfied), 4 - mainly dissatisfied, 5 - dissatisfied and 6 - desperate.

This implies that 18 patients were

desperate due to present urinary symptoms and 22 patients were dissatisfied. The arithmetic mean of given answers was 5,450 points with the standard deviation (SD) of 0,504.

Taking into consideration the age of the sample i.e. equal presence of examinees (20 examinees in each group) who are between 59 and 69, and between 70 and 80 years old, the arithmetic means of given answers regarding IQL have been calculated by age groups, as shown in Tables 3 and 4.

Variable	AM SD
PIQL	5,300 0,470

**Table 3.** The arithmetic mean of preoperative IQL values in the age group 59-69

Variable	AM SD
PIQL	5,600 0,503

**Table 4.** The arithmetic mean of preoperative IQL values in the age group 70-80

Note: The symbols of used variables in tables 5 and 6: PIQL- index of quality of life preoperatively

## 4. RESULTS

The treatment results in this study have been assessed based on the analysis of given answers about IQL in time intervals of 4, 8 and 12 weeks, which is shown in Table 5.

Time interval of giving answers about the quality of life as a consequence of urinary symptoms	AM SD
4 weeks	1,850 0,580
8 weeks	1,700 0,464
12 weeks	1,575 0,501

**Table 5.** IQL arithmetic means during postoperative checkups.

The IQL arithmetic mean during the first checkup was 1,850 points implying that 4 patients were semi-satisfied, 26 patients were mainly satisfied and 10 patients were satisfied with their voiding situation actually with their quality of life as a consequence of urinary symptoms.

During the second checkup, the IQL arithmetic mean was 1,700 points implying that 28 patients were mainly satisfied, and 12 patients were satisfied with their quality of life as a consequence of urinary symptoms.

During the third checkup, the

IQL arithmetic mean was 1,575 points implying that 23 patients were mainly satisfied, and 17 patients were satisfied with their quality of life as a consequence of urinary symptoms.

Previously stated results refer to the total sample i.e. all observed patients. Taking into consideration the age of patients i.e. the equal number of patients (20) in each age group (59-69 and 70-80), the analysis of answers given individually, has been done for those groups within the same sample.

Table 6 refers to the group of patients whose age is 59-69, and Table 7 refers to the group of patients at the age of 70-80.

Time interval of giving answers about the quality of life	Variable	AM	SD
4 weeks	K1-IQL	1,700	0,470
8 weeks	K2-IQL	1,600	0,503
12 weeks	K3-IQL	1,450	0,510

**Table 6.** The IQL arithmetic mean in the group of patients whose age is between 59 and 69 during the first, second and third checkup

NOTE: Symbols of used variables: K1-first checkup K2 second checkup, K3 third checkup, IQL Index of Quality of Life.

Time interval of giving answers about the quality of life	Variable	AM	SD
4 weeks	K1-IQL	2,000	0,649
8 weeks	K2-IQL	1,800	0,410
12 weeks	K3-IQL	1,700	0,470

**Table 7.** The IQL arithmetic mean in the group of patients whose age is between 70 and 80 during the first, second and third checkup

NOTE: Symbols of used variables in table 7 is the same as in table 6.

Testing the difference of IQL arithmetic means between the test results before the operation, during the first, second and third checkup was performed by t-test and the Wilcoxon test of equivalent pairs. The t-test for dependent (paired) samples is applied in group of patients observed together, and the Wilcoxon test of equivalent pairs for dependent (paired) samples is applied in age groups observed individually.

Table 8 demonstrates difference

testing of arithmetic means between the results before operation, first, second and third checkup – in total for **all the observed patients**. The symbols of the variables used match the symbols of the variables used in Tables 6 and 7.

Variables	Test result t p	Conclusion
P-IQL: K1-IQL	33,893 0,000	p<0,01
P-IQL: K2-IQL	33,541 0,000	p<0,01
P-IQL: K3-IQL	35,704 0,000	p<0,01

**Table 8.** Comparison of preoperative results of IQL and the results of the same tests during first, second and third checkup

Table 8 shows that there has been a highly statistically significant difference between preoperative results of IQL and the results of the same test during the first, second and third checkup. Taking into consideration the age subgroups (59-69 and 70-80), the testing of AM difference between the results before operation, first, second and third checkup, isolated, for each subgroup was conducted.

Table 9 refers to the comparison of results of age subgroup 59-69. The symbols of the variables used match the ones in the previous tables.

Variables	Test result T z p	Conclusion
P-IQL: K1-IQL	0,00 3,920 0,0001	p<0,01
P-IQL: K2-IQL	0,00 3,920 0,0001	p<0,01
P-IQL: K3-IQL	0,00 3,920 0,0001	p<0,01

**Table 9.** Comparison of preoperative results of IQL and the results of the same tests during first, second and third checkup

Table 9 clearly shows that there has been a highly statistically significant difference between the IQL preoperative results compared to the results of the same tests during the first, second and third checkup in this age subgroup.

Variables	Test results	Conclusion
P-IQL: K1-IQL	0,00 3,920 0,0001	p<0,01
P-IQL: K2-IQL	0,00 3,920 0,0001	p<0,01
P-IQL: K3-IQL	0,00 3,920 0,0001	p<0,01

**Table 10.** Comparison of IQL preoperative results and the results of the same tests during first, second and third checkup

Table 10 refers to the comparison of results of the **age subgroup 70-80**. The symbols used in the following tables match the ones in the pre-

vious tables. Table 10 clearly demonstrates that there has been a highly statistically significant difference between the IQL preoperative results and the results of the same test during the first, second and third checkup in the stated age subgroup.

The AM difference testing between the age groups was also conducted. The t-test and Mann-Whitney test were used for this purpose. The t-test for independent samples was applied in all those cases where the difference in variance was not statistically significant, which, however, was established by the F-test. In cases where the difference in variance was statistically significant, the Mann-Whitney test for independent samples was applied.

Table 11 shows the results of the comparison. The symbols of the variables used match the ones in the previous tables.

Variable	Test results t ili U z p	Conclusion
P-IQL	1,949–0,0587	p>0,05
K1-IQL	1,674–0,1023	p>0,05
K2-IQL	1,378–0,1761	p>0,05
K3-IQL	1,611–0,1154	p>0,05

**Table 11.** Comparison of preoperative results and the results during the first, second and third IQL checkup between the age subgroup

Table 11 shows that there has been no statistically significant difference between the IQL preoperative values and the values of the same test during all the postoperative checkups.

## 5. DISCUSSION

Although TURP is a standard surgical procedure in the BPH treatment, there are few studies that assess its impact on the quality of life, as a consequence of the urinary symptoms. It is a fact that there are not any opponents to the currently accepted position that the improvement the quality of life, as a consequence of the urinary symptoms, is the most important goal of the BPH treatment from the patients' perspective (18).

In this study, the evaluation of the quality of life was done through IPSS whose question N° 8 is Index-of-Quality of Life, as a consequence of the urinary symptoms. In 1992, the American Urologists Association (AUA) published Symptom Score

Index which was adopted by the World Health Organization in 1993 as the International Prostate Symptom Score (I-PSS). It consists of 7 same questions referring to LUTS as in AUA Symptom Index with additional question N° 8 referring to disease specific quality of life (IQL). The questionnaire was designed in a way that patients are expected to fill it in by themselves.

However, in reality, it has turned out that some patients cannot fill it in on their own. Many studies, nevertheless, have shown that there is not a big difference in answers i.e. deviation in terms of over or under evaluating the complaint degree irrespective of the way the questionnaire was completed (patient on his/her own or in doctor's presence) (19, 20).

Marszalek and associates analyzed the improvement of the symptom score after TURP in 25 random and controlled studies between 1996 and 2006 (18).

All studies have shown dramatic improvement of the symptom score which was -62% after 12 months and thus the quality of life has significantly been improved (21).

By analyzing the obtained results in our study, we have shown that there is a highly statistically significant difference between the IQL preoperative values and the results of the same test during all postoperative checkups.

By testing the difference of IQL arithmetic means, between the age subgroups of the patients treated with the TURP method, our study has shown that there is not a statistically significant difference between the results in the mentioned age subgroups during all postoperative checkups.

The quality of life, as a consequence of the urinary symptoms, has significantly improved after treating BPH with the TURP method. The arithmetic mean of the evaluated IQL in our series of examinees, postoperatively, (12 weeks after operation) was 1,575 points compared to the arithmetic mean preoperatively which was 5,450 points, thus showing that the quality of life has been improved by 71,11% i.e. the difference of the arithmetic means

is highly statistically significant.

## 6. CONCLUSION

The quality of life, as a consequence of urinary symptoms, has been significantly improved after treating BPH with TURP method.

The impact of TURP on the quality of life, as a consequence of urinary symptoms, does not depend on age. As a matter of fact, TURP is equally efficient in that field irrespective of patients' age.

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Corresponding author: prof Snjezana Milicevic, MD  
PhD. Clinic of Urology Clinical Center University of  
Banjaluka. Z. Korde 1, 78 000 Banjaluka. Bosnia and  
Herzegovina. E-mail: smilicevic@blic.net. Tel. 00 387  
51 343 345