Turkish Journal of Geriatrics
2025; 28(3):312–319

DOI: 10.29400/tjgeri.2025.447

Mahmut UĞURLU[1]
Sabuhi ALİSHOV[2]
Fazlı POLAT[1]
Süleyman YEŞİL[1]
Ali ATAN[1]

[1]Gazi University, Faculty of Medicine, Urology, Ankara, Türkiye

[2]Kütahya Park Hayat Hospital, Urology, Kütahya, Türkiye

Correspondence

Mahmut UĞURLU
Phone : +905071327098
e-mail : mahmutugurlu@gazi.edu.tr

Received : May 04, 2025
Accepted: Jul 06, 2025

Cite this article as:
Uğurlu M, Alishov S, Polat F. et al. The Impact of Age on International Prostate Symptom Score and Quality of Life Scores After Open Prostatectomy Elderly Patients. Turkish Journal of Geriatrics 2025; 28(3):312–319.doi:10.29400/tjgeri.2025.447

ORIGINAL ARTICLE

THE IMPACT OF AGE ON INTERNATIONAL PROSTATE SYMPTOM SCORE AND QUALITY OF LIFE SCORES AFTER OPEN PROSTATECTOMY ELDERLY PATIENTS

Abstract

Introduction: Benign prostatic hyperplasia is a common condition in elderly men and can significantly impair quality of life. Open prostatectomy remains a valuable surgical option for patients with large prostate volumes, particularly in centers where minimally invasive techniques are not available. However, there is limited data regarding the influence of patient age on surgical outcomes. This study aimed to evaluate the effect of age on International Prostate Symptom Score and quality of life outcomes following open prostatectomy.

Materials and Method: This retrospective study included 53 patients who underwent open prostatectomy for benign prostatic hyperplasia with large prostate volumes between 2015 and 2020. Patients were divided into two groups based on age: younger than 70 years and 70 years or older. Preoperative and postoperative International Prostate Symptom Score and quality of life scores were compared between the groups.

Results: The mean age of the patients was 70.4 years. Both younger and older patients achieved marked improvements in postoperative International Prostate Symptom Score and quality of life scores. Although elderly patients exhibited slightly higher postoperative scores, the magnitude of improvement was comparable across groups. Complication rates were low and did not differ significantly between age groups, demonstrating that advanced age does not compromise surgical safety or effectiveness.

Conclusion: Open prostatectomy provides substantial and consistent symptomatic and quality of life benefits for patients with large-volume benign prostatic hyperplasia, independent of age. These findings affirm that open prostatectomy remains a highly reliable treatment option for elderly patients, offering effective and safe outcomes comparable to those observed in younger individuals.

Keywords: Prostatic Hyperplasia; Prostatectomy; Quality of Life; Aging.

INTRODUCTION

Benign prostatic hyperplasia (BPH) is a non-malignant enlargement of the prostate gland, with its prevalence increasing with age. It represents one of the most common causes of lower urinary tract symptoms (LUTS) in older men (1). Although it is not life-threatening, LUTS—characterized by symptoms such as difficulty urinating, nocturia, increased urinary frequency, and a sensation of incomplete bladder emptying—can significantly impair patients' quality of life (2).

When assessing BPH, the International Prostate Symptom Score (IPSS) and Quality of Life (QoL) score have become essential tools for evaluating patients with LUTS and/or BPH. These validated instruments are suggested as effective methods for diagnosing and monitoring treatment outcomes in this patient group (3). As out comes reported by patients themselves, they are crucial in clinical decision-making, especially for gauging how subjective symptoms respond to therapy. Aging-related physiological changes, such as decreased detrusor contractility, impaired neurogenic control, and bladder comorbidities, have been identifiedas factors that can worsen LUTS (4).

While the initial management of BPH typically involves medical therapy, this approach often proves insufficient for patients with prostate volumes greater than 80 mL, which necessitates surgical intervention. According to the 2025 guidelines of the European Association of Urology (EAU), open prostatectomy (OP) remains one of the recommended surgical options for patients in whom endoscopic enucleation is not feasible (5). Despite the increasing use of minimally invasive techniques such as Holmium Laser Enucleation of the Prostate (HoLEP) and Robot-Assisted Simple Prostatectomy (RASP), OP continues to be widely performed in developing countries due to limited access to advanced technology (6).

Although previous studies have demonstrated the overall surgical efficacy of OP in improving IPSS and QoL scores, data on variations in these outcomes with age remain limited. However, age-related physiological changes in the lower urinary tract may directly influence surgical outcomes.

This study retrospectively analyzed changes in IPSS and QoL scores following OP in patients with large-volume (>80 mL), medically refractory BPH. The study aimed to compare the changes in these subjective scores across age groups (≥70 years vs. <70 years) and assess the impactof age on clinical outcomes following OP.

MATERIALS AND METHOD

In this retrospective study, 53 patients were selected from a total of 855 who underwent surgery for BPH between 2015 and 2020 at a university hospital recognized as one of the national reference centers for BPH surgery. Demographic data, clinical follow-up parameters, IPSS, and QoL scores were obtained comprehensively from the hospital information management system and patient records. Ethical approval for the study was granted by our university's Clinical Research Ethics Committee (Decision No: 803, dated 26.11.2020).

Patients included in the study were over 45 years old, had prostate volumes greater than 80 cm^3 as measured by transrectal ultrasonography, had not responded to medical treatment, and had surgical indications due to recurrent urinary retention and/or bladder stones. Patients diagnosedwith prostate cancer, a history of previous prostate surgery, urethral stricture, neurogenic bladder dysfunction, bladder tumors, coagulopathy, or those unableto safely discontinue anticoagulant therapy were excluded from the study.

Surgical Procedure and Clinical Follow-Up

Antiplatelet medications were discontinued one week before surgery. Under general or spinal anesthesia, urethrocystoscopy was initially performed to inspect the urethra and bladder. The

bladder was then filled with saline, and a midline suprapubic incision was made to access the bladder. Two traction sutures were placed on the anterior wall of the bladder, which was subsequently opened. An incision was made on the bladder neck mucosa according to the prostatic shape at the bladder neck, and digital enucleation was initiated from the anterior aspect of the prostate. After completing the enucleation, the bladder neck was sutured using continuous 2-0 Vicryl (polyglactin 910, Ethicon, NJ, USA) between the 3 and 9 o'clock positions to achieve hemostasis and fix the trigone to the prostate capsule.After bladder neck suturing, a 22F urethral Foley catheter was inserted, and the bladder was closed in two layers with 2-0 Vicryl. Before the anterior bladder wall was closed entirely, an 18F Foley catheter was inserted suprapubically to establish a cystostomy. Following closure, the bladder was filled with saline to check for leakage along the suture line. In the absence of leakage, a prevesical drain was placed, and the rectus muscle, fascia, subcutaneous tissue, and skin were closed in layers.

In the postoperative period, continuous bladder irrigation was administered through the cystostomy catheter for 24 hours. When the mixture of urine and irrigation fluid became clear, the irrigation was stopped, and the cystostomy catheter was clamped.Once clear urine flow was confirmed, the cystostomy catheter was removed. In three patients, the catheter was removed on the 6th postoperative day due to urethral irritation and urine leakage around the catheter. The catheter was removed in the remaining 50 patients on postoperative day 7.

At three months postoperatively, patients were evaluated for IPSS and QoL scores. They were divided into two age groups: those aged ≥70 and those under 70.Although the ≥65 age threshold is commonly used to define older adults in the geriatric literature, a cutoff of 70 years was chosen in this study to ensure better statistical group balance and to more accurately reflect the physiological changes associated with advanced age. IPSS, QoL scores, surgical indications, and complications were compared between the two age groups.

Statistical Analysis

Statistical analyses were performed using SPSS software version 27.0.1. The normality of the distribution of variables was assessed using the Shapiro-Wilk and Kolmogorov-Smirnov tests. Descriptive analyses were presented as mean and standard deviation for normally distributed variables, and as median with minimum and maximum values for non-normally distributed and ordinal variables. The Mann-Whitney U test was utilized for non-normally distributed variables. The Chi-square test was applied to categorical variables, including surgical indications and complications. A p-value of <0.05 was deemed statistically significant in all analyses.

A post-hoc power analysis based on a high effect size (Cohen's d=0.8) indicated that a minimum sample of 26 patients would be sufficient for 80% power at a 5% significance level. Therefore, the current sample size (n=53) is considered statistically adequate.

RESULTS

The study included 53 patients agedbetween 52 and 89,with a mean age of 70.4 years.In terms of age distribution, 12 patients (22.6%) were younger than 65 years, 15 patients (28.3%) were between 65 and 69 years, and 26 patients (49.1%) were 70 years or older. Overall, 41 patients (77.4%) were aged 65 years and above.The mean prostate volume for the entire cohort was 164.1 mL. The duration of surgery was measured from the time of skin incision to the completion of wound closure, yielding a mean of 44.2 minutes. In the postoperative period, the average duration of cystostomy was 2.1 days, while the average duration of urethral catheterization was 6.9 days (Table 1).

When comparing the patient groups based on age, the cohort was divided into those under 70 (n=27) and those aged 70 years or older (n=26). The median prostate volume in patients under 70 was 140 mL, while in patients older than 70, it was 170 mL. This difference was statistically significant, as determined by the Mann-Whitney U test (p=0.004).

Preoperative IPSS scores had a median of 28 in the younger and 31 in the older groups, indicating a statistically significant difference (p=0.005). Preoperative IPSS scores were evaluated in terms of both voiding and storage symptoms across the two age groups, and were found to be higher in the elderly group. Voiding symptom scores had a median of 17 in patients <70 years and 18 in those ≥70 years, with a statistically significant difference (p=0.008). Similarly, storage symptoms were significantly more pronounced in the elderly group(p=0.006).Similarly, preoperative QoL scores had a median of 5 in patients under 70 and 6 in those aged 70 or older. (p=0.014).

Following surgery, a marked reduction in IPSS scores was observed in both age groups. For voiding symptoms, the postoperative median score was 4 in patients <70 years and 5.5 in those ≥70 years (p < 0.005). A similar improvement was noted in storage symptoms, with a median postoperative score of 3 in the younger group and 4 in the elderly group (p < 0.005). Additionally, postoperative QoL scores improved markedly, with medians of 1 and 1.5 for the younger and older groups, respectively. This difference was also statistically significant (p=0.013).

Changes between preoperative and postoperative values were analyzed to better assess

Table 1. Demographic and Clinical Characteristics

Variable	Mean±SD
Age (years)	70.4±7.9
Prostate Volume (mL)	164.1±46
Surgical Procedure Time (minutes)	44.2±9.4
Cystostomy Duration (days)	2.1±0.4
Catheterization Duration (days)	6.9±0.4

Table 2. Distribution of Clinical and Functional Outcomes by Age Group

Variable	< 70 Years (n:27) Median (IQR)	≥ 70 Years (n:26) Median (IQR)	p
Prostate Volume (mL)	140 (110–360)	170 (110–330)	0.004
Preoperative IPSS	28 (25–35)	31 (26–35)	0.005
Preoperative IPSS (Voiding)	17 (14–20)	18(15–20)	0.008
Preoperative IPSS (Storage)	12 (11–15)	13 (11–15)	0.006
Postoperative IPSS	7 (4–18)	9.5 (5–19)	0.002
Postoperative IPSS (Voiding)	4 (2–10)	5.5 (3–11)	<0.005
Postoperative IPSS (Storage)	3 (2–8)	4 (2–8)	<0.005
IPSS Improvement	22(11-28)	21(12-29)	0.23
IPSS Improvement (Voiding)	13(7-16)	12(7-17)	0.13
IPSS Improvement (Storage)	9(4-12)	9(5-12)	0.65
Preoperative QoL	5 (4–6)	6 (4–6)	0.014
Postoperative QoL	1 (1–4)	1.5 (1–3)	0.013
QoL Improvement	4(1-5)	4(2-5)	0.68

p: Mann-Whitney U, IQR: Interquartile Range

surgical efficacy. The change in IPSS score (ΔIPSS) was calculated as a median of 22 in patients under 70 and 21 in patients aged 70 or older. Although both groups demonstrated significant symptom relief, the difference in the degree of change between groups was not statistically significant (p=0.236).The median ΔIPSS for voiding symptoms was 13 in patients <70 years and 12 in those ≥70 years, indicating no statistically significant difference between the age groups (p=0.13). Similarly, the median ΔIPSS for storage symptoms was comparable between the two groups (p=0.65).Similarly, changes in QoL scores showed improvement in both groups, with a median change of 4 in both age categories. This difference was also insignificant (p=0.686) (Table 2).

When the indications for surgery were examined, the distribution across age groups revealed noteworthy patterns. A total of 36 patients (67.9%) underwent surgery due to medically refractory BPH:19 in the <70 years group and 17 in the ≥70 years group. The number of patients who underwent surgery for acute urinary retention was 2 in the younger group and 3 in the older group, accounting for 5 patients (9.4%). Surgery due to lower urinary tract symptoms associated with bladder stones was performed in 6 patients from each age group, totaling 12 patients (22.6%). The distribution of surgical indications between the two age groups was not statistically significant (p=0.864) (Table 3).

In addition to surgical indications, we analyzedpostoperative complications acrossdifferent age groups. Outof 53 patients, six individuals (11.3%) experiencedcomplications.The prevalent complication was bladder neck contracture, seen in 4 patients (7.5%). Additionally, 2 patients (3.7%) needed blood transfusions because of postoperative bleeding. The remaining 47 patients (88.7%) reported no postoperative complications.

When the distribution of complications was evaluated by age group, two cases of bladder neck contracture and one case of bleeding were recorded in the <70 years group. Similarly, in the ≥70 years group, two cases of bladder neck contracture and one case of bleeding were observed. There was no statistically significant difference between the groups regarding complication rates (p=0.999) (Table 4).

These findings demonstrate the efficacy of OP across all age groups. Further evaluations on this topic will be discussed in the Discussion section.

Table 3. Distribution of Surgical Indications by Age Group

Surgical Indication	< 70 Years (n:27,%)	≥ 70 Years (n:26,%)	p
Medically Refractory BPH	19(%70.4)	17(%47.2)	0.86
Acute Urinary Retention	2(%7.4)	3(%11.5)	
Bladder Stone	6(%22.2)	6(%23.1)	

p: Chi Square

Table 4. Distribution of Postoperative Complications by Age Group

Complication	< 70 Years (n:27,%)	≥ 70 Years (n:26,%)	p
No Complication	24(%88.9)	23(%88.5)	0.99
Bladder Neck Contracture	2(%7.4)	2(%7.6)	
HemorrhageRequiring Transfusion	1(%3.7)	1(%3.8)	

p: Chi Square

DISCUSSION

This study observed significant improvements in IPSS and QoL scores following OP in patients with large-volume BPH. One of the most notable findings is that these improvements occurred at similar rates in both age groups (<70 and ≥70 years). Despite a greater preoperative symptom burden in the older group, the postoperative improvement was similar to that of younger patients, reinforcing the effectiveness of OP as a viable treatment option for elderly individuals.

The marked improvements in IPSS and QoL scores at the third postoperative month represent the primary clinical outcomes of this study. Our findings align with those reported in similar studies with comparable follow-up durations in the literature. In a prospective study by Geavlete et al., the mean IPSS decreased from 28 to 7, and the QoL score from 5.1 to 1.3 following OP (7). Similarly, in a randomized controlled trial by Rao et al., mean IPSS scores dropped from 24.5 to 5.4 and QoL scores from 5.1 to 2.3 at the 3-month mark after OP (8). Although slight differences in postoperative scores were observed between age groups in our study, the degree of improvement in IPSS and QoL was not significantly influenced by age. This further demonstrates that OP is effective across different age groups. Moreover, as noted in previous studies, these improvements are maintained with long-term follow-up and are not diminished by advancing age.

Regarding complications, a study published by Kalfazade et al. reported higher rates of preoperative acute retention in patients aged ≥80 years, but no significant differences in intraoperative blood loss, transfusion requirements, or Clavien-Dindo ≥3 complications between age groups (9). Similarly, our study found no significant differences in the total complication rates between patients under and over 70. The complication-free rates were notably high in both groups (88.8% and 88.4%, respectively). The most common complication was bladder neck contracture, while the need for transfusion due to bleeding was infrequent, indicating that age does not increase the risk of complications. These findings support that OP can be safely performed in elderly patients with careful selection.

In a study by Ou et al. comparing surgical techniques in patients with large prostates, the average operative times were similar between the TURP and OP groups. However, the amount of resected tissue was significantly higher in the OP group, and improvements in IPSS and QoL scores at 3 months were more pronounced (10). In another study by Ahyai et al., the mean operative time was slightly longer in the HoLEP group compared to the OP group in patients with large prostates (11). These findings suggest that OP remains an effective and viable surgical option for patients with prostates larger than 80 mL (12). Furthermore, the risk of urethral stricture associated with prolonged endoscopic procedures continues to make OP a preferred approach in selected cases.

The scarcity of studies comparing IPSS and QoL scores by age group in patients undergoing OP adds to the importance of our research. Moreover, the single-center design and the standardized surgical technique used by the same surgical team enhance the internal consistency of the data.

Nonetheless, our study has several limitations. Its retrospective design required evaluating data collected in the past, which may have introduced selection bias. Additionally, as endoscopic enucleation techniques became more prevalent in our clinic after 2020, patients undergoing OP during that period were excluded to avoid bias due to the concurrent use of laser-based alternatives. This decision further limited the sample size. Furthermore, objective uroflowmetric parameters such as Qmax and post void residual volume could not be included, restricting the study's outcomes to subjective assessments. However, this aligns with the study's methodological framework, which explicitly focused on age-related changes in subjective IPSS and QoL scores.

While many studies evaluate objective parameters after BPH surgery, there is a lack of research comparing symptom severity and quality of life scores across age groups. This study aims to provide meaningful insights to the current literature by focusing on symptom changes based on patient-reported outcomes.

CONCLUSION

This study evaluated changes in IPSS and QoL scores by age group in patients who underwent OP for large-volume BPH. The findings demonstrate that significant improvements in both symptoms and quality of life were achieved postoperatively in both age groups. Despite a higher baseline symptom burden among elderly patients, the degree of postoperative improvement was comparable to that of younger patients. Furthermore, the similar complication rates across age groups support the notion that OP is a safe surgical option even in older individuals. In clinical settings where access to minimally invasive techniques is limited, OP remains an effective and valid treatment option for patients with large prostate volumes.

Future multicenter prospective studies comparing open prostatectomy with minimally invasive techniques, such as laser enucleation or bipolar TUR-P, could provide a clearer understanding of age-related differences in surgical outcomes. Incorporating both subjective and objective measures would offer a more comprehensive evaluation of efficacy, safety and postoperative recovery in elderly patients.

Acknowledgements
The authors have no acknowledgements to declare.

Conflict of Interest
The authors declare no conflictof interest.

Funding Sources
The authors received no financialsupport for the present study.

REFERENCES

1. Shao W-H, Zheng C-F, Ge Y-Cet al. Age-related changes for the predictors of benign prostatic hyperplasia in Chinese men aged 40 years or older. Asian journal of andrology. 2023;25(1):132-6. doi: 10.4103/aja202223
2. Engström G, Henningsohn L, Walker-Engström M-Let al. Impact on quality of life of different lower urinary tract symptoms in men measured by means of the SF 36 questionnaire. Scandinavian journal of urology and nephrology. 2006;40(6):485-94.doi: 10.1080/00365590600830862
3. Milicevic S, Grubor P, Lucic N. The evaluation of impact of BPH surgical treatment with the open prostatectomy and transurethral resection of the prostate methods on the quality of life. Medical Archives. 2011;65(5):274. doi:10.5455/medarh.2011.65.274-277
4. Chang Y-H, Siu JJ-Y, Hsiao P-Jet al. Review of underactive bladder. Journal of the Formosan Medical Association. 2018;117:178-84.doi: 10.1016/j.jfma.2017.09.006
5. Baboudjian, Michael et al. "Summary Paper on Underactive Bladder from the European Association of Urology Guidelines on Non-neurogenic Male Lower Urinary Tract Symptoms." European urology vol.86,3(2024): 213-220. doi: 10.1016/j.eururo.2024.04.0046.
6. Salako AA, Badmus TA, Owojuyigbe AM, et al. Open prostatectomy in the management of benign prostate hyperplasia in a developing economy. Open Journal of Urology. 2016;6(12):179-89. doi: 10.4236/oju.2016.612029
7. Geavlete B, Bulai C, Ene C et al. P. Bipolar Vaporization, Resection, and Enucleation Versus Open Prostatectomy: Optimal Treatment Alternatives in Large Prostate Cases? Journal of Endourology. 2015;29(3):323-31. doi: 10.1089/end.2014.0493
8. Rao J-M, Yang J-R, Ren Y-Xet al. Plasmakinetic enucleation of the prostate versus transvesical open prostatectomy for benign prostatic hyperplasia> 80 mL: 12-month follow-up results of a randomized clinical trial. Urology. 2013;82(1):176-81. doi: 10.1016/j.urology.2013.02.032
9. Kalfazade N, Akkaş F, Emre Ş, et al. Safety and effectivity of open simple prostatectomy in octogenarians: A single center experience. The New Journal of Urology. 2023;18(2):124-34. doi: 10.33719/yud.2023;18-2-1185919

10. Ou R, You M, Tang Pet al. A randomized trial of transvesical prostatectomy versus transurethral resection of the prostate for prostate greater than 80 mL. Urology. 2010;76(4):958-61. doi: 10.1016/j.urology.2010.01.079

11. Ahyai SA, Chun FK, Lehrich K,et al. Transurethral holmium laser enucleation versus transurethral resection of the prostate and simple open prostatectomy—which procedure is faster? The Journal of urology. 2012;187(5):1608-13. doi: 10.1016/j.juro.2011.12.107

12. Cho JM, Moon KT, Lee JH, et al. Open simple prostatectomy and robotic simple prostatectomy for large benign prostatic hyperplasia: Comparison of safety and efficacy. Prostate International. 2021;9(2):101-6. doi: 10.1016/j.prnil.2020.11.004