

ORIGINAL ARTICLE

Living status in patients over 85 years of age after TUVRP

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Abstract

Introduction: To evaluate surgical risk and post-operative quality of living status in patients over 85 years of age after transurethral vaporization resection of the prostate (TUVRP).

Methods: Sixty patients over 85 years of age underwent TUVRP were compared with 228 patients less than the age of 80 years. Group A was 60 patients greater than 85 years of age, Group B was 137 patients from 71 to 79 years of age, and Group C was 91 patients from 60 to 70 years of age.

Results: In Group A, pre-operative ASA grade was higher than the other two groups, compared with Group C, $p < 0.01$. Operating time was 40.03 ± 18.90 min, compared in the three groups, $p > 0.05$. Follow-up was obtained in 49 (81.67%) patients; of them 10 patients were deaths with a survival time of 22.90 ± 11.14 months. In the 39 survivors, post-operative IPSS score was 11.17 ± 6.9 , compared with Group B, $p > 0.05$ and Group C, $p < 0.01$. Quality of Life (QOL) index was 1.11 ± 0.80 , compared with Group B, $p < 0.001$ and Group C, $p < 0.01$. Barthel Index score in 16 patients was > 60 and the score was 82.81 ± 8.56 pre-operatively. The patients with > 60 were increased to 19 cases and the score was improved to 90.93 ± 7.58 ($p < 0.001$) in follow-up.

Conclusion: Surgical risk in patients over 85 years of age was higher than patients less than the age of 80 years. A safety TUVRP could improve their voiding function and activities of daily living.

Keywords

BPH, over 85 years of age, post-operative living status, surgical risk, transurethral vaporization resection of the prostate

History

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Introduction

With the population is aging, the better medical care and living conditions have allowed people to reach an older age in better health than previously possible. As the elderly have continued to grow in number, so has the number of with benign prostate hyperplasia (BPH) in this segment of the population. Most patients over 85 years of age with BPH who present for surgical correction of their urinary outlet obstruction are those in whom medical therapy or alternative procedures have failed or are inappropriate for some reason in clinical, although the criteria for performing transurethral vaporization resection of the prostate (TUVRP) surgery are now more stringent than before. We retrospectively evaluated the surgical risk and outcomes of TUVRP, and investigate post-operative quality of living status in patients over 85 years of age with BPH.

Patients and methods

Patients

Between January 2006 and September 2012, 60 patients over 85 years of age with BPH were treated by TUVRP in our

department and they were separated as Group A. The results in these patients were compared with a retrospective cohort of 228 patients less than 80 years of age with BPH (Table 1). The Chinese Urology Association guideline on diagnosis and treatment to BPH was followed to select patients for surgery. The inclusion criteria were refractory urinary retention, recurrent urinary tract infections, recurrent gross hematuria, renal insufficiency secondary to bladder outlet obstruction, bladder calculi, serious lower urinary tract symptoms (LUTS) (severe International Prostate Symptom Score (IPSS)), medical management and less-invasive prostatic surgical procedures failed and life expectancy was ≥ 2 years. Bladder disease or neurologic disease affecting bladder function, anticoagulation therapy that cannot be stopped or replaced without risk for the patient and severe coagulopathy were excluded from this study. Patients with ASA score III and IV underwent surgery only after the life-threatening systemic disease was effectively treated. Prostate volume ≥ 80 ml was also included in inclusion criteria.

Operative technique

Surgery was performed using spinal anesthesia. A standard 26F continuous-flow Storz resectoscope (Tuttlingen, Germany) with a wing loop was used. The electrosurgical generator (Bircher Type-4400, Irvine, California, USA) was set to 280–290 W of pure cutting current for the incision and

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Table 1. Main causes undergoing TUVRP in patients over 85 years of age with BPH.

	>85 years Group A (n = 60)	71–80 years Group B (n = 137)	<70 years Group C (n = 91)
Urinary retention	37 (61.67%)	58 (42.34%)	40 (43.96%)
Bladder stones	7 (11.67%)	25 (18.25%)	10 (10.99%)
Urethral stricture	3 (5.00%)	3 (2.19%)	4 (5.97%)
Urinary tract infection	2 (3.33%)	9 (6.57%)	3 (4.48%)
Hydronephrosis or Renal insufficiency	3 (5.00%)	6 (4.38%)	7 (10.45%)
Hematuria	1 (1.67%)	11 (8.03%)	2 (2.99%)
Serious LUTS	7 (11.67%)	25 (18.25%)	32 (35.16%)

Table 2. ASA grade in patients over 85 years of age with BPH.

	>85 years Group A (n = 60)	71–80 years Group B (n = 137)	<70 years Group C (n = 91)
Grade I	0 (00.00%)	3 (2.19%)	17 (18.68%)
Grade II	30 (50.00%)	86 (62.77%)	64 (70.33%)
Grade III	29 (48.33%)	48 (35.05%)	10 (10.29%)
Grade IV	1 (1.67%)	0 (00.00%)	0 (00.00%)
Mean score	2.50	2.33	1.92

ASA Grade in Group A was compared with that of the Group B, $p > 0.05$ and the Group C, $p < 0.01$.

80–90 W for coagulation. All procedures were performed by two consultant urologists with equivalent experience. No significant difference in surgical outcome was found between the two surgeons. Prostate tissue was resected to the surgical capsule of the prostate during the operating procedure. All patients signed an informed consent.

Outcome variables

Measured outcomes included the causes undergoing TUVRP surgery, American Society of Anesthesiologists (ASA) grade, pre-operative prostate volume, operating time, pre-operative hemoglobin level, and hemoglobin level in one day after operation, peri-operative blood transfusion and surgical complications. The ASA grade score was used to assess the patient's overall health that is based on the four classes (I to IV) (Table 2). Grade I – patient is a completely healthy fit patient. Grade II – patient has mild systemic disease. Grade III – patient has severe systemic disease that is not incapacitating. Grade IV – patient has incapacitating disease that is a constant threat to life. Transabdominal ultrasonography was performed to assess the prostate volume and the urinary system. In follow-up period, activities of daily living were investigated using the Barthel Index. And voiding function was evaluated by IPSS score and Quality of Life (QOL) index simultaneously.

B Statistical analysis

Differences of measurement data were evaluated using Student's *t*-test. Pre- and post-operative outcomes for each patient were compared using a paired *t*-test. Enumeration data were compared using χ^2 test. *p* Values < 0.05 were considered significant. Values were reported as the mean \pm SD.

Results

288 patients were enrolled in the study. Group A consisted of 60 patients with an age ranged from 85 to 97 years, Group B consisted of 137 patients from 71 to 80 years and Group C consisted of 91 patients from 60 to 70 years.

Patients undergoing TUVRP for urinary retention in Group A were more than the other two groups ($p < 0.05$), and serious LUTS were more frequently found in Group C, compared with Group A, $p < 0.01$.

Mean prostate volume in Group A was not significantly different from that of the other two groups (Group B, 5.43 ml larger, $p > 0.05$ and Group C, 8.41 ml smaller, $p > 0.05$). But mean prostate volume in Group B was 13.84 ml larger than that of the Group C ($p < 0.05$). ASA Grade in Group A was compared with that of the Group B, $p > 0.05$ and the Group C, $p < 0.01$. No group difference was seen in operating time. Group A had a lower pre-operative Hgb level than the other two groups (Group B, $p < 0.001$; Group C, $p < 0.01$). Post-operative Hgb level in Group A was lower than that of the other two groups ($p < 0.001$). Compared with pre-operative Hgb level, post-operative Hgb level was decreased in the three groups ($p > 0.05$). In Group A, peri-operative blood transfusion was administered in two patients with a total of 600 ml due to anemia. No significant complication was found in the surgical procedure and no deaths occurred within 3 months after the surgery.

In Group A, follow-up was obtained 41.56 ± 17.10 months (7–76 months) after surgery in 49 (81.67%) patients and the other 11 (18.33%) patients were lost to follow-up. During the study period, 10 patients were dead with a survival time of 22.90 ± 11.14 months (5–42 months): 2 for malignant tumors, 2 for systemic failure, 2 for severe infectious disease, 1 for intestinal obstruction and 3 for other diseases. In 39 survivors, 3 (7.68%, 3/39) patients still need to catheterization due to non-urinary tract obstruction post-operatively, the other 36 (92.31%, 36/39) patients had a higher post-operative IPSS score (Group B, $p > 0.05$; Group C, $p < 0.01$) and a lower QOL index (Group B, $p < 0.001$; Group C, $p < 0.01$) than the other two groups.

Sixteen patients with Barthel Index score > 60 were maintained at > 60 . Among 18 patients with 40–60, 13 patients remained at 40–60, 3 patients were improved to > 60 and 2 patients were decreased to < 40 . In 5 patients with < 40 , 3 patients unchanged and 2 patients were improved to 40–60.

Discussion

Surgical risk

The aging population results in increasing numbers of surgical operations on very elderly patients [1–4]. Despite the increasing use of pharmacotherapy to manage patients with mild to moderate LUTS, a substantial number of elderly patients are still likely to require transurethral resection of the prostate (TURP) either for significant LUTS or urinary retention [5]. According to the Chinese Guidelines on Diagnosis and Treatment to Urological Diseases for the diagnosis and treatment of BPH, the absolute indications for primary surgical management of BPH are as follows: refractory urinary retention, recurrent urinary tract infections,

Table 3. Surgical risk in patients over 85 years of age with BPH.

	>85 years Group A (n = 60)	71–80 years Group B (n = 137)	<70 years Group C (n = 91)
Age	87.9 0 ± 2.67	73.80 ± 2.12	66.76 ± 4.75
Prostate volume (ml)	61.56 ± 35.44	66.99 ± 32.65	53.15 ± 24.15
Operating time (min)	40.03 ± 18.90	35.20 ± 14.78	38.30 ± 11.96
Pre-operative Hgb (g/l)	122.47 ± 19.75	136.24 ± 14.90	137.60 ± 16.30
Post-operative Hgb (g/l)	114.00 ± 21.64	31.31 ± 15.61	135.40 ± 18.00

recurrent gross hematuria, renal insufficiency secondary to bladder outlet obstruction, bladder calculi and so on. In general, TURP surgery is reserved for patients with symptomatic BPH who have acute, recurrent, or chronic urinary retention. In whom, medical management and less-invasive prostatic surgical procedures failed. With aging process, the association between increasing age and increasing morbidity and mortality for TURP has been well recognized [6–11]. In this study, the increased risk may be explained by a worse ASA grade and poor Hgb level in patients over 85 years of age with BPH. The most cause undergoing surgery in patients over 85 years of age with BPH is for retention although they were with worse ASA. The surgical risk was unable to hold very elderly patients to undergo TUVRP (Table 3). Brierly [5] suggests that, although many patients over the age of 80 years undergoing TURP have significant pre-existing medical disease, the majority of complications following TURP are related to the surgical procedure itself, rather than the consequence of pre-existing medical conditions. Therefore, sufficient assessment and preventive measures to surgical risk should be always taken before operation.

Peri-operative management and surgical technique

TURP remains the gold standard surgical intervention for men with BPH. TUVRP is a modification of TURP using one of the novel band resection election electrodes. The advantages of TUVRP include instantaneous bulky tissue removal, greater visibility, better hemostasis, and less bleeding [12,13]. In this study, no difference was seen among the three groups in operating time and no finding suggests special complications occurred in patients over 85 years of age with BPH. In a study examining the effect of age on peri-operative complications, Polanczyk showed that fatal and major complications increase with aging [6]. In addition, peri-operative complications in the elderly are associated with greater mortality. Thus, quality initiatives with great potential for improving surgical outcomes in elderly patients should target the prevention of peri-operative complications [3]. Although several risk factors for post-operative morbidity and mortality increase with aging, increasing age itself remains an important risk factor for post-operative morbidity and mortality [1–4]. Perfect pre-operative preparation, skilled surgical technique and careful post-operative treatment are the key to ensure that patients with surgical safety. Greater surveillance and more rapid and appropriate response always should be paid to the co-existent systemic disease during the peri-operative period [14]. The total operating time controlled in about 40 min will be most important to surgical safety.

Table 4. IPSS score and QOL index in patients over 85 years of age after TUVRP.

	>85 years Group A (n = 36)	71–80 years Group B (n = 137)	<70 years Group C (n = 91)
Post-operative IPSS score	11.17 ± 6.9	8.70 ± 5.98	6.36 ± 6.21
Post-operative QOL index	1.11 ± 0.80	1.95 ± 1.07	1.95 ± 1.70

Table 5. Barthel Index score in patients over 85 years of age after TUVRP.

N = 39	>60	40–60	<40
Pre-operative case	16 (41.03%)	18 (46.15%)	5 (12.82%)
Post-operative case	19 (48.72%)	15 (38.46%)	5 (12.82%)
Increased case	3	–3	0
Pre-operative score	82.81 ± 8.56	48.06 ± 6.89	24.00 ± 14.32
Post-operative score	90.93 ± 7.58***	48.89 ± 16.23	31.00 ± 18.51*

Compared with pre-operative score, * $p < 0.05$, *** $p < 0.001$.

Voiding function

In this study, 3 (7.68%) patients over 85 years of age still need to catheterization due to non-urinary tract obstruction post-operatively, and IPSS score in the other patients was lower than patients below 80 years of age (Table 4). Therefore, prostatic hyperplasia is not only a factor to dysuria in these patients. More attention should be paid to factors outside the prostate hyperplasia when we evaluate the clinical manifestations and treatment to very elderly patients with BPH [1]. On the other hand, most patients over 85 years of age underwent TUVRP for urinary retention, serious LUTS or other accompanied complications of BPH. During the follow-up period, 36 (92.31%) patients could void by themselves and most patients were satisfied with the outcome of TUVRP surgery and the QOL index was better than that of patients less than 80 years of age. This may be related to expectation on surgical efficacy and quality of life in the patients is lower than patients below 80 years old. However, the study results could suggest that it is worth to perform a TUVRP surgery on patients over 85 years of age with BPH when the very elderly patients suffer from serious symptoms of BPH or urological comorbidities associated with BPH. A safety TUVRP surgery could improve their voiding function [15].

Quality of living status

In the follow-up period, our attention was specifically focused on the quality of living status in patients ≥ 85 years of age after the TUVRP was underwent. The Barthel Index score is a 10-item instrument measuring a person's level of functional independence in personal activities of daily living [16] (Table 5). The activities of daily living in patients over 85 years of age with BPH were assessed using the Barthel Index score, to investigate their ability to eat, bathe, make up, dress, defecate, urinate, stand, walk and so on. Scored as >60 is with easily, 41–60 is with difficulty, and ≤ 40 is not at all. During this follow-up period, 10 patients were dead for co-existent diseases. In 39 survivors, 16 patients with Barthel Index score >60 were maintained at >60 . Among 18 patients with 40–60, 3 patients were improved to >60 and 2 patients were

decreased to <40. In 5 patients with <40, 2 patients were improved to 40–60. As a result, patients with Barthel Index score >60 were increased to 19 cases from 16 cases after TUVRP. Meanwhile, the Barthel Index score in patients with >60 and <40 was significantly improved. Urinary retention, serious LUTS or other accompanied complications of BPH do impact activities of daily living in very elderly patients. When the influence factors are relieved after TUVRP, the activities of daily living would be improved in patients over 85 years of age with BPH.

Conclusion

The findings of this study suggest that the surgical risk of TUVRP in very elderly patients over the age of 85 years is higher than patients less than the age of 80 years, and postoperative voiding function in patients over 85 years of age is poor than that patients less than 80 years of age. But most patients over 85 years of age can obtain satisfactory voiding function and keep their activities of daily living after TUVRP surgery in survival period. A safety TUVRP surgery could improve their voiding function and activities of daily living.

Declaration of interest

No competing financial interests exist.

References

1. Li AH, Lu HH, Liu SK, et al. The clinical feature of advanced aged patients with benign prostatic hyperplasia and the efficiency of transurethral vaporization resection of the prostate. *J Modern Urol* 2009;14:291–4.
2. Turrentine FE, Wang H, Simpson VB, Jones RS. Surgical risk factors, morbidity, and mortality in elderly patients. *J Am Coll Surg* 2006;203:865–7.
3. Story DA. Postoperative complications in elderly patients and their significance for long-term prognosis. *Curr Opin Anaesthesiol* 2008; 21:375–9.
4. Sieber FE, Barnett SR. Preventing postoperative complications in the elderly. *Anesthesiol Clin* 2011;29:83–97.
5. Brierly RD, Mostafid AH, Kontothanassis D, et al. Is transurethral resection of the prostate safe and effective in the over 80-year-old? *Ann R Coll Surg Engl* 2001;83:50–3.
6. Frederick E. Sieber, Sheila Ryan Barnett. Preventing postoperative complications in the elderly. *Anesthesiol Clin* 2011;29:83–97.
7. Liu SS, Della Valle AG, Besculides MC, et al. Trends in mortality, complications, and demographics for primary hip arthroplasty in the united states. *Int Orthop* 2009;33:643–51.
8. Wang MC, Kreuter W, Wolfla CE, et al. Trends and variations in cervical spine surgery in the United States: medicare beneficiaries, 1992 to 2005. *Spine (Phila Pa 1976)* 2009;34:955–61.
9. Anger JT, Weinberg AE, Albo ME. Trends in surgical management of stress urinary incontinence among female medicare beneficiaries. *Urology* 2009;74:283–7.
10. Bentrem DJ, Cohen ME, Hynes DM, et al. Identification of specific quality improvement opportunities for the elderly undergoing gastrointestinal surgery. *Arch Surg* 2009;144:1013–20.
11. Hamel MB, Henderson WG, Khuri SF, Daley J. Surgical outcomes for patients aged 80 and older: morbidity and mortality from major noncardiac surgery. *J Am Geriatr Soc* 2005;53:424–9.
12. Nuhoglu B, Ayyildiz A, Fidan V, et al. Transurethral electrovaporization of the prostate: is it any better than standard transurethral prostatectomy? 5-year follow-up. *J Endourol* 2005;19:79–82.
13. Gupta NP, Singh A, Kumar R. Transurethral vapor resection of prostate is a good alternative for prostates >70g. *J Endourol* 2007; 21:1543–6.
14. Story DA. Postoperative mortality and complications. *Best Pract Res Clin Anaesthesiol* 2011; 253:319–27.
15. García Torrelles M, Carrascosa Lloret V, Beltrán Armada JR, et al. Results of the surgical treatment of benign prostatic hyperplasia in geriatric patients. *Arch Esp Urol* 2007;60:23–30.
16. van der Putten JJMF, Hobart JC, Freeman JA, Thompson AJ. Measuring change in disability after inpatient rehabilitation: comparison of the responsiveness of the Barthel Index and the functional independence measure. *J Neurol Neurosurg Psychiatry* 1999;66:480–4.