

Effects of Transurethral Resection of Prostate and Plasmakinetic Resection of Prostate on Patients' Health Related Quality of Life

WU Zong-lin¹, XIA Shu-jie^{2△}, GENG He¹

(1 Urological department, Putuo District People's Hospital, Shanghai, China;

2 The Affiliated First People's Hospital of Shanghai Jiaotong University, Department of Urology, Shanghai, China)

ABSTRACT Objective: To investigate the effects of transurethral resection of prostate and plasmakinetic resection of prostate on health related quality of life (HRQOL) and urinary symptoms in patients with benign prostatic hyperplasia (BPH). **Methods:** In this prospective randomized study, 105 patients with BPH were recruited. 51 patients underwent TURP and 54 patients underwent PKRP. Patients completed two validated questionnaires: the International Prostate Symptom Score (IPSS) and the associated QOL index. These were completed preoperatively, at 1, 6, and 12 months postoperatively. **Results:** The HRQOL of patients who underwent TURP and PKRP for BPH had significantly improved 6 months after their operation. The IPSS Scores, QOL index and total WHOQOL-BREF scores at 6 months (10.4 ± 2.6 , 1.7 ± 0.6 , 55.1 ± 7.4), and 12 months (11.4 ± 2.6 , 1.7 ± 0.5 , 55.2 ± 6.9) improved than that in preoperative (21.5 ± 5.3 , 5.3 ± 0.9 , 52.4 ± 7.0) in TURP group. IPSS Scores, QOL index and total WHOQOL-BREF scores at 6 months (9.8 ± 2.4 , 1.5 ± 0.4 , 57.9 ± 8.1), and 12 months (10.6 ± 2.2 , 1.7 ± 0.5 , 56.3 ± 6.2) improved than that in preoperative (21.3 ± 6.1 , 5.2 ± 1.0 , 55.0 ± 8.8) in PKRP group respectively. **Conclusions:** Improvement in HRQOL was observed 6 months after TURP and PKRP in patients with BPH. This study demonstrates that the WHOQOL-BREF is a suitable HRQOL instrument for older people with BPH accepted TURP and PKRP procedures.

Key words: Prostatic hyperplasia; Transurethral resection of prostate; Quality of life

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Introduction

The volume of prostate increase with age^[1]. Autopsy studies had indicated that 50% of men in their fifth decade demonstrated pathologic evidence of benign prostate hyperplasia (BPH), and that BPH prevalence increased to 90% by the ninth decade^[2]. It has become increasingly evident that BPH is rarely a life-threatening disease and primarily affects health-related quality of life (HRQOL) of men's lives, so special attention should be paid to HRQOL before initiation of any treatment^[3-5]. HRQL is a multidimensional concept which encompasses well-being related to health, each of these domains can be measured in two dimensions: objective assessments of functioning or health status, and more subjective perceptions of health^[6].

Transurethral resection of the prostate (TURP) remains the gold standard for the surgical treatment of bladder outflow obstruction due to BPH. Nevertheless, significant complications remain associated with this procedure. For this reason, new surgical treatment methods which have lower morbidity and which are also less invasive are being investigated nowadays. The development of bipolar and laser systems in the last decade has tried to solve the problems^[7,8]. Plasmakinetic resection of prostate (PKRP) is one of

these newly developed methods. With this technique, the prostatic tissue is resected through radiofrequency energy by using bipolar plasmakinetic technology.

An important goal for treating men with BPH and low urinary tract symptoms (LUTS) resulting from BPH is to relieve bothersome symptoms and their effect on HRQOL. Therefore, HRQOL measurements of LUTS and BPH must be considered as key outcome measures for judging treatment success. The responsiveness of the International Prostate Symptom Score Quality of life (IPSS-QoL) indicates an improvement in the patients' overall HRQOL after surgery. Nevertheless, HRQOL is a multidimensional concept, the content of a one item instrument is highly questionable as being suitable for HRQOL research. Some studies measured HRQOL changes with validated instrument, e.g. SF-36, after TURP^[9,10]. Initial experience with PKRP has shown the procedure to be safe and efficacious. However, there was no studies to date have described the effect of PKRP for BPH on HRQOL. In our study, we prospectively assessed the effects of TURP and PKRP on patients' HRQOL with generic instrument (WHOQOL-BREF).

1 Materials and methods

This prospective randomized study was carried out between June 2004 and June 2009. It was approved by our hospital research and ethics committee. Written informed consent was obtained from 105 men with bladder outflow obstruction due to BPH undergoing elective transurethral prostatectomy. Patients were randomized to TURP or PKRP using sequentially numbered opaque envelopes containing numbers from random digits table. A total of

Author introduction: WU Zong-lin, (1972-), Male, master, Mainly engaged in urology, Email: zonglinwu@gmail.com

△Correspondence: XIA Shu-jie Department of Urology, the Affiliated First People's Hospital of Shanghai Jiaotong University, Shanghai 200080, China (Tel: 86-21-63240090. Email: xsjurologist@163.com)

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51 men underwent TURP and 54 underwent PKRP. Baseline characteristics of both groups are shown in Table1 and Table 2.

The urologic criteria for inclusion in the trial were patients older than 50 years with IPSS > 8, Qmax < 10 ml/s and voided volume > 150 ml, acute urinary retention, recurrent urinary tract infection, recurrent hematuria, bladder stone (diameter < 2cm), azotemia (serum creatinine < 200 umol/L), and total prostate volume (TPV) < 60 ml. All patients underwent a routine physical examination and laboratory tests (complete blood count, urinalysis,

serum electrolytes and prostate specific antigen (PSA)). Patients with a serum PSA value > 4 ng/mL or abnormal digital rectal examinations were performed prostate biopsy, and patients found to have prostate cancer excluded from the study. Patients with urinary infection were treated before the operation. Exclusion criteria were previous myocardial infarction within the 6 months preceding surgery, previous TURP, confirmed or suspected prostate cancer, serum creatinine more than 200 umol/L and prostate volume less than 30 ml and greater than 60 ml.

Table 1 Baseline characteristics of the patients in the two study groups

	TURP (n=51)	PKRP (n=54)	P value
Age(years)	74.7± 6.3	73.1± 7.3	0.230
PSA(ng/ml)	3.1± 1.6	3.0± 1.7	0.889
TPV(ml)	44.2± 11.7	43.8± 12.5	0.872
Serum [Na](mmol/L)	139.5± 3.6	137.7± 3.1	0.779
Days in hospital (days)	6.9± 1.5	6.5± 1.3	0.370
Operating time (minutes)	54.3± 14.6	56.7± 17.9	0.447
Course of disease(years)	3.8± 2.5	4.6± 3.5	0.220
Hemoglobin(g/L)	130.8± 13.5	135.7± 17.2	0.113

Note: TURP, transurethral resection of prostate; PKRP, plasmakinetic resection of prostate; PSA, prostate specific antigen; TPV, total prostate volume

All patients were operated by the same surgeons and received regional anesthesia. In the 51 patients who underwent standard TURP, a ACMI CIRCON Elite System Rotating 26F continuous-flow resectoscope with 5% glucose irrigation was used. The PKRP was carried out in 54 patients using the PlasmaKinetic Tissue Management System (Gyrus Medical, Ltd., Bucks, UK), comprising a bipolar electrosurgical device used endoscopically to remove the obstructing prostate tissue instantly by resection and vaporization with saline irrigation.

At the end of the operation, a 22F three-way catheter with saline irrigation was inserted, and irrigation was continued until the catheter drainage became clear. The catheter was removed at the time the patient was discharged from the hospital.

The two groups were compared according to serum PSA, total prostate volume, serum concentration of sodium, the operating time, IPSS, QOL, WHOQOL-BREF, Qmax, days in hospital. After

1, 6, and 12 months, WHOQOL-BREF, IPSS, Qmax values were obtained for comparison with the preoperative values.

All data are reported as mean standard deviation. Independent-samples T test and analysis of variance were used to examine for statistical significance. A probability < 0.05 was considered significant.

2 Results

Of 105 patients recruited, of the men 51 underwent TURP and 54 underwent PKRP. Table 2 lists several parameters measured. The groups were similar with respect to age, preoperative IPSS, QOL score, WHOQOL-BREF score, uroflowmetry, and prostate volume. Drug history was similar between the groups. Almost 23.5% of patients with TURP (12 of 51) and 16.7% of those with PKRP (9 of 54) had acute urinary retention.

Table 2 Followup data of two groups

	Preoperative	Postoperative		
		1 month	6 month	12 month
TURP patients (n)	51	51	48	45
IPSS	21.5± 5.3	9.7± 2.8	10.4± 2.6*	11.4± 2.6†
QOL	5.3± 0.9	2.7± 0.9	1.7± 0.6*	1.7± 0.5†
Qmax	7.5± 1.5	21.7± 3.8	22.5± 2.7*	23.3± 3.3†
WHOQOL-BREF	52.4± 7.0	49.6± 7.6	55.1± 7.4*	55.2± 6.9†

Physical	12.4± 1.5	11.3± 1.7	13.5± 1.8	13.6± 1.3
Psychological	12.7± 2.6	11.9± 1.7	13.4± 2.0	13.4± 1.5
Social	13.1± 2.9	12.3± 2.5	13.7± 3.0	13.5± 2.2
Environmental	14.2± 1.5	13.8± 1.6	14.5± 2.0	14.7± 1.8
PKRP patients (n)	54	53	50	46
IPSS	21.3± 6.1	9.0± 2.6	9.8± 2.4*	10.6± 2.2†
QOL	5.2± 1.0	2.6± 0.7	1.5± 0.4*	1.7± 0.5†
Qmax	6.9± 1.9	20.5± 4.2	21.4± 3.5*	22.5± 4.4†
WHOQOL-BREF	55.0± 8.8	52.3± 7.6	57.9± 8.1*	56.3± 6.2†
Physical	12.9± 1.9	12.0± 1.4	14.0± 1.6	14.6± 2.1
Psychological	13.0± 2.3	12.3± 1.8	13.7± 2.1	13.2± 2.5
Social	14.2± 3.5	13.5± 2.9	14.9± 3.8	14.6± 3.1
Environmental	15.0± 2.3	14.5± 1.8	15.3± 1.4	15.1± 2.7

Note: TURP, transurethral resection of prostate; PKRP, plasmakinetic resection of prostate; IPSS, International Prostate Symptom Score Quality of life; QOL, quality of life; Qmax, maximum urinary outflow; WHOQOL-BREF, World Health Organization Quality of Life instrument-brief; †, compared with pre-operation P < 0.05; *, compared with pre-operation P < 0.05

There was no significant between TURP and PKRP groups with respect to uroflowmetry, IPSS, QOL score, WHO-BREF score and four domains score pre- and postoperation. But there was a significant improvement in Qmax, IPSS, QOL, total WHO-BREF score, physical domain and psychological domain pre- and postoperation in both groups (table 2). At 1-month follow-up, mean WHO-BREF physical domain score decrease 1.1 compared with the baseline in TURP group (P < 0.05), and 0.9 in PKRP group (P < 0.05). There was no significant in Qmax, IPSS, QOL, total WHO-BREF score and four domain score at 6-month follow-up compared with that at 12-month follow-up in both group.

Two TURP patients (3.9%) developed urethral strictures compared with one PKRP patient (1.8%). Postoperatively and during a year of follow-up, erectile dysfunction was reported by 27.5% of the TURP group and 20.4% of the PKRP group. While three patients of the TURP group required blood transfusion compared with four patients of the PKRP group. There was no transurethral resection (TUR) syndrome in any patient of each group.

3 Discussion

BPH can have a considerable impact on HRQOL^[11-13]. In particular, it is clear that a very high proportion of men attending clinics with BPH feel that these symptoms interfere with their everyday lives. The patient is typically concerned about the impact of BPH on quality of life rather than the presence of cellular proliferation, prostatic enlargement, or elevated voiding pressure. The goals of the treatment of BPH are to improve the patient's HRQOL, to relief the low urinary tract obstructions due to BPH.

Over the years, TURP is now considered the gold standard for the surgical management of BPH. Nevertheless, significant complications remain associated with this procedure. For this reason, alternative surgical treatment options have been explored in an attempt to reduce the complications. Recent surgical innovations include PKRP, holmium and thulium laser resection of prostate^[7,14]. Several studies showed that PKRP was safe and effective surgical procedure^[15-17]. Scoring systems (IPSS) have been developed to enable clinicians to evaluate the effectiveness of PKRP and TURP in the treatment of BPH^[8]. One limitation of these studies has been that the outcomes data are disease-specific for urinary symptoms and do not evaluate the effects of treatment on health-related quality of life (HRQOL). Few studies to date have described the effect of TURP for BPH on HRQOL with generic instrument^[18]. To our knowledge we report the first prospective, randomized study comparing effects of TURP and PKRP on HRQOL measured with generic instrument for symptomatic BPH.

The most important finding of this investigation was that the HRQOL of patients who underwent TURP and PKRP for BPH decreased at 1 month after their operation, but improved significantly at 6 months after their operation. Subsequently, the HRQOL of patients was improved consistently. The HRQOL assessment tools (WHO-BREF) used in this study were selected to examine the overall condition of the patient (including, Physical, Psychological, Social, and Environmental domain) rather than using measures that are disease-specific scales for urinary symptoms. In the future, best surgical procedures of BPH should be defined such as TURP and PKRP, in terms of influence on HRQOL, rather than simply on improvement in Qmax and IPSS.

HRQOL is a multidimensional concept; IPSS-QoL item is

highly questionable as being suitable for HRQOL research. WHO-BREF scale is used widely to measure the HRQOL of patients [19-21]. In this study, HRQOL of patient with BPH was measured with WHO-BREF scale before and after operation (TURP and PKRP). It was demonstrated that WHO-BREF is suitable for this study.

It is questionable that the IPSS, QOL, and Qmax was significant improvement, but the WHO-BREF total score and four domain score decreased in both group at 1 month. One reason is that WHO-BREF measures the patient's life status during a 2-week period. But the patient did not recover his health completely in six weeks after operation. So the objective measures are improved, WHO-BREF score and four domain score decreased.

Previous, large-scale prospective investigations have addressed the effect of TURP on HRQOL. A consistent improvement in HRQOL was observed 3 months after TURP in patients with BPH[18]. Almost no data described the effect of PKRP on HRQOL. In our investigation, there was a significant improvement in Qmax, IPSS, QOL, total WHO-BREF score, physical domain and psychological domain in both groups. WHO-BREF score was significant improvement 6 months after TURP and PKRP.

4 Conclusion

In conclusion, most of the investigations on patients undergoing TURP and PKRP for BPH have examined postoperative complications or the technical success of the procedure. This study examined the influence of TURP and PKRP on HRQOL. A consistent improvement in HRQOL was observed 6 months after TURP and PKRP in patients with BPH. This study demonstrates that the WHOQOL-BREF is a suitable HRQOL instrument for older people with BPH accepted TURP and PKRP procedures.

Abbreviations and Acronyms:

BPH= benign prostatic hyperplasia

TURP= transurethral resection of the prostate

PKRP= plasmakinetic resection of prostate

HRQOL= health-related quality of life

QOL= quality of life

LUTS= low urinary tract symptoms

IPSS= International Prostate Symptom Score

IPSS-QoL= International Prostate Symptom Score Quality of

life

PSA= prostate specific antigen

TPV= total prostate volume

Qmax=maximum urinary outflow

[Na]= serum concentration of sodium

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等离子经尿道前列腺电切对患者生活质量的影响

吴宗林¹ 夏术阶^{2△} 耿 和¹

(1 上海市普陀区人民医院 上海 200060 2 上海交通大学附属第一人民医院 上海 200080)

摘要 目的 探讨等离子经尿道前列腺电切(PKRP)和常规经尿道前列腺电切(TURP)对良性前列腺增生(BPH)患者生活质量的影响。方法 采取前瞻性随机对照的方法将 105 名需要手术治疗的 BPH 患者随机分成二组 :即 TURP 组 51 例 ,PKRP 组 54 例。使用 IPSS、QOL 和 WHOQOL-BREF 量表 ,分别在术前、术后第 1、6 和 12 个月对患者的 LUTS 和生活质量进行评估。结果 :TURP 组和 PKRP 组患者的生活质量在术后 6 个月得到明显改善。TURP 组术后第 6 个月的 IPSS、QOL 和 WHOQOL-BREF 评分分别为 10.4± 2.6, 1.7± 0.6 和 55.1± 7.4 , 术后第 12 个月的 IPSS、QOL 和 WHOQOL-BREF 评分分别为 11.4± 2.6, 1.7± 0.5 和 55.2± 6.9 , 均比术前 (21.5± 5.3, 5.3± 0.9 和 52.4± 7.0) 有明显改善。PKRP 组术后第 6 个月的 IPSS、QOL 和 WHOQOL-BREF 评分分别为 9.8± 2.4, 1.5± 0.4 和 57.9± 8.1 ,术后第 12 个月的 IPSS、QOL 和 WHOQOL-BREF 评分分别为 10.6± 2.2, 1.7± 0.5 和 56.3± 6.2 ,均比术前(21.3± 6.1, 5.2± 1.0 和 55.0± 8.8)有明显改善。结论 :TURP 和 PKRP 术后第 6 个月患者的生活质量得到持续改善 ,WHO-QOL-BREF 可以作为评价 TURP 和 PKRP 对 BPH 患者生活质量影响的可靠测量工具。

关键词 前列腺增生 经尿道前列腺电切 生活质量

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作者简介 吴宗林(1972-) 男 副主任医师 ,硕士研究生 ,
E-mail: zonglinwu@gmail.com

△通讯作者 夏术阶 ,上海交通大学附属第一人民医院泌尿外科 ,
上海(200080) ,电话 021-63240090 ,Email: xsjurologist@163.com
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