

Results of Transurethral Incision of the Prostate Gland in Early Benign Prostatic Hyperplasia

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Abstract

Objective: The purpose of the present study is to report the results of treatment for symptomatic patients with early benign prostatic hyperplasia (BPH) using transurethral incision of the prostate gland (TUIP), who had previously received medical treatment.

Methods: Patients with ages from 50 to 70 years who had early BPH with lower urinary tract symptoms (LUTS) and had received alpha 1 blocker and, or 5-alpha-reductase inhibitor during the years 2018 to 2020 were included in the study. After receiving information regarding surgical treatment (TUIP) instead of using only medications, 30 patients were willing to change from receiving medications to submitting to surgical treatment. The results of treatment before and after surgery were compared. Collected data included measurements of lower urinary tract symptoms using International Prostatic Symptoms Score (IPSS), the maximum flow rate of the urine (Q-max) and the quality of life (QoL) scores.

Results: There were 28 patients in the study. The mean IPSS scores obtained 3 months, 6 months, and 12 months after surgery were significantly lower than those before the surgery with p -values < 0.001 for all comparisons. The mean Q-max values obtained 3 months, 6 months, and 12 months after the surgery were significantly higher than those before the surgery. The mean QoL scores obtained 3 months after the surgery were significantly better than those before surgery.

Conclusion: TUIP in the treatment of early BPH with lower urinary tract symptoms in the early stages was associated with good outcomes and should be considered as an option for these patients.

Keywords: BPH, TUIP, IPSS, Q-max, QoL

INTRODUCTION

With the aging population, the number of patients diagnosed and treated with benign prostatic hyperplasia (BPH) is increasing.¹ Patients with BPH suffer from having lower urinary tract symptoms (LUTS), which disturb their daily lives. In the early stages of the disease there are many treatment options, such as the watchful and

waiting method, medical treatment or minimally invasive surgery.² In order to choose which treatment is best for each patient, the doctor has to consider many factors such as the availability of each treatment and whether each patient will comply with the treatment and the follow up process.

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Since its initial description in 1969 by Orandi,³ transurethral incision of the prostate (TUIP) alleviates LUTS secondary to bladder outlet obstruction without tissue removal. This technique is considered the surgical therapy of choice for men with small prostates and without median lobe enlargement as supported by guidelines of the European Association of Urology,⁴ American urological association,⁵ and the Canadian Urological association.⁶ Surgical treatment such as TURP or TUIP results in the recovery of voiding efficacy and detrusor function within 3 months after treatment in a majority of patients with detrusor underactivity (DU).⁷

To determine the proportion of patients requiring medical therapy for LUTS following TUIP, the Trinet X Analytic Network showed that medication was used in 65% of patients between 6 months and 24 months after TUIP.⁸ A meta-analysis of short-term and long-term data from 10 randomized control trials comparing TUIP with TURP found similar LUTS improvements and significant improvement in maximal flow rate for TUIP patients with small prostate gland without median lobe enlargement.⁹ The benefits of TUIP included shortened operative time and a lower risk of operative complications such as retrograde ejaculation, postoperative bleeding, uncontrolled pain, incontinence and impotence. There are also published data supporting a significantly lower bladder neck contracture rate for men undergoing TUIP when compared to TURP.¹⁰

TUIP is thus a good choice for treating patients with BPH and LUTS, when the prostate size is small, and the median lobe is not enlarged. Currently, there is no study on the outcome of TUIP in such patients previously treated by medications in Thailand, and the objective of the present study was to obtain and present those outcomes.

PATIENTS AND METHODS

The present prospective study received approval from the Research Ethics Committee of Trang hospital. The study included patients treated at Trang Hospital from January 2018 to December 2021. Patients with BPH receiving the medications including alpha-1 blocker and or 5-alpha-reductase inhibitor between the ages of 50 to 70 years old were included. In addition, patients must have small prostate glands, of size of 2 to 3 finger breadths by digital rectal examination evaluation (exact evaluation of the prostate gland volume using ultrasonography were not done due to the limited resource); a PSA level less

than 4 ng/dL; no previous history of any lower urinary tract surgery; no previous history of lower urinary tract injury; no neurogenic bladder diseases; and no evidence of vesical calculus.

All patients received information regarding TUIP in comparison to using medications to reduce LUTS, and all consented to participate in the study. Patients in the present study all responded well to medications but wishes to undergo TUIP due to the adverse effects caused by the medications, and many did not want to travel to the hospital to receive medications during the COVID-19 pandemic.

All patients received a full physical examination, and measurements of serum creatinine and PSA levels. LUTS were scored using the International Prostatic Symptoms Score (IPSS). Uroflowmetry was used to measure the maximal urine flow rate in ml/sec (Q-max), and the quality of life (QoL) was also evaluated.

All patients underwent TUIP performed by one surgeon, either under general anesthesia or spinal block. The one incision technique, made at 6 o'clock from the trigone to the verumontanum using a bipolar cautery knife which also stopped the bleeding, was chosen because of the shorter operative time and fewer complications compared with the 2-incision technique. If the median lobe was found to be enlarged or if the prostate gland was larger than 2 visual fields or if there were other conditions such as vesical calculi or urethral stricture present, then those patients would be excluded from the study. The duration of surgery was defined as the time from scope insertion to the time of inserting the urinary catheter.

The urinary catheter was retained after surgery and patients remained in hospital for 2 to 3 days for observation. They received antibiotics for 2 to 3 weeks and were followed by the surgeon at the outpatient department. All medications for BPH were discontinued after surgery. Patients were scheduled for follow up at 3, 6 and 12 months. Data to be collected at follow-up included IPSS, Q-max, QoL scores and presence of surgical complications. These measurements were compared between preoperative and postoperative periods using paired t-tests, and *p*-values less than 0.01 were considered statistically significant.

RESULTS

Thirty patients consented to participate in the study. Two failed to follow up, therefore only 28 patients were included in this study. There were 25 patients who live in the Trang province, 2 patients lived in the Songkhla

province and 1 patient lived in the Krabi province. The average age was 61 years, with a range of 52 to 70 years. The average size of the prostate was 2 to 3 finger-breadths. The average preoperative PSA level was 2.68 ng/dL (range, 1.12 to 3.76 ng/dL). There were 24 patients who used only alpha 1 blocker before surgery and 4 patients who used an alpha 1 blocker and a 5-alpha-reductase inhibitor.

Four patients received spinal block and 24 patients received general anesthesia. The average time of surgery was 15.9 (range, 8 to 52) minutes. One patient had a rather long operative time of 52 minutes because of technical problems with the surgical equipment. The estimated blood loss was 20 (range, 10 to 50) mL. None of the patients required blood transfusion, had uncontrolled pain, retrograde ejaculation, incontinence, or impotence.

The comparisons of IPSS and Q-max before and after TUIP at 3, 6 and 12 months are provided in Tables 1 and 2. There were significant improvement in both IPSS and Q-max after surgery at all time points. In a similar manner, the mean QoL score after surgery at 3 months was 0.679 (with SD: 0.772), which was significantly different from the mean preoperative QoL score of 1.25 (SD: 0.646), with a *p*-value of 0.001.

Table 1 Comparison of IPSS before and after TUIP

Time after TUIP	Mean IPSS (SD) N = 28	<i>p</i> -value*
Before surgery	9.96 (6.24)	-
3 months after surgery	3.96 (3.04)	< 0.001
6 months after surgery	3.59 (2.46)	< 0.001
12 months after surgery	3.63 (2.74)	< 0.001

*Paired t-test between each postoperative period and the preoperative period; SD: standard deviation

Table 2 Comparison of Q-max before and after TUIP

Time after TUIP	Mean Q-max (SD) N = 28	<i>p</i> -value*
Before surgery	11.1 (4.99)	-
3 months after surgery	15.0 (5.02)	0.001
6 months after surgery	16.1 (7.96)	0.001
12 months after surgery	16.2 (7.87)	0.001

*Paired t-test between each postoperative period and the preoperative period; SD: standard deviation

DISCUSSION

A dynamic role of peripheral condensation of the prostatic stroma acting as a capsule leading to BPH / LUTS has been proposed. Capsular constriction could further exacerbate the symptoms derived from already hyperplastic prostate.¹¹ Transurethral incision of prostate (TUIP) is an operative approach to disrupt the prostatic capsule to alleviate voiding symptoms. This is an ideal procedure for any patient with bladder-outlet obstruction and an enlarged prostate gland weighing 30 g or less, or in whom the primary obstruction is located at the bladder neck.^{3,12} Either a single incision is made at 6 o'clock position or two incisions are made at 5 and 7 o'clock position.¹³

According to the present study, TUIP using a single incision at the 6 o'clock position can improve LUTS symptoms as well as urine flow (Q-max) when compared with medical treatment. Furthermore, the mean difference in the quality of life (QoL) scores before and three months after surgery emphasized that TUIP can improve QoL as well. Other benefits of TUIP over medication include eliminating the need for regular follow-ups to receive the medications as well as the side effects of medical treatment, and the costs associated with time-off work. The safety, or lack of complications of TUIP such as blood loss requiring blood transfusion, uncontrolled pain, retrograde ejaculation, incontinence or impotence, should be mentioned as well.

Four prospective, randomized trials comparing transurethral resection with transurethral incision of prostate gland have been conducted and showed that the complication rates associated with incision were much lower than those associated with resection (impotence 2% vs. 5%, retrograde ejaculation 15% vs. 66% incontinent 1% vs. 6%, need for blood transfusion 1% vs. 6%).¹⁴⁻¹⁷

Most patients in the present study did not have confidence in receiving the surgery. It is very important to select patients suitable for TUIP, and no less important to explain to patients all the benefits and risks clearly before the surgery which may contribute to a better outcome.

It might be difficult to draw definite conclusions due to the small number of the patients in the present study. In the future, a randomized controlled study may be needed to make a definite conclusion that TUIP provides better results than using medications in the selected patients.

CONCLUSION

TUIP for LUTS provides good results for patients whose prostate is not too big and without median lobe enlargement. From the present study, TUIP provides better results than medications. Patients had significant LUTS improvement, significant improvement in maximal flow rate and the Quality of life at 3 to 12 months. There were no complications. TUIP is an option that should be considered when treating the patient suffering from LUTS whose prostate is not too large and without median lobe enlargement.

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บทคัดย่อ เราสามารถทำนายผลการรักษาผู้ป่วยต่อมลูกหมากโต โดยวิธีการผ่าตัดกรีดต่อมลูกหมากได้หรือไม่

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วัตถุประสงค์: เพื่อประเมินผลการรักษาโดยวิธีผ่าตัดกรีดต่อมลูกหมากในผู้ป่วยต่อมลูกหมากโตที่เคยได้รับการรักษาโดยใช้ยามาก่อน

วิธีการศึกษา: การศึกษาครั้งนี้ทำในผู้ป่วยต่อมลูกหมากโตช่วงอายุ 50-70 ปี ที่มีอาการและเคยได้รับการรักษาด้วยยาแอลฟาวันบล็อกเกอร์ และ/หรือ ยาไฟว์แอลฟารีดักเตสอินฮิบิเตอร์ มาก่อน โดยผู้ป่วยที่มารักษาก็จะได้รับฟังข้อมูลเกี่ยวกับการรักษาด้วยวิธีผ่าตัดกรีดต่อมลูกหมาก ในช่วงปี 2561-2563 มีผู้ป่วย 30 ราย เลือกที่จะรับการรักษาด้วยการผ่าตัดกรีดต่อมลูกหมาก แทนการใช้ยารักษาต่อมลูกหมากโต โดยผู้ป่วยกลุ่มนี้จะได้รับการเก็บข้อมูลเพื่อเปรียบเทียบผลการรักษาก่อนผ่าตัดและหลังผ่าตัด โดยประเมินจาก 1. อาการแสดงที่เก็บข้อมูลจากแบบสอบถาม IPSS 2. อัตราการไหลสูงสุดของปัสสาวะ (Q-max) และ 3. แบบสอบถามเกี่ยวกับคุณภาพชีวิตของผู้ป่วย (QL)

ผลการศึกษา: ผลการศึกษาในผู้ป่วย 28 ราย แสดงให้เห็นว่า ค่าอาการแสดงของผู้ป่วย (IPSS) หลังการผ่าตัด 3 เดือน, 6 เดือน, 1 ปี ลดลงเมื่อเทียบกับอาการแสดงของผู้ป่วยก่อนผ่าตัดที่ใช้ยารักษาอย่างมีนัยสำคัญทางสถิติ (p -value < 0.01) ผลการรักษาเมื่อพิจารณาจากอัตราการไหลสูงสุดของปัสสาวะ (Q-max) พบว่าอัตราการไหลสูงสุด (Q-max) หลังผ่าตัด 3 เดือน, 6 เดือน, 1 ปี เพิ่มขึ้นมากกว่าอัตราการไหลสูงสุดของปัสสาวะก่อนผ่าตัดที่ใช้ยารักษาอย่างมีนัยสำคัญทางสถิติ (p -value < 0.01) และเมื่อพิจารณาคะแนนจากแบบสอบถามถึงคุณภาพชีวิตของผู้ป่วยพบว่าคุณภาพชีวิตหลังผ่าตัด 3 เดือนดีขึ้น เมื่อเทียบกับคุณภาพชีวิตก่อนผ่าตัดที่รักษาด้วยยาอย่างมีนัยสำคัญทางสถิติ (p -value < 0.01)

สรุปผลการศึกษา: การรักษาผู้ป่วยต่อมลูกหมากโตระยะแรกด้วยการผ่าตัดกรีดต่อมลูกหมากได้ผลดีและควรพิจารณาใช้ ในผู้ป่วยบางรายที่มีอาการจากภาวะต่อมลูกหมากโต
