

TRANSURETHRAL INCISION OF THE PROSTATE: AN OBJECTIVE AND SUBJECTIVE EVALUATION OF EFFICACY DURING NINE-YEAR FOLLOW-UP

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SUMMARY – Longterm efficacy of transurethral incision of the prostate (TUIP) was evaluated in selected patients. A total of 50 patients with symptoms of bladder outlet obstruction caused by smaller benign prostates (estimated weight 30 g or less) were assigned to TUIP. Bilateral incision at “5 and 7” o’clock position was performed in all patients. Preoperative and postoperative evaluation included total urinary symptom score (I-PSS), uroflowmetry, patient overall assessment of surgery outcome, and sexual function questionnaire. The mean follow-up time was 66 months (6 to 108 months). Improvements in the mean urinary peak flow rates were observed in all cases. Postoperative total as well as irritation and obstructive symptom scores decreased significantly. All of 28 patients who had been sexually active before surgery retained their sexual activity after surgery, and only one (3.6%) of these had retrograde ejaculation. In comparison to other studies, where patients with bladder outlet obstruction caused by small prostate underwent classic transurethral resection of prostate (TURP), TUIP appeared to be faster, technically easier, and associated with lower morbidity. The results of this study clearly demonstrated TUIP to be an effective treatment for bladder outlet obstruction caused by small prostates in all patients, especially younger men, those with normal sexual activity, and patients at high operative risk. The method showed comparably good longterm outcome as TURP, but with less complications.

Key words: *Prostate – surgery; Prostatectomy – methods; Follow up studies*

Introduction

Benign prostatic hypertrophy (BPH) describes a patho-anatomic condition, whereas prostatism denotes the constellation of voiding symptoms commonly associated with it¹. Prostatism is a clinical syndrome consisting of irritation and obstructive bladder symptoms. At the beginning of the fourth decade, only 8% of men have histopathologic BPH. However, 50% of men aged 51 to 60 and 90% of men aged over 80 have histologic evidence of BPH². About 28% of men aged over 40 and 43% of men aged over 60 have voiding symptoms³. The Agency for Health Care Policy and

Research (AHCPR) and World Health Organization Consensus Committee (WHOC) both recommend surgery if the patient has refractory urinary retention or any of the following conditions, which are clearly secondary to BPH: recurrent urinary tract infection, recurrent gross hematuria, bladder stones, renal insufficiency, large bladder diverticula, or severe symptoms⁴.

Transurethral resection of the prostate (TURP) has been the gold standard for the treatment of obstructive BPH for over 30 years for its superior objective and subjective results compared with some novel less invasive therapies⁵. Despite its high rate of success, TURP is associated with a number of morbid conditions, including the risk of bleeding with subsequent transfusion, retrograde ejaculation, TURP syndrome, impotence and incontinence^{6,7}. These complications as well as high costs associated with prolonged hospitalization have led to the emergence of many less invasive surgical procedures.

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Received October 15, 2003, accepted in revised form November 25, 2003

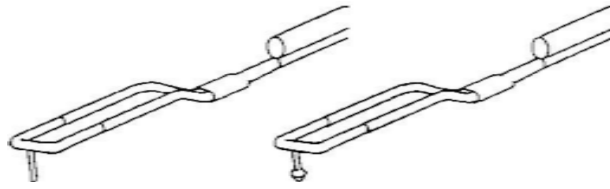


Fig. 1. Colling's knife electrodes

In 1964, Aboulker and Steg performed 'divulsion of the prostate'. They used an expandable sound to rupture the prostatic urethrae in 218 patients with obstructive symptoms. Although satisfactory results were achieved in 75% of patients, they were associated with significant complications, most notably profuse bleeding, incontinence, and phlegmon in the space of Retzius⁸. Orandi expanded on this idea and theorized that endoscopic incision in certain locations could achieve similar efficacy with fewer complications⁹. He first performed his procedure in 1969. Later on, Orandi subsequently modified these incisions and included the prostatic urethrae only, without manipulation of the bladder neck, in order to avoid damage to the internal sphincter mechanism¹⁰.

Modifications made by later investigators are variations of Orandi's original procedure. Different instruments have been used, including Colling's knife, Sachs's knife, Orandi's knife, and standard resectoscope. Recently, the free-beam and contact Nd:YAG lasers have been used for TUIP¹¹. TUIP, as originally described by Orandi, involved two incisions. The technique has been modified by several investigators who describe single incision for TUIP¹². The most popular unilateral incision is located at 6-o'clock positions. The most commonly performed bilateral incisions are at 5- and 7-o'clock positions. The incisions were

gradually deepened to include full thickness of the bladder neck and prostate, until the capsule was reached. Most investigators agree that ideal candidates for TUIP are patients who would have a resected weight of ≤ 30 . Larger gland required deep incisions into the capsule, which invariably led to opening of venous sinuses and perforation of the capsule causing extravasations and uncontrolled venous bleeding. Frequently extensive fulguration was necessary, which significantly increased the incidence of postoperative complications.

Patients and Methods

From June 1994 till June 2003, 50 selected patients underwent TUIP at the Department of Urology, Sestre milosrdnice University Hospital in Zagreb. The patients included in the study had small benign prostate on rectal examination, ultrasonographically measured prostatic volume ≤ 30 g, prostatic specific antigen (PSA) level lower than 4 ng/ml, maximum urine flow lower than 15 ml/s, International Prostate Symptom Score (I-PSS) lower than 19, and postvoid residual urine lower than 300 ml. All patients underwent bilateral incisions with a Colling's knife extending from below the ureteric orifice down to the verumontanum and deep to perivesical and periprostatic fat at the "5 and 7" o'clock position (Figs. 1 and 2). Preoperative and postoperative evaluation performed at month 1, 3, 6, 12 and every 6 months till 108 months after surgery included total scores of urinary symptoms (I-PSS), uroflowmetry, patient overall assessment of surgery outcome, and sexual function questionnaire. The operation was in almost all cases conducted under spinal anesthesia except for four patients with significant medical problems, where it was performed under local anesthesia. All patients were man-



Fig. 2. Transurethral incision of the prostate at 5 and 7 o'clock positions



Fig. 3. Urethroscopic view of prostatic urethra preoperative, postoperative and 8 years after TUIP

aged by the authors only and followed from 6 months for up to 8 years (Fig. 3). The mean follow-up time was 66 months (range 6 to 108 months). Eight of the 50 patients who underwent transurethral incision of the prostate were lost to follow-up for unknown reasons (all of them followed up for less than 3 years). During the follow-up period, three patients died from unrelated diseases, and four underwent additional surgical procedure of the prostate. They were excluded from the study.

The results were presented as median and range or mean \pm standard deviation. Frequency tables were used for qualitative data descriptions. Quantitative analysis was done by use of χ^2 -test, and data were analyzed by Friedman's test. In all statistical analyses, $p < 0.05$ was taken as significant.

Results

Postoperative improvements in the mean peak flow rates could be determined throughout the study period.

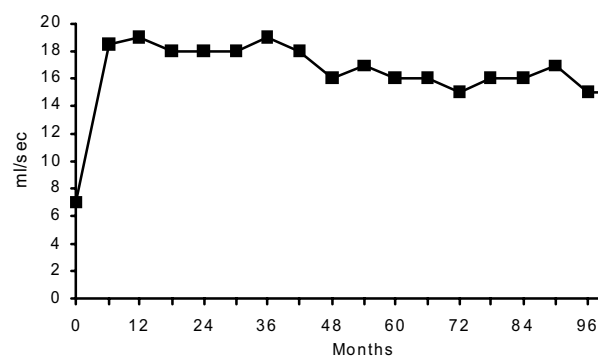


Fig. 4. Mean peak flow rates preoperatively and at each follow-up interval

Preoperative and postoperative mean peak urinary flow rates are listed in Fig. 4. Compared to baseline, the postoperative total, obstructive and irritative scores were statistically significantly lower at all follow-up visits ($p < 0.005$). The mean total, obstructive and irritative symptom scores are listed in Fig. 5. The patients were satisfied with the outcome of the surgery, with no statistically significant difference between the treatment groups (Fig. 6). The satisfaction rate steadily declined over time. All 28 preoperatively sexually active patients retained their sexual activity after the surgery, and 27 of them retained normal ejaculation. The median length of surgical procedure was 15 (range 10-45) minutes. One patient required blood transfusion, four patients had uroinfection, and three patients had hematuria. None of these patients had TUR syndrome. Urinary catheter was removed after a median of 2 (range 1-4) days. The median time of hospitalization was 3 (range 1-4) days.

No late complications such as urethral stricture, incontinence, and bladder neck contracture were observed.

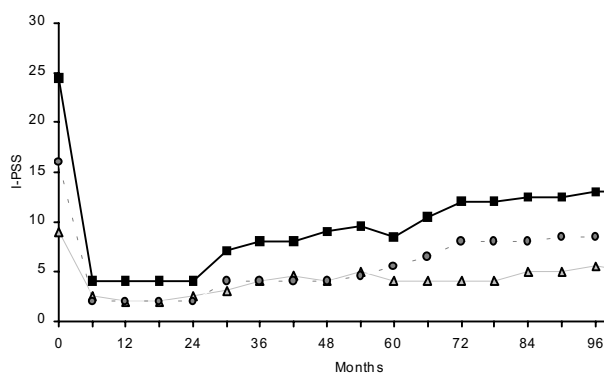


Fig. 5. International Prostate Symptom Scores (I-PSS) total (■), obstructive (○) and irritative (△) preoperatively and at each follow-up interval

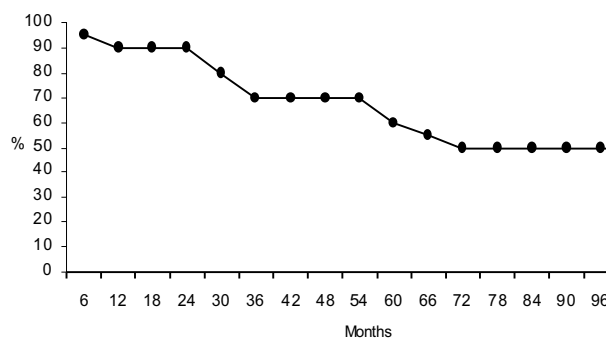


Fig. 6. Overall subjective assessment of surgical outcome

Discussion

Over years, TURP as a treatment modality for obstructing BPH has gained popularity throughout the world. It is now considered the gold standard for the surgical management of BPH. However, the morbidity rate (18%) combined with the demand for minimally invasive, cost-effective treatment has fueled the search for other treatment modalities¹³. TUIP, a procedure initially described by Orandi in 1969, has been 'rediscovered' and may even replace TURP as the treatment of choice for selected population of men with bladder outlet obstruction caused by small BPH¹⁴. No differences in treatment outcome were observed using single or double incisions¹³.

We compared our results with the results of other studies, where patients with small prostate underwent classic TURP (prostate size 30 g or less)¹⁴⁻²⁰. TUIP was better than TURP in terms of shorter postoperative duration of catheterization and shorter hospitalization time. We found a significant reduction in both blood loss requiring transfusion (19% for TURP and 2% for TUIP) and operative time (30-59 minutes for TURP and 15 minutes for TUIP). None of our patients had TUR syndrome. We found that both operations significantly improved symptom scores (75% for TUIP and 85% for TURP). The flow rate improvement was significantly better in the TURP group. Retrograde ejaculation reported in other (TURP) studies was recorded in 36%²¹, 42%¹⁴, 57%¹⁸ and 68%¹⁹ of patients, and in only one (3.6%) patient in the TUIP group. Erectile dysfunction was seen in 5%-20% in the TURP groups^{14,17-19}, whereas none of our patients had postoperative erectile dysfunction. This makes TUIP particularly well suited for patients in whom maintenance of sexual function is an important consideration. We found a higher incidence of bladder neck contracture after TURP. TUIP is also indicated in chronically ill, debilitated patients with

a high risk of anesthesia-related complications, and we performed the procedure satisfactorily in four patients using local anesthesia only. Like most of authors, we think that the TUIP procedure is easier to teach and to learn than TURP^{14,18,21}.

However, TUIP is not free from disadvantages. It is not effective in patients with a prominent median lobe or those with a markedly enlarged prostate gland (greater than 30 g)²². Another disadvantage is that no tissue is obtained for pathologic analysis. Thus, all patients undergoing TUIP should be evaluated preoperatively using both serum prostate-specific antigen (PSA) determination and meticulous digital rectal examination. All patients in our study had PSA concentration less than 4.0 ng/mL (normal range 0-4 ng/mL) and negative digital rectal examination. During the follow-up of 66 months, the PSA value did not exceed the limit of 4.0 ng/mL in any of the patients. Four of our patients who underwent transurethral resection after transurethral incision of the prostate had no histologic signs of cancer. As cost containment is becoming a key factor for our health care system, it is quite likely that TUIP as well as other less invasive procedures will have expanded indications.

Although we had a relatively small number of patients, the success rate of our results is at least comparable with other contemporary series^{16-18,21,22}.

Conclusions

The results of this study clearly demonstrate that in selected patients TUIP is an effective procedure for long-term relief of outlet obstruction. Transurethral incisions at the "5 and 7" o'clock position is an effective method of treatment for small BPH in all patients, especially younger men, those with normal sexual activity and patients with a high surgical risk, with as good longterm outcome as after TURP but with less complications. TUIP was found to be superior for being faster, technically easier, and associated with less morbidity and a decrease in retrograde ejaculation as compared with TURP.

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Sažetak

TRANSURETRALNA INCIZIJA PROSTATE: OBJEKTIVNA I SUBJEKTIVNA PROCJENA UČINKOVITOSTI KROZ DEVET GODINA PRAĆENJA

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U radu su procijenjeni rezultati transuretralne incizije prostate (TUIP) na duži rok kod selekcioniranih bolesnika. Kod 50 bolesnika sa simptomima subvezikalne opstrukcije, koji su bili uzrokovani malom benignom prostatom (procijenjena težina 30 grama ili manja) učinjen je TUIP. Kod svih bolesnika učinjene su bilateralne incizije na "5 i 7" sati. Prijeoperacijska i poslijeoperacijska procjena kroz intervale praćenja obuhvaćala je ukupnu ocjenu težine simptoma (I-PSS), mikciometriju, ocjenu zadovoljstva bolesnika rezultatom operacijskog zahvata, te upitnik o seksualnim funkcijama. Pобољшanje srednjih vrijednosti maksimalne brzine protoka bilo je vidljivo u svih bolesnika. Poslijeoperacijski ukupni, iritativni i opstruktivni zbroj simptoma pao je značajno u svim razdobljima praćenja. Kod svih 28 bolesnika koji su prijeoperacijski bili seksualno aktivni potencija je sačuvana poslijeoperacijski, a samo je jedan bolesnik signalizirao retrogradnu ejakulaciju. Rezultati ispitivanja uspoređeni su s rezultatima studija transuretralne resekcije (TURP) malih prostata objavljenim u dostupnoj literaturi. TUIP je učinkovita metoda liječenja male benigne prostate, poglavito u mlađih, seksualno aktivnih te visokorizičnih bolesnika, s podjednako dobrim rezultatima na duži rok kao kod TURP-a, ali s puno manje komplikacija.

Ključne riječi : *Prostata – kirurgija; Prostatektomija – metode; Studije praćenja*