

# Change of Sexual Function in Patients Before and After Ho:YAG Laser Enucleation of the Prostate

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**ABSTRACT:** The aim of this study is to evaluate the effect of Ho:YAG laser enucleation of the prostate (HOLEP) to the sexual function of patients with benign prostatic hyperplasia (BPH). In the course of the study, 108 patients with BPH were recruited and accepted treatment with HOLEP. The effectiveness of treatment was evaluated by flow rate and the International Prostate Symptom Score (IPSS) before HOLEP and 6 months afterwards. Meanwhile, the sexual functions were evaluated with the Danish Prostate Symptom Score Sexual Function Questionnaire (DanPSS Sex). Before and 6 months after HOLEP treatment, the mean residual urine volume was reduced from  $106.0 \pm 51.7$  mL to  $5.6 \pm 1.7$  mL ( $P < .01$ ), maximum flow rate was improved from  $7.2 \pm 3.9$  mL/s to  $21.7 \pm 1.3$  mL/s ( $P < .01$ ), nocturia frequency was reduced from 5.5 to 1.5 ( $P < .01$ ), and the mean IPSS score was decreased from  $19.4 \pm 5.6$  to  $7.4 \pm 2.6$  ( $P < .01$ ). The proportion of patients satisfied with their

libido was 55% before HOLEP and 57% 6 months afterwards, while 23.5% of the patients had no libido before and after HOLEP; 37% of the patients were satisfied with their erection before HOLEP and 40% after 6 months; 30% of the patients had completely satisfactory sex life before HOLEP, and 32% did 6 months later. The corresponding percentages of fully impotent patients increased from 33% before the procedure to 35% 6 months postoperation. Early morning erections were reported by 45% of the patients before the procedure and by 62% 6 months later ( $P < .01$ ). In 70% of the patients with normal sex life, ejaculation was retrograde 6 months after HOLEP ( $P < .01$ ). HOLEP does not affect the sexual function of patients with BPH but does improve the ability of early morning erection, while causing retrograde ejaculation.

Key words: Surgery, HOLEP, erection.

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Recently, studies (Namasivayam et al, 1998; Baniel et al, 2000) have indicated a correlation between lower urinary tract symptoms caused by benign prostatic hyperplasia and some aspects of sexual problems; 44.2% of patients with severe urinary symptoms had unsuccessful coitus, compared to 13.1% of patients with milder dysfunction (Baniel et al, 2000). Another study identified a correlation between lower urinary tract symptoms and other sexual dysfunctions, including ejaculation disorders, a decreased sexual desire, and a diminished satisfaction (Burger et al, 1999).

Ho:YAG laser enucleation of the prostate (HOLEP) is a new and promising technique for the resection of prostatic tissue (Chepurov, 1999; Elzayat et al, 2005; Kim et al, 2005). Ho:YAG laser technique possesses unique characteristics such as narrow range of thermal injury (only 0.5–1.0 mm) and good hemostasis (Stephenson et al, 2001). Ho:YAG laser technique enables the operating area to be kept clean and reduces

the likelihood of breaking through the prostatic surgery membrane. The Ho:YAG laser rarely hurts the erectile nerves or penile blood vessels. HOLEP provides quick alleviation of symptoms and has been proven to be safe. It may, however, have some side effects, among which disturbances of sexual function were most often suspected. To evaluate the effect of HOLEP on sexual function, studies have been conducted, and the results are reported below.

## Materials and Methods

The primary study population included 108 patients with benign prostatic hyperplasia (BPH) for at least (or about) 2 years in Qilu Hospital of Shandong University and Shandong Province Hospital. The mean age of the patients was 69.2 years, ranging from 54 to 82 years. The mean prostatic volume detected by transrectal sonography was  $50.8$  cm<sup>3</sup>, ranging from  $15.0$  to  $106.0$  cm<sup>3</sup>. Patients were asked about their medical history. The investigation showed that 11% of the patients suffered from diabetes and 14% from hyperpiesia; 33% of the patients reported smoking, while 43% had a history of frequent use of alcohol. About 27% of the patients lived alone. Only 3% of the 108 patients had been treated by pharmacotherapy for impotence before HOLEP.

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## Change of patients before HOLEP and 6 months later

	IPSS Score	Qmax Flow Rate (mL/s)	Residual Urine (mL)	Nocturia Frequency
Before HOLEP	19.4 ± 5.6	7.2 ± 3.9	106.0 ± 51.7	5.5
After HOLEP	7.4 ± 2.6*	21.7 ± 1.3*	5.6 ± 1.7*	1.5*

\*  $P < .01$ .

The patients were treated with HOLEP. The laser energy was applied directly to the prostatic tissue by using a standard 550-micron end-firing fiber. The mean weight of the enucleated prostate tissue in HOLEP was 31.7 g, ranging from 12 to 102 g. By analysis of the tissue, a definite pathologic diagnosis was conducted.

The effectiveness of treatment was evaluated by flow rate and the International Prostate Symptom Score (IPSS) before HOLEP and 6 months afterwards. Each patient also filled in the Danish Prostate Symptom Score Sexual Function Questionnaire (DanPSS Sex) before the HOLEP treatment and 6 months after it. The questionnaire consisted of 22 items, including patients' general health, libido, satisfaction with their current sex life, occurrence of early morning erections, coital frequency, sexual potency, satisfaction with erection and ejaculation, percentage of successful intercourse, and the possible impairing effect of the procedure on potency. The patients completed the same questionnaire 6 months after HOLEP. The SPSS 11.0 method (SPSS Inc, Chicago, Ill) was applied to analyze and compare data.

## Results

As shown in the Table, before and 6 months after HOLEP treatment the mean residual urine volume was reduced from 106.0 ± 51.7 mL to 5.6 ± 1.7 mL ( $P < .01$ ). Maximum flow rate was improved from 7.2 ± 3.9 mL/s to 21.7 ± 1.3 mL/s ( $P < .01$ ), nocturia frequency was reduced from 5.5 to 1.5 ( $P < .01$ ), and the mean IPSS score was decreased from 19.4 ± 5.6 to 7.4 ± 2.6 ( $P < .01$ ). The Table shows that it is obvious

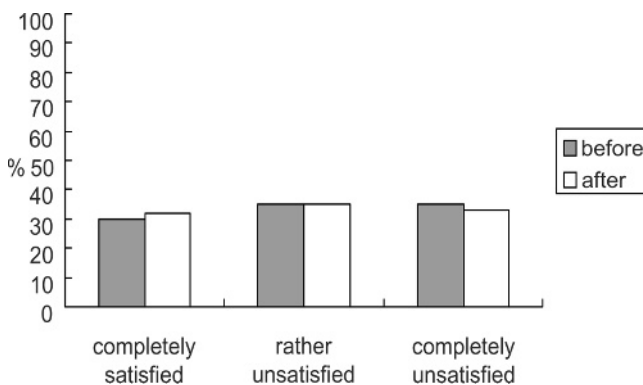


Figure 1. Proportions of the patients' degree of satisfaction with their sex life before and 6 months after HOLEP. There are no significant differences between groups ( $P > .05$ ).

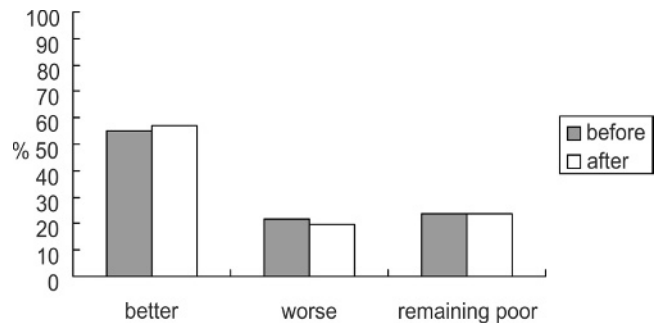


Figure 2. Findings on libido before HOLEP and 6 months later; 55% of the patients reported normal libido before HOLEP, while 57% did after 6 months ( $P > .05$ ).

patients' symptoms improve greatly after HOLEP treatment.

As shown in Figures 1 through 4, the questionnaire data indicated that the percentage of patients satisfied with their sex life was 30% before the HOLEP treatment versus 32% after the treatment (Figure 1). The percentage of satisfactory libido changed from 55% to 57% after the HOLEP treatment, while 23.5% of the patients had no libido before and after HOLEP treatment (Figure 2). The percentage of patients satisfied with their erection increased slightly from 37% to 40% after HOLEP treatment, the same increase as the percentage of fully impotent patients from 33% to 35% (Figure 3). No significant change was observed for the orgasm rate (76% to 70%) (Figure 4). Significant change was observed for early morning erections, which increased from 45% to 62% ( $P < .01$ ), and for the ejaculation rate; 21% of patients felt pain or discomfort on ejaculation. In 70% of the patients, ejaculation was retrograde 6 months after HOLEP ( $P < .01$ ).

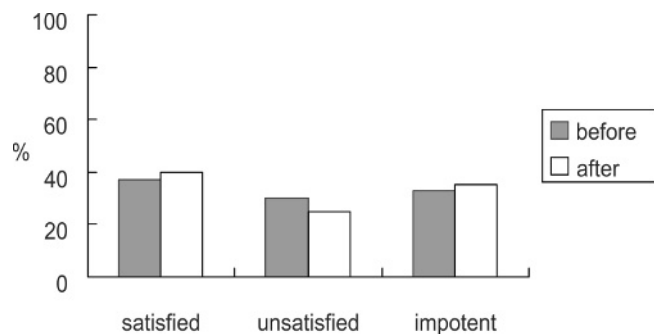


Figure 3. Data on erection before and 6 months after HOLEP. Only 37% of the patients had satisfactory erections before HOLEP, but 40% of the patients reported satisfactory erection after 6 months. Still, there were 33% of the patients who had no erection before and 35% 6 months later. HOLEP appeared to have no significant effect on erection. Early morning erections were reported by 45% of the patients before the procedure, and by 62% 6 months later. The difference before and after HOLEP was significant ( $P < .01$ ).

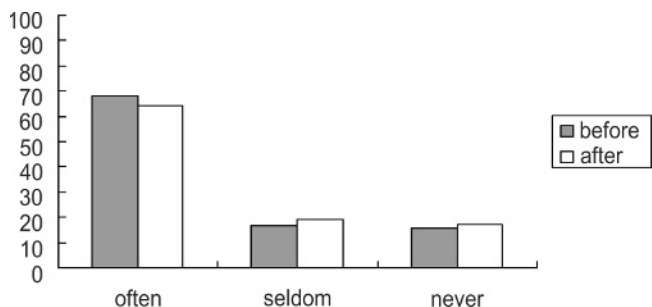


Figure 4. Experience of orgasm before and 6 months after HOLEP. Orgasm was experienced during intercourse in half or more than half of the occasions by 76% of the patients before the procedure, and by 70% 6 months afterwards ( $P > .05$ ).

## Discussion

According to the results above, patients' erections showed no significant change, which suggests that HOLEP has fewer side effects on erection activity. But the HOLEP could affect sexual function in other ways, which were divided into 2 categories: psychogenic and physiologic effects. Psychogenically, patients could be affected negatively due to worrying about the invasive procedure; physiologically, patients could be affected by injury to the urethra due to feeling pain during erection.

The erection ability of some patients seemed improved: 15% of patients reported that they had better early morning erections than before. Studies (Pekka et al, 1998; Mishriki et al, 2001) also reported a similar phenomenon after transurethral resection of the prostate (TURP). Our data indicate that the change can most likely be attributed to the improvement of the quality of sleep due to the reduction of nocturia frequency (Table). The survey showed that when patients experienced difficulty of urination caused by BPH, they would prefer to avoid suffering from this condition by ceasing to pursue sex. Subsequently, their libido remained in a comparatively low state. After HOLEP treatment, dysuria vanished. As the result, the pressure above was released, the libido became normal, and the patients felt that their erection ability improved.

Meanwhile, 70% of the patients were often troubled by retrograde ejaculation after the HOLEP treatment, but their satisfaction with their orgasm remain unchanged. The major reason is that the internal sphincter in the neck of the bladder was injured and could not

block semen flowing into the bladder (Libman and Fichten, 1987; Dunsmuir et al, 1996; Tuhkanen et al, 2004).

In summary, HOLEP did not affect the sexual functions of the patient significantly but did improve the ability to achieve early morning erection, while causing retrograde ejaculation, which has no particular effect on orgasm.

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