Short Communication

Surgical procedures for benign prostatic hyperplasia: A nationwide survey in Japan

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Abstract: We investigated the trend in surgical procedures for benign prostatic hyperplasia (BPH) during the past 10 years in Japan. A questionnaire inquiring about the number of operations and surgical procedures for BPH in 1999, 2004 and 2009 was sent to 1824 institutes belonging to the Japanese Urological Association and/or the Japanese Clinical Urologists Association. Responses were obtained from 767 institutes (42.1%). The number of operations showed a gradual increase during the 10 years (n = 17 221 in 1999, 18 772 in 2004, 20 413 in 2009). Transurethral resection of the prostate, including transurethral resection in saline, was consistently the most common procedure (72.5% to 79.2%). Holmium laser enucleation of the prostate and transurethral enucleation with a bipolar system have dramatically increased, becoming the second most common in 2009 (n = 3416), although enucleation by open prostatectomy was still a viable option in 2009 (n = 555). Photoselective vaporization of the prostate was the third most common method in 2009 (n = 572). Coagulation and thermotherapy have become uncommon (n = 2039 in 1999, 217 in 2009), whereas incision and stenting were unchanged during the period. Thus, surgical procedures for BPH have been increasing in Japan during the past decade. Transurethral resection remains the standard, whereas enucleation and vaporization have been increasing.

Key words: benign prostatic hyperplasia, nationwide survey, surgery.

Introduction

There are several treatment options for benign prostatic hyperplasia (BPH), including watchful waiting, behavioral therapy, medical treatment and surgical treatment, including open and endoscopic prostatectomy.1,2 Surgical treatment is definitely more effective in improving lower urinary tract symptoms (LUTS) and urinary flow rate than medical treatment. There are very many methods, including incision, resection, enucleation, coagulation and vaporization, as well as the use of energies, such as mechanical force, high frequency current, microwaves, radiofrequencies, ultrasound, the potassium laser and the holmium laser.1,2 Seki et al.3 carried out a survey to evaluate the prevalence of and preference for surgical treatment for BPH in 2000. However, there is no statistical information available in Japan after their survey. Some procedures might lose popularity and others gain popularity through innovation, progress and widespread use of various surgical techniques. In addition, the changes in socioeconomic status and patients’ attitudes regarding valuing their quality of life might influence the indication for surgery and its type. In the present study, we investigated the trend in surgical procedures for BPH during the past 10 years in Japan.

Methods

The study was carried out as an official research project of the Japanese Urological Association (JUA). A questionnaire inquiring about the number of operations by surgical procedures for BPH from 1 January to 31 December in 1999, 2004 and 2009 was mailed to 1824 urological institutes in Japan in February 2010. Of these institutes, 1189 and 635 belonged to the JUA (mainly academic, educational or referral hospitals) and the Japanese Clinical Urologists Association (JCUA, mainly private clinics), respectively. The types of surgical procedures asked about in the questionnaire are listed in Table 1. In addition, we inquired about the most suitable surgical procedure according to estimated prostate volume (PV).

Results

The overall response rate was 42.1% (767/1824). The response rate was higher for members of the JUA (48.0%, 572/1189) than for JCUA members (30.7%, 195/635). Replies were obtained from members in all 47 prefectures in Japan.
The number of operations showed a gradual increase during the 10 years (Table 2). It increased among the members of the JUA, whereas a decreasing tendency was observed among the members of the JUCA. Transurethral resection of the prostate (TURP) was consistently the most common procedure in each year (Table 3). A surge of transurethral resection in saline (TURis) was observed in 2009. Holmium laser enucleation of the prostate (HoLEP) or transurethral enucleation with a bipolar (TUEB) system has dramatically increased to become the second most common procedure in 2009, although enucleation by open prostatectomy was still a viable option in 2009. Photoselective vaporization of the prostate (PVP) has replaced visualized laser ablation of the prostate (VLAP). Coagulation using interstitial laser coagulation of the prostate (ILCP) and transurethral needle ablation (TUNA) has become uncommon. Although over 1000 of transurethral microwave thermotherapy (TUMT) procedures were carried out in 1999, the number rapidly decreased in 2009. Incision and stenting were unchanged during the period.

If PV was < 20 mL, 8% reported that there was no surgical indication (Table 4). However, if surgery was considered, resection was the most frequent answer throughout the range of PV. Incision was only indicated for men with PV < 20 mL. The proportion of resections decreased with the increase of PV; conversely, the proportion of open prostatectomy increased. If PV was 100 mL or over, open prostatectomy was most often selected, followed by resection and enucleation other than open prostatectomy.

**Discussion**

This survey was carried out for 1824 institutes belonging to the JUA and JCUA in Japan. Although the response rate was 42%, it is the largest series to show the number of operations.
according to surgical procedures for BPH in Japan. Because not only academic hospitals but also private clinics replied, the results seem to be representative of the actual clinical condition in Japan. According to the survey, the number of operations showed a gradual increase during the 10 years. Introduction of new medical treatments might affect the number of operations by influencing the indication for surgery. The years investigated in this survey, 1999, 2004 and 2009, were in the α1-blocker era. A 5-alpha reductase inhibitor became available at the end of 2009 in Japan, so it is unlikely that the launching of the drug influenced the statistics in 2009. Although the reasons for the surgical indication are unknown in the survey, the increasing number of operations might reflect the increased availability of new technologies with less invasiveness, as well as the increased number of the elderly population in Japan during the 10 years.4

The survey showed that TURP was the most frequent procedure, even in 2009. It seems that most urologists actively doing surgery are familiar with conventional TURP using a resectoscope with a loop electrode. However,
considering the recent rapid increase in the number of bipolar TURP operations using saline instead of sorbitol solution for irrigation (TURis, etc.), it might replace conventional TURP in the future, because of its low incidence of development of dilutional hyponatremia. Another remarkable change observed in the survey was the increased number of enucleations, especially those carried out by HoLEP. There are many reports showing the efficacy and safety of HoLEP using an 80–100 W of holmium laser. It can be applicable for prostates of 100 mL or larger, which are not usually indicated for TURP. However, the high prices of the generator and the morcellator might prevent the widespread utilization of the procedure. This survey showed an increased number of TUEB procedures using a spatula for mechanical enucleation of adenoma in 2009. Although evidence for the efficacy and safety is poor, it might become more popular as a method of enucleation because of the low price of the apparatus. Vaporization is a safe surgical procedure that can achieve coagulation of the prostatic cavity. VLAP using the Nd : YAG laser completely disappeared in 2009; instead, PVP using the KTP laser increased. As a result of the shorter optical penetration of the KTP laser than the Nd : YAG laser, the incidences of severe dysuria and delayed sloughing were lower for PVP than for VLAP. Although PVP has efficacy comparable to TURP with fewer complications, the generator and the laser fiber have not yet been approved in Japan. Transurethral vaporization of the prostate (TURisV) using a mushroom-shaped electrode for vaporization with high frequency current might be promising, because the expensive generator is not necessary. The dramatically decreased numbers of procedures with coagulation and thermotherapy might reflect the dissatisfaction of urologists and patients with the efficacy, despite the decreased invasiveness. Significant reductions of the medical fees for coagulation and thermotherapy in 2004 and 2006 might also have contributed to the decrease in these procedures. Incision still survives, because it is applied to patients with prostates smaller than 20 mL. Stenting, which is not a surgical procedure in reality, has been constantly used. It might be indicated for aged patients unfit for surgical treatment as a result of comorbidity, for example.

In conclusion, surgical procedures for BPH have been increasing in Japan during the past decade. Transurethral resection remains the standard, whereas enucleation and vaporization have been increasing.

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