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Surgical intervention for benign prostatic hyperplasia in Hong Kong

在香港以外科手術治療前列腺腫大

Objectives. To review the treatment of benign prostatic hyperplasia in Hong Kong.

Design. Questionnaire study and review of previous presentations at the Hong Kong Urological Association meetings.

Setting. Urology centres in the public sector, Hong Kong.

Participants. Thirteen public urology centres replied to the questionnaire survey. Thirty-two papers on benign prostatic hyperplasia presented at past annual scientific meetings of the Hong Kong Urological Association were identified. This would provide an overview of the development of surgical interventions for the treatment of benign prostatic hyperplasia carried out in Hong Kong.

Results. Most known surgical techniques have been practised in Hong Kong. Many 'minimally invasive procedures' have now fallen out of favour. Some newer techniques are now available and have produced favourable results. Nonetheless, transurethral resection of the prostate remains the standard surgical intervention in 12 of 13 centres in Hong Kong.

Conclusion. Transurethral resection of the prostate remains the technique of choice for the treatment of benign prostatic hyperplasia in Hong Kong. New techniques should be comprehensively studied and evaluated before being introduced into regular practice.

Key words:

Data collection;
 Prostatic hyperplasia;
 Surgery

關鍵詞：

數據搜集；
 前列腺增生；
 手術

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目的：探討香港的醫院治療前列腺腫大的情況。

設計：問卷調查以及翻查過往在香港泌尿外科學會會議上發表的報告。

安排：香港公立醫院的泌尿科診療中心。

參與者：共有13家公立泌尿科診療中心接受問卷調查。此外，在過去的香港泌尿外科學會科學年會上發表的論文中，有32份有關前列腺腫大的報告，可用於回顧香港治療前列腺腫大手術的發展歷史。

結果：大部分已知的技術，香港的診療中心都有採用。許多微創手術已逐漸變得少用，取而代之的一些新技術，效果卻相當良好。不過，在13家參與研究的中心中，有12家目前仍以經尿道前列腺切除術為慣常採用的治療方法。

結論：經尿道前列腺切除術仍是香港最常用於醫治前列腺腫大的手術。現有的新技術還需要經過全面的研究和評估，才能引入成為常規療法。

Introduction

Benign prostatic hyperplasia (BPH) is the most common benign neoplasm in males. Lower urinary tract symptoms (LUTS) are common in ageing men and their incidence and severity increase with age.^{1,2} In a community-based survey on men's health in 2003, 16% of Hong Kong males aged 40 to 79 years had moderate-to-severe LUTS. In an ageing population, the impact on the health economy will become more apparent. While many of these patients can be managed in a primary care setting, some require specialist assessment and treatment.

Surgical intervention remains the sole means of curing the resultant obstruction of urinary tract. The absolute indications for surgery include refractory urinary retention, renal impairment, and haematuria due to BPH. Urinary tract infection and bladder stone formation are also good indications for surgical intervention. Another large group of surgical candidates are those who had unsatisfactory medical management of LUTS.

Watchful waiting is a reasonable option for patients with uncomplicated BPH and few or mild symptoms.³ Medical treatment is now the mainstay treatment for symptomatic LUTS. Some alpha-1 blockers have been specifically designed to treat LUTS: they effectively relieve symptoms with acceptable side-effects.³ Nonetheless, improvement in urodynamic parameters is at most modest and it remains doubtful whether the natural course of BPH can be altered.^{4,5} Long-term use of a 5 alpha-reductase inhibitor has recently been shown to prevent some complications of BPH,⁶ but it provides only modest symptomatic relief. The main indication for its use in the Hong Kong public sector is recurrent haematuria due to BPH in patients who are considered unfit for surgery. The efficacy of a combination of an alpha-1 blocker and a 5 alpha-reductase inhibitor is being studied. The consensus is that side-effects are additive, whereas the combination therapy offers synergistic benefit. The cost of long-term combination therapy is also a concern.³

There are reasons for continuing unsatisfactory medical therapy. The waiting list for surgery is very congested in public hospitals and the waiting time is very long. Many patients cannot afford to undergo surgery in the private sector. Some patients also mistakenly believe that urinary incontinence will develop as a result of surgery for BPH.

The consensus of the Hong Kong urological community is that in the hands of a competent urologist, sphincter damage is extremely rare. Since the introduction of the Hopkins rod lens system in the late 1970s, transurethral resection of the prostate (TURP) has become the gold standard of surgical treatment for BPH. With technical and instrumental improvements, serious complications such as TURP syndrome and sphincter damage are rare. Postoperative incontinence, if present, is generally the persistence of preoperative urge incontinence due to bladder dysfunction—detrusor overactivity (previously called detrusor instability).

Specialist training is required for surgeons perform-

ing TURP: morbidities may arise even in experienced hands. The complication rate has steadily declined and mortality has recently been reported at less than 0.25%.⁷ In the 1990s, some single-centre retrospective studies reported zero mortality, major intra-operative complication rate of 2.5%, TURP syndrome shown in 0.8%, and transfusion rate of 0.2%.⁷ Contrary to this, a review of randomised controlled trials of different surgical modalities reported a transfusion rate for TURP of 7.2% (if an excessively high transfusion series was excluded) and TURP syndrome occurred in 3.4% to 6.7% of patients.⁸ In the same review, post-operative clot retention occurred in 5.5%, urethral stricture in 3.8%, bladder neck contracture in 4.7%, erectile dysfunction in 6.5%, and retrograde ejaculation in 65% of patients. Newer interventions for BPH thus aim to attain the same benefits as TURP without the morbidity. Many of them are described as 'minimally invasive procedures'. Although there is a paucity of well-designed randomised controlled trials that examine these new techniques, studies of actual practice are abundant and may better reflect clinical practice.⁹ Most of these 'minimally invasive procedures' appear to wane in popularity after a short period of interest, and TURP remains the gold standard of surgical intervention for BPH.

In November 2003, the Hong Kong Urological Association (HKUA) conducted a survey of men's health and the practice of surgical intervention for BPH. The survey was a community-based study of two major aspects of men's health: LUTS and erectile function. This paper focuses on the questionnaire survey of surgical intervention for BPH in public hospitals. It provides a representative overview of the practice in Hong Kong as the public sector accounts for more than 90% of hospital admissions.

It is hoped that an analysis of past peer-reviewed presentations of the HKUA annual scientific meetings will demonstrate the evolution of surgery for BPH and current practice in Hong Kong.

Methods

This study was a questionnaire survey of non-medical intervention to cure BPH. Measures aimed to provide only temporary relief, such as a urethral catheter or stent, were excluded. Questionnaires were sent to all urology divisions of public hospitals. Staff were asked to indicate their experience and current practice of each individual mode of treatment. They were also asked to indicate whether the techniques were carried out routinely, for selected cases only, or as part of a clini-

Table 1. Peer-reviewed presentations on surgical interventions at Hong Kong Urological Association annual scientific meetings, 1995-2002

Surgical intervention*	No. of presentations	No. of centres doing presentations
TUMT	1	1
VLAP	1	1
ILC	4	2
HoLRP	5	1
PVP	1	1
TUVP	1	1
TUVRP	1	1
Plasma kinetic resection	2	1

* TUMT denotes transurethral microwave thermotherapy, VLAP visual laser ablation of the prostate, ILC interstitial laser coagulation, HoLRP Holmium laser resection of the prostate, PVP photoselective vaporisation of the prostate, TUVP transurethral vaporisation of the prostate, and TUVRP transurethral vaporisation-resection of the prostate

cal study or trial before being introduced into routine practice (Appendix). Additional treatment modalities could be added when applicable. It was not our intention to enquire the selection criteria for individual techniques because it would involve heterogeneity during analysis.

In some techniques, energy is delivered to induce coagulation necrosis and delayed prostate shrinkage. In transurethral microwave thermotherapy (TUMT), endoscopy is not required and microwave energy is delivered through a device mounted on a urethral catheter with a feedback system. Other techniques deliver various energy forms under endoscopic guidance: non-contact Nd-YAG laser in visual laser ablation of the prostate (VLAP), radio frequency in transurethral needle ablation (TUNA), and diode laser in interstitial laser coagulation (ILC).

Other techniques apply the principle of prostatectomy. There is an immediate channel after removal of the obstructing tissue: Holmium-YAG laser in Holmium laser resection of the prostate (HoLRP), high-power electrocautery thick loop resection with or without a feedback system in transurethral vaporisation-resection of the prostate (TUVRP), high-power electrocautery vaporisation in transurethral vaporisation of the prostate (TUVP), KTP laser in photoselective vaporisation of the prostate (PVP), and bipolar electrocautery loop resection in plasma kinetic resection. Transurethral incision of the prostate (TUIP) and TURP are considered the same: TURP is converted to TUIP when the prostate is found to be small.

A permanent stent is inserted to maintain a patent

prostatic urethral channel and requires a steady position and appropriate epithelialisation.

In addition to the questionnaire survey, past presentations at the annual scientific meetings of HKUA were analysed. Attention was focused on papers concerning BPH and surgical intervention. The intention was to determine the development of surgical techniques used to treat BPH in Hong Kong.

Results

A total of 32 peer-reviewed papers about BPH from past HKUA annual scientific meetings (1995-2002) were reviewed. They accounted for 25% of all presentations. All except one were from public hospital urology divisions. Sixteen (50%) discussed the experience of the various surgical interventions for BPH. Nearly all established surgical intervention techniques were reported (Table 1) and TURP was the usual reference standard.

Questionnaires were returned from 13 of the 14 public urology centres. Most centres reported interventional techniques that had been or were currently in use (Table 2). In 10 centres, TURP is the only routine surgical intervention for BPH. In the other two centres, HoLRP or TUVRP are also practised together with TURP. Transurethral vaporisation-resection of the prostate has replaced TURP as the only routine surgical intervention for BPH in one centre (Table 3). These centres have reviewed their results and reported their experience to support the change of practice. Some techniques are currently used only for selected cases (Table 4). At least three centres are practising open prostatectomy for large prostates. Selection criteria for individual techniques were not identified.

Many techniques have disappeared from current practice (Table 2). The most striking example is ILC. Ten of the 13 centres performed it previously probably because of the theoretical benefit of minimal invasiveness while inducing coagulation necrosis. It is now known that the technique produces a very modest benefit and initial voiding dysfunction.¹⁰ In addition to ILC, plasma kinetic resection, TUVP, and TUNA are no longer performed in public hospitals. Currently PVP is under study by one centre and transurethral ethanol ablation of the prostate in another (Table 2).

Discussion

Benign prostatic hyperplasia associated with LUTS is

Table 2. Results of questionnaire survey on the utility of various surgical modalities* in 13 public urological centres

Surgical intervention [†]	First appeared in the literature	No. of centres			
		Previously practised	Currently practised	No longer practised	Part of current study
TURP (TUIP included)	1920s	13	12	1	-
Permanent stent	1991	7	2	5	-
TUMT	1992	3	1	2	-
VLAP	1993	7	2	5	-
TUNA	1993	5	0	5	-
ILC	1994	10	0	10	-
HoLRP	1995	4	2	2	-
TUVP	1996	4	0	4	-
PVP	1997	2	0	1	1
TUVRP	1999	9	6	3	-
Plasma kinetic resection	2001	4	0	4	-
TEAP	2002	-	-	-	1

* Arranged in chronological order of appearance in the literature

[†] TURP denotes transurethral resection of the prostate, TUIP transurethral incision of the prostate, TUMT transurethral microwave thermotherapy, VLAP visual laser ablation of the prostate, TUNA transurethral needle ablation, ILC interstitial laser coagulation, HoLRP Holmium laser resection of the prostate, TUVP transurethral vaporisation of the prostate, PVP photoselective vaporisation of the prostate, TUVRP transurethral vaporisation-resection of the prostate, and TEAP transurethral ethanol ablation of the prostate

Table 3. Routine surgical interventions for benign prostatic hyperplasia in 13 public urology centres

Interventions for routine use*	No. of urology centres
TURP only	10
TURP and HoLRP	1
TURP and TUVRP	1
TUVRP only	1
Total	13

* TURP denotes transurethral resection of the prostate, HoLRP Holmium laser resection of the prostate, and TUVRP transurethral vaporisation-resection of the prostate

Table 4. Interventions for selected patients in 13 public urology centres

Intervention for selected cases*	No. of urology centres
TUMT	1
Permanent stent	2
VLAP	2
TUVRP	4
HoLRP	1
Open prostatectomy	>3

* TUMT denotes transurethral microwave thermotherapy, VLAP visual laser ablation of the prostate, TUVRP transurethral vaporisation-resection of the prostate, and HoLRP Holmium laser resection of the prostate

a common health problem of ageing males. It has a significant impact on the quality of life and sometimes the physical well-being of affected individuals. In an ageing population, the impact on an already stretched health economy is tremendous. Patients with complicated BPH certainly require surgical intervention. Although medical therapy is the mainstay treatment for symptomatic control of BPH, patients who respond

unsatisfactorily should not be denied the opportunity of effective surgery.

Transurethral resection of the prostate has replaced open prostatectomy since the introduction of the Hopkins rod lens system in the 1970s and has remained the gold standard of surgical intervention worldwide. In the past decade, many minimally invasive procedures have been introduced in the hope of minimising some of the problems associated with TURP such as haemostasis and TURP syndrome. Nonetheless, many of these procedures have not stood the test of time and have relatively quickly fallen out of favour. Procedures of TUMT, VLAP, and permanent prostatic urethral stents are performed only for selected cases by a few centres in Hong Kong.

Some techniques have disappeared from practice: ILC, TUNA, TUVP, and plasma kinetic resection. There are reasons for such phenomenon. Some techniques are ineffective although truly minimally invasive (TUMT) and serious unexpected complications have occurred. Patients may experience an initial prolonged period of voiding problems after some procedures (TUMT, ILC, TUNA, and VLAP). Initial set-up costs may be high (TUMT, PVP, VLAP, and HoLRP), although the energy source can be used in other disciplines (VLAP and HoLRP). Recurrent costs may also be considerable (PVP, VLAP, permanent stent, and ILC). The most important factor is that, to date, no technique has been found superior to TURP in terms of effectiveness versus morbidity.

The findings of this study are consistent with

worldwide opinion: TURP remains the gold standard of surgical intervention for BPH. Interventions in the form of prostatectomy are still regarded as the most efficient way to surgically treat BPH. It is interesting to note that TUVRP has replaced TURP as a routine surgical intervention in one centre. Techniques of TUVRP or HoLRP together with TURP are now routinely practised by others. It is apparent that these urology centres have tried the techniques, reviewed the results, and reported the experience before introducing them into routine practice.^{11,12}

Transurethral vaporisation-resection of the prostate may be regarded as a variant of TURP because the technique is very similar. In TUVRP, high energy (with or without a feedback system) is delivered through a thick cutting loop so as to decrease bleeding and other potential intra-operative complications of TURP. There may be some installation cost but the recurrent costs compare favourably with TURP.

High-power Holmium-YAG laser for HoLRP is available in many public hospitals and its use for prostatic resection does not require additional cost. The advantage of HoLRP is that bleeding is reduced compared with TURP, especially for large prostates. Since the irrigating fluid is normal saline, TURP syndrome is not a problem. However the learning curve is steep.

Although open prostatectomy has largely been replaced by TURP, it is still practised in some public hospitals for very large prostates. Nonetheless, some centres safely perform transurethral resection in the form of TURP, TUVRP, or HoLRP on huge prostates. Young urologists are now much more proficient at performing TURP than open prostatectomy for large prostates. The choice of surgical procedure is a technical decision based on prostate size and the patient's co-morbidities.³

Conclusion

Surgical intervention is a realistic option for treating LUTS. In BPH, prostate resection remains the surgical treatment of choice for urologists in Hong Kong, with TURP the gold standard. Alternative treatments have failed to replace TURP. Some centres

in Hong Kong perform TUVRP and HoLRP as a routine procedure, and they have reviewed and reported their experience. Open prostatectomy for huge prostates continues to be performed. New interventions should be cautiously and thoroughly evaluated before being introduced into routine practice.

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Appendix.

Questionnaire of surgical techniques used to treat benign prostatic hyperplasia

	Previously done but stopped				Currently doing			
	For service		For trial before use	As clinical study	For service		For trial before use	As clinical study
	Routine use	Selected case			Routine use	Selected case		
TURP / TUIP								
Permanent stent								
TUMT								
VLAP								
TUNA								
ILC								
HoLRP								
TUVP								
PVP								
TUVRP								
Plasma kinetic resection								
Others:								

Please tick the appropriate box

- TURP: Transurethral Resection of Prostate
- TUIP: Transurethral Incision of Prostate
- TUMT: Transurethral Microwave Thermotherapy
- VLAP: Visual Laser Ablation of Prostate
- TUNA: Transurethral Needle Ablation of Prostate
- ILC: Interstitial Laser Coagulation of Prostate
- HoLRP: Holmium Laser Resection of Prostate
- TUVP: Transurethral Vaporisation of Prostate
- PVP: Photoselective Prostatectomy
- TUVRP: Transurethral Vaporization-Resection of Prostate