

Diagnosis and Treatment of Primary Bladder Neck Obstruction in Young Men

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ABSTRACT

Primary bladder neck obstruction (PBNO) is a videourodynamic diagnosis in which the bladder neck does not open completely or appropriately during micturition. This article describes its epidemiology and typical presenting symptoms and signs. The diagnosis of this condition is often missed for several years in many cases. Although the true prevalence is difficult to ascertain, studies in young men with chronic voiding dysfunction show a marked prevalence of the condition. The treatments available are pharmacologic and surgical. The mainstay of medical treatment for PBNO has been α -blockers. Successful medical treatment is more likely to be achieved in men who are urodynamically obstructed. The most effective treatment has been surgical incision of the bladder neck. In the future, to truly assess the effects of the therapy, randomized, placebo-controlled studies and defined outcome measures are necessary. *Key words:* adrenergic alpha-antagonists, bladder neck obstruction, urodynamics

INTRODUCTION

Primary bladder neck obstruction (PBNO), first described by Marion [1], is a condition in which the bladder neck fails to open sufficiently during voiding, resulting in a weak urinary stream without other anatomic obstructions. PBNO, diagnosed by sophisticated videourodynamic study (VUDS), has been recognized as one of the important causes of chronic voiding dysfunction in young men [2-5]. The exact pathophysiology of PBNO is not fully understood. Complex sympathetic nervous system dysfunction of bladder neck smooth muscle, e. g. increases in the neuropeptide Y-immunoreactive nerves, has been suggested to be the cause of PBNO [6]. In addition, some patients with PBNO have over-extension of the functional external sphincter to the bladder neck. Inadequate relaxation of the external striated sphincter during volitional micturition may cause bladder neck dysfunction [7].

EPIDEMIOLOGY

The true incidence and prevalence of PBNO in men are unknown. Kaplan et al reported a 54% incidence of PBNO in a retrospective study of 137 men younger than 50 years of age with chronic voiding

dysfunction [2]. Nitti et al found a 47% incidence of PBNO in 85 men between the ages of 18 and 45 years with lower urinary tract symptoms (LUTS) [3]. In a prospective study of 90 young men with chronic (LUTS) and low uroflow, Wang et al found a 41% incidence of PBNO [4].

CLINICAL PRESENTATION

As in older men with benign prostatic hypertrophy (BPH), young men with PNBO can present with a variety of symptoms including irritation, obstruction or a combination of both. From our prospective urodynamic database of 90 men between the age of 18 and 50 years with LUTS and low flow, 37 (41%) had PBNO. Their mean age was 37.7 years and their average international prostate symptom score (IPSS) was 18.1. Their mean storage and voiding scores were 10.1 and 8.1, respectively. Forty-three percent of patients with PBNO had associated idiopathic detrusor overactivity. One patient had an initial presentation of acute urinary retention. Two patients had a history of bladder stones and three patients had a history of urinary tract infection [4].

Although young men with chronic LUTS are not uncommon, they are often misdiagnosed as having chronic prostatitis, prostatodynia or psychogenic voiding dysfunction because of negative findings on physical and laboratory exams [2]. However, Nitti et al demonstrated that low uroflow and high voiding symptom scores were useful in deciding which patients to evaluate with VUDS [3]. Wang et al recommended using VUDS to make an accurate diagnosis in young men with chronic LUTS and low uroflow [4]. In addition, we suggest that urodynamic study and voiding cystography could be separately performed for diagnosis in hospitals without VUDS facilities.

DIAGNOSIS

Primary bladder neck obstruction is a videourodynamic diagnosis. The keys to the diagnosis of PBNO are narrowing only at the vesical neck on fluoroscopic voiding cystourethrogram (Fig. 1), a relaxed external sphincter on electromyography during voiding and no distal urethral obstruction [2-4]. Associated findings include sustained high detrusor contraction during voiding and low flow. However, maximum detrusor pressures have ranged greatly from 20 to 200 cmH₂O in various series of patients with PBNO [2-4,8,9]. Recently, Nitti et al categorized PBNO into three distinct types: classic high-pressure low flow, normal-pressure low flow with narrowing at the bladder neck, and delayed opening of the bladder neck [3]. Cystoscopy may be helpful in finding other urethral problems, but has little to no role in confirming the diagnosis of PBNO. It is important to differentiate the diagnosis of

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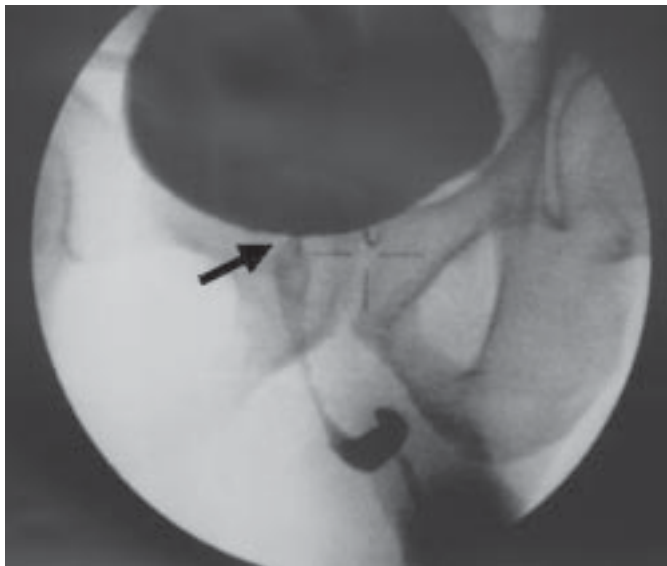


Fig. 1. Fluoroscopic image demonstrated narrowing at the bladder neck (arrow) as compared to the prostatic urethra.

dysfunctional voiding from PBNO because the treatment is different. Dysfunctional voiding is a dyscoordination between the detrusor and the pelvic floor/external sphincter complex during micturition in neurologically normal individuals [10]. Wang et al found that dysfunctional voiding was the most common diagnosis in young men with LUTS and low uroflow [4].

MEDICAL TREATMENT

It is well known that the bladder neck and prostate are rich in α -adrenergic receptors. Thus α -blockers have been the mainstay of medical treatment for PBNO. However treatment results with α -blockers in PBNO have varied greatly. Most studies have been small, nonrandomized and noncontrolled and the types and dosages of drugs have not been consistent. Mishra and Trockman demonstrated beneficial effects of α -blockers in PBNO [9,11], while Kaplan and Norlen did not observe these benefits [2,12]. Recently, Nitti et al reported that 10 (58%) of 17 men with PBNO had significant improvement in IPSS with α -blockers [3]. In a prospective study, Yang et al showed that 54% of men with PBNO who received doxazosin for 3 months had successful treatment results and men with positive responses had higher pre-treatment detrusor pressures and lower maximal flow rates than did nonresponders. Successful treatment was more likely to be achieved in men who were urodynamically obstructed [5].

SURGICAL TREATMENT

Although α -blockers are effective and safe for treating young men with PBNO [4,5], it is unusual for these young men to continue using α -blockers with time [3]. The most effective treatment of PBNO is transurethral incision of the bladder neck. In 1973, Turner-Warwick et al introduced the concept of bladder neck incision [13]. In 1986, Norlen et al reported encouraging results with bladder neck incision in 23 patients with unsuspected proximal urethral obstruction [12]. In 1994, Kaplan et al demonstrated that 34 young patients with PBNO were mis-

diagnosed with chronic nonbacterial prostatitis [2]. Thirty of 31 (97%) patients who accepted transurethral incision of the bladder neck showed marked improvement in both voiding symptoms and uroflow. In 1996, Trockman et al reported a 87% overall improvement in symptoms after transurethral incision of the bladder neck [9]. In 2002, Nitti et al reported that after failure with or intolerance to α -blockers, 73% of young men with functional bladder neck obstruction showed significant improvement after bladder neck incision [3].

The major concern in classic bilateral bladder neck incision is postoperative retrograde ejaculation, which may occur in 27%-100% of patients having the procedure [9,12]. Retrograde ejaculation is less likely to occur in unilateral incision or when part of the supramontanal tissue is preserved in the bilateral bladder neck incision. Kaplan et al and Webster et al reported that all the patients retained antegrade ejaculation after unilateral incision of the bladder neck [2,14]. Yang et al reported that all patients had antegrade ejaculation 2 years after modified bladder neck incision [15].

Bladder neck incision seems not affect sexual function. Trockman et al demonstrated that there was no new erectile dysfunction after transurethral incision of the bladder neck [9]. Yang et al used international index of erectile function (IIEF) questionnaires to quantitatively investigate pre- and postoperative sexual function in patients who underwent trans-urethral incision of the bladder neck. The pre- and postoperative IIEF scores did not change significantly [15]. The preservation of antegrade ejaculation may be one of the important factors in maintaining and achieving sexual satisfaction after surgery.

CONCLUSIONS

Primary bladder neck obstruction is a common videour-dynamic diagnosis in young men with chronic voiding dysfunction. Treatment alternatives include observation with continued follow-up, α -blockers, and transurethral incision of the bladder neck. The most effective treatment has been surgical incision. Retrograde ejaculation or sexual dysfunction may be avoided by using a modified incision of the bladder neck with preservation of the supramontanal prostatic tissue.

In the meantime, there is still much to learn about the natural history and etiology of PBNO. Uniform diagnostic criteria should be developed to help predict response to treatment. To truly assess the effects of pharmacotherapy, randomized, placebo-controlled studies with adequate dose titration and defined outcome measures are necessary.

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14:00-14:30	Neurophysiology of micturition: GYN surgery & urethrovaginal (UV) function	陳進典
14:30-15:00	Is simple hysterectomy causing UV dysfunction?	龍震宇
15:00-15:30	Voiding dysfunction after radical hysterectomy: diagnosis & management	郭漢崇
15:30-15:45	Q&A	
15:45-16:00	Coffee Break	
	Moderator	陳慧毅 / 孫茂榮
16:00-16:30	Planning the concomitant treatment of UV dysfunction with pelvic reconstructive surgery	黃寬慧
16:30-17:00	The management of unsatisfactory anti-incontinence surgeries	盧佳序
17:00-17:30	Management of OAB symptoms before/after GYN surgery	王國華
17:30-17:45	Q&A	
17:45-17:50	Closing remarks	蘇聰賢
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