Scope
Volume 15 Number 03 September 2025

Bladder Neck Incision in Primary Bladder Neck Obstruction in Young Male: A Case Series

[1]Dr. Sauvik Debnath, [1]Dr. Partha Pratim Das, [1]Dr. MD Dawood Khan, [1]Dr. Manas Sasmal
[1]Department of Urology, Nil Ratan Sircar Medical College, Kolkata, India

Corresponding Author: Sauvik Debnath

Abstract

Background: Primary bladder neck obstruction (PBNO) is an under-recognized cause of bladder outlet obstruction (BOO) in young men, characterized by failure of the bladder neck to open during voiding without other anatomic causes. Patients may present with voiding and/or storage symptoms. While alpha-blockers are the first-line therapy, surgical intervention with bladder neck incision (BNI) is indicated in refractory cases. Major concerns with BNI are retrograde ejaculation and incontinence. We report our single-center experience. **Methods**: This prospective study was conducted at Nil Ratan Sircar Medical College, Kolkata, over 18 months. Eleven men aged ≤50 years with videourodynamically confirmed PBNO were included. Patients with benign prostatic enlargement, urethral stricture, neurogenic bladder, underactive detrusor, or prior alpha-blocker therapy were excluded. Preoperative evaluation included history, clinical examination, blood tests, cystoscopy, uroflowmetry, urodynamic studies, and ultrasonography. Surgical criteria were Qmax <10 ml/s, bladder contractility index (BCI) >100, and cystoscopic evidence of high bladder neck. All underwent bilateral BNI at 5 and 7 o'clock positions under regional anesthesia. Foley catheter was removed after 5–7 days, and follow-up uroflowmetry and ultrasound were performed. Retrograde ejaculation was confirmed by post-ejaculatory urine analysis. **Results**: Mean age was 34 years. Preoperative mean Qmax was 6.6 ml/s. Ten patients (91%) had significant postoperative improvement, with mean Qmax rising to 22.18 ml/s (average gain: 14 ml/s). One patient required redo BNI due to incomplete incision. No incontinence occurred. Retrograde ejaculation was observed in one patient (9%). **Conclusion**: BNI is a safe and effective treatment for PBNO in young men, with excellent symptomatic and objective outcomes. Complication rates were low, with retrograde ejaculation occurring less frequently than in prior reports and no incontinence. Larger studies are needed to confirm these findings.

Keywords: Primary bladder neck obstruction, Bladder neck incision, Young male, Retrograde ejaculation, Uroflowmetry

Introduction

Primary bladder neck obstruction (PBNO) is characterized by inadequate opening of the bladder neck during voiding, leading to urinary outflow resistance in the absence of anatomical obstruction such as benign prostatic enlargement, urethral stricture, or neurological dysfunction. The condition was first described in men by Marion in 1933 [1]. Subsequently, Turner-Warwick and colleagues (1973) highlighted the importance of urodynamic studies and voiding cystourethrography for the diagnosis of bladder neck dysfunction in men younger than 50 years with longstanding lower urinary tract symptoms (LUTS) [2]. Norlen and Blaivas (1986) further identified vesical neck obstruction in young and middle-aged men, many of whom were previously misdiagnosed with prostatitis, neurogenic bladder, or psychogenic voiding dysfunction [3]. PBNO in women was reported in the mid-1980s, broadening its clinical spectrum [4].

The exact pathophysiology remains unclear. A normal voiding cycle begins with relaxation of the external urethral sphincter, following which bladder pressure equates or surpasses bladder neck pressure, allowing urine flow [5]. In PBNO, bladder neck pressure remains abnormally high relative to intravesical pressure. Several mechanisms have been proposed, including excess striated muscle tone extending from the external sphincter to the bladder neck [6], and heightened sympathetic nervous system activity causing functional narrowing [7].

Given the diagnostic challenges and variable treatment outcomes, management of PBNO continues to evolve. Bladder neck incision (BNI) has been considered an effective surgical option in selected patients, though complications such as retrograde ejaculation remain a concern [8–10]. This study evaluates the outcomes of BNI in young male patients with PBNO managed at a tertiary care center in Eastern India.

Methodology:

This prospective study was conducted in the Department of Urology, Nil Ratan Sircar Medical College, Kolkata, over an 18-month period from January 2023 to June 2024. 11 male patients with PBNO (proven by video urodynamics studies and excluding other causes of bladder outflow obstruction), age <=50 yrs has been selected. Patients with other causes of bladder outlet obstruction (BOO) like benign prostatic hyperplasia (BPH), neurogenic bladder, under-active bladder (BCI <100), urethral stricture has not been included in our study. Patients who are already on alpha blockers or who have history of erectile dysfunction are also excluded.

After detailed history and clinical examinations, all patients underwent blood investigations including routine blood tests and renal function tests. All of them underwent preoperative routine cystoprostatic examination to rule out other causes of bladder outflow obstruction (BOO). All of them underwent routine urodynamic studies (UDS) to exclude possibilities of under-active bladder. Criteria for selecting patients for BNI:

- Poor flow as described by uroflowmetry study (Qmax <10 ml/s)
- Normal bladder contractility; bladder contractility index (BCI) >100 in UDS

- Cystoscopic criteria-
- No urethral stricture
- No prostatomegaly
- Signs of BOO like trabeculations, diverticula etc
- High bladder neck: Bladder cavity could not be seen when we place 30 degree telescope at verumontanum and looking upwards.

Imaging: ultra sound kidney-ureter-bladder region indicate bilateral or unilateral hydroureteronephrosis (HDUN) with bladder changes trabeculations, sacculations, diverticula and thick bladder wall) suggestive of bladder out flow obstruction and high post-void residue (PVR >100 ml)

After all investigations all patients underwent bladder neck incision (BNI) at 5 and 7 O ' clock position under regional anaesthesia with the help of either laser or mono-polar diathermy. All patients who had undergone BNI, in post operative period Foley catheter kept in place for 5-7 days and then removed. After 1 week of removal of catheter an uroflowmetry has been done to note the voided volume as well as the maximum flow rate (Qmax) and ultrasonography for assessment of PVR. In case of any complications, the patients were investigated and managed accordingly. If patient develop retrograde ejaculation, then it was confirmed by post-ejaculatory urine analysis for spermatozoa.

Results:

We reviewed the results of BNI in 11 patients 50 yrs or less with PBNO presented at our department in last 18 months. Mean age was 34 yrs. One patient had history of AUR. The mean maximum flow rate (Qmax) is 6.6 ml/s. None of them has any history of urethral instrumentation. Preoperative cystoscopic examinations reveal high bladder neck in all patients and also the UDS shows normal detrussor function as evident by BCI >100.

10 patients had improved postoperative urinary flow as evidenced by the improvement in Qmax. One patient has failed to void after BNI and re-catheterisation has been done. Average postoperative Q max improvement was 14 ml/s with an average postoperative flow of 22.18 ml/s(+/- 5.4).

Regarding complications of the procedure, none of them develop incontinence. One patient has developed retrograde ejaculation as evident from the history. We later confirm it by post-ejaculatory urine analysis. One patient had no improvement in urinary flow. On

further evaluation it was found that BNI has been done incompletely and planned for a re-do surgery.

Discussion

The etiology of PBNO remains debated, with structural, congenital, and neurological theories proposed. Early descriptions by Marion [1] suggested fibrous narrowing, while Leadbetter and Leadbetter [6] described mesenchymal maldevelopment at the bladder neck. Neurological dysfunction via sympathetic overactivity has also been implicated [7]. PBNO is more commonly diagnosed in males [3].

Historically, bladder neck obstruction in children was treated with Y-V plasty or vesicostomy [11]. In adults, medical therapy with alpha-blockers has been used, but surgical treatment remains the mainstay in refractory cases. BNI, introduced in adults by Turner-Warwick in 1973 [2], has been widely adopted. Bilateral BNI, however, is associated with retrograde ejaculation, with reported incidence around 21% [12]. Unilateral BNI has been reported to preserve antegrade ejaculation [13].

In our series, the incidence of retrograde ejaculation was 9%, lower than previously reported. No patient developed incontinence. BNI provided excellent functional outcomes with significant improvement in urinary flow. Our findings support its use in carefully selected patients, particularly those with upper tract changes due to chronic obstruction [9,10].

Conclusion:

Primary bladder neck obstruction in young men presents a diagnostic and therapeutic challenge. In carefully selected patients, bilateral bladder neck incision is a safe and effective intervention, offering substantial improvement in urinary flow with minimal risk of incontinence. Retrograde ejaculation remains a potential but relatively uncommon complication. BNI may be considered a primary option in patients with significant PBNO who have completed their families. Larger studies are required to establish long-term safety and efficacy.

Limitations :

This was a single-centre study with a small sample size and relatively short follow-up. Larger, multi-centric prospective studies are needed, particularly in resource-limited settings, to refine follow-up protocols and management strategies.

Ethical Approval

This study was conducted in accordance with the principles of the Declaration of Helsinki. Informed consent was obtained from all participants before inclusion in the study.

Funding: No financial support or funding was received for this study.

Abberiviations:
PBNO- Primary Bladder Neck Obstructio
BOO- Bladder Outlet Obstruction
BNI- Bladder Neck Incision
UDS- Urodynamic Study
HDUN- Hydroureteronephrosis

Conflicts of Interest: The authors declare no conflicts of interest.

Acknowledgements
We thank *Prof(Dr.) Tapan Kumar Mandal*, Head of Department, Department of Urology, Nil Ratan Sircar Medical College & Hospital and *Dr. Uday Sankar Chatterjee*, Paediatric Urologist, Park Clinic, Kolkata, India, for his valuable guidance.

References :

1. Turner-Warwick R, Whiteside CG, Worth PHL, et al. A urodynamic view of the clinical problems associated with bladder neck dysfunction. Br J Urol. 1973;45:44–59.
2. Norlen LJ, Blaivas JG. Unsuspected proximal urethral obstruction in young and middle-aged men. J Urol. 1986;135:972–976.
3. King AB, Goldman HB. Bladder outlet obstruction in women: functional causes. Curr Urol Rep. 2014;15:436.
4. Tanagho EA, Miller ER, Meyers FH, Corbett RK. Observations on the dynamics of the bladder neck. Br J Urol. 1966;38:72–84.
5. Leadbetter GW, Leadbetter WF. Diagnosis and treatment of congenital bladder neck obstruction in children. N Engl J Med. 1959;260:633.
6. Crowe R, Noble J, Robson T, et al. Increased neuropeptide Y in bladder neck nerves of men with dyssynergia. J Urol. 1995;154:1231–1236.
7. Yalla SV, Resnick N. Initiation of voiding in humans: urethral sphincter responses. J Urol. 1997;157:590–595.
8. Casale AJ. Posterior urethral valves. In: Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds). Campbell-Walsh Urology. 10th ed. Philadelphia: Elsevier; 2012:3589–3610.
9. Yang Q, Peters TJ, Donovan JL, Wilt TJ, Abrams P. Transurethral incision vs resection of prostate: systematic review. J Urol. 2001;165:1526–1532.
10. Kochakarn W, Lertsithichai P. Unilateral incision for PBNO: symptom relief and fertility preservation. World J Urol. 2003;21:159–162.
11. Abdel-Basir SM. Bladder neck resection with preservation of antegrade ejaculation: Basir technique. J Endourol. 2003;17:109–111.

Table 1. Preoperative and Postoperative Qmax

Patient No.	Preoperative Qmax (ml/s)	Postoperative Qmax (ml/s)
1	6	22
2	7	25
3	5	20
4	8	26
5	6	24
6	7	23
7	6	7
8	8	26
9	5	22
10	7	24
11	6	25

Table 2. Postoperative Complications

Complication	Number of Patients
Retrograde Ejaculation	1
Incomplete Incision / Re-catheterization	1
Incontinence	0

Figure 1- Management Flow Chart

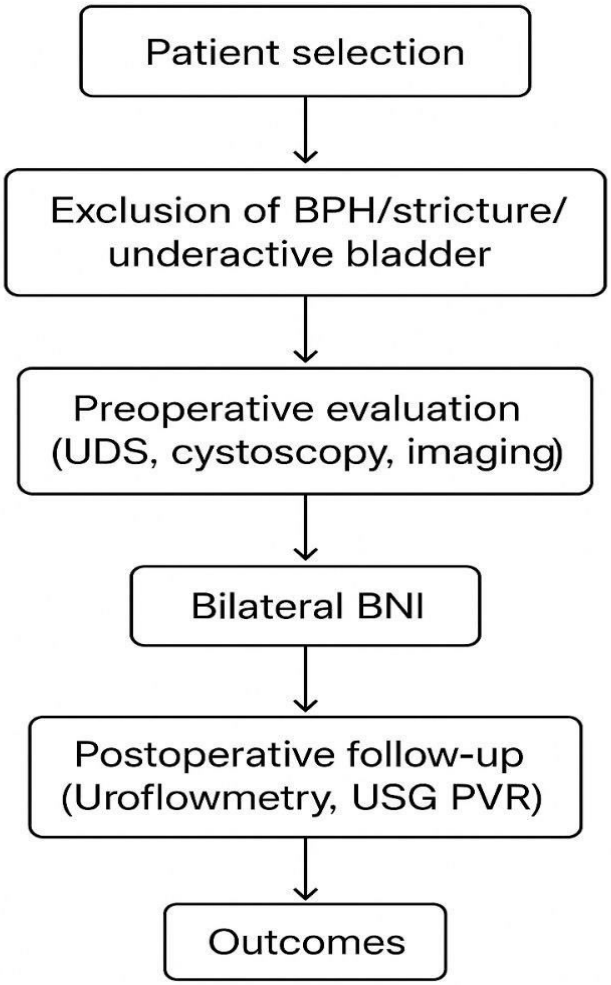

Figure 2- Comparision of Maximum Flow Rate following BNI

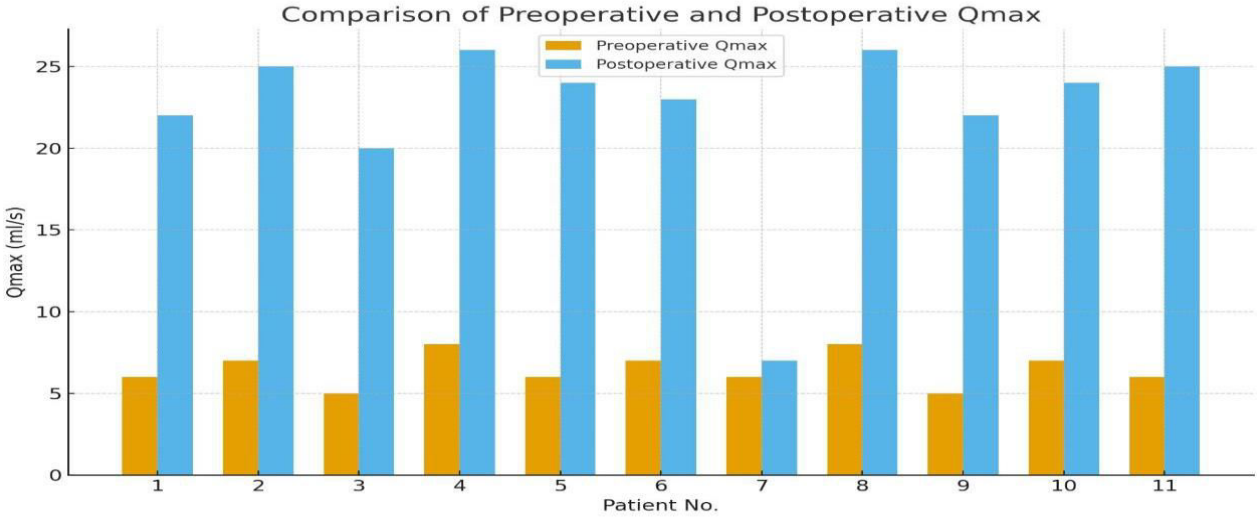

Figure 3- Study summary.