

Research Article

Outcomes of Transurethral Deep Lateral Incision in Bladder Neck Contractures

Mesane Boynu Darlıklarında Transüretral Derin Lateral İnsizyonun Sonuçları

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Abstract

Aim: Bladder neck contractures (BNC) are a significant complication following prostate surgeries. The aim of this study is to evaluate the outcomes of transurethral deep lateral incision without intralesional agents in the management of recurrent BNC and to compare the results with existing literature.

Material and Method: A retrospective analysis of 12 patients who underwent transurethral deep lateral incision for recurrent BNC between January 2023 and June 2024 was performed. Data collected included demographic characteristics, surgical details, and postoperative outcomes. Success was defined as the absence of dilation requirements and a lack of obstructive uroflowmetric patterns within 6 months. Complications were classified according to the modified Clavien-Dindo system.

Results: The mean age of the patients was 68.25 years. Etiologies included radical prostatectomy (5 patients), transurethral resection of the prostate (5 patients), and combined radical prostatectomy with radiotherapy (2 patients). The mean operative duration was 32.67 minutes, and the overall success rate was 83.3%. Two patients (16.6%) experienced recurrence requiring additional intervention. Postoperative incontinence was observed in 16.6% of cases and was managed conservatively. No intralesional agents were used, and the procedure achieved comparable success rates to more complex techniques with fewer associated complications.

Conclusion: Transurethral deep lateral incision is an effective and minimally invasive technique for managing recurrent BNC, offering high success rates without the need for intralesional agents. This approach can be considered a primary treatment option before resorting to more invasive surgical methods.

Keywords: Bladder neck contracture, Deep lateral incision, Transurethral incision

Öz

Amaç: Mesane boynu kontraktürleri (MBK), prostat ameliyatlarından sonra görülen önemli bir komplikasyondur. Bu çalışma, tekrarlayan MBK yönetiminde intralezyonel ajanlar kullanılmadan gerçekleştirilen transüretral derin lateral insizyonun sonuçlarını değerlendirmeyi ve mevcut literatürle karşılaştırmayı amaçladı.

Gereç ve Yöntem: Ocak 2023 ile Haziran 2024 arasında tekrarlayan mesane boynu kontraktürü (MBK) nedeniyle transüretral derin lateral insizyon geçiren 12 hastanın retrospektif analizi gerçekleştirildi. Toplanan veriler demografik özellikler, cerrahi detaylar ve postoperatif sonuçları içeriyordu. Başarı, 6 ay içinde dilatasyon gereksiniminin olmaması ve obstrüktif üroflowmetrik desenlerin bulunmaması olarak tanımlandı. Komplikasyonlar, modifiye Clavien-Dindo sistemi kullanılarak sınıflandırıldı.

Bulgular: Hastaların ortalama yaşı 68,25 yıl idi. Etiyolojiler arasında radikal prostatektomi (5 hasta), transüretral prostat rezeksiyonu (5 hasta) ve radyoterapi ile kombine radikal prostatektomi (2 hasta) yer almaktaydı. Ortalama operasyon süresi 32,67 dakika olup, genel başarı oranı %83,3 olarak bulundu. İki hasta (%16,6) ek müdahale gerektiren rekürrens yaşadı. Postoperatif inkontinans vakaların %16,6'sında gözlemlendi ve konservatif yöntemlerle yönetildi. İntralezyonel ajanlar kullanılmadı ve prosedür, daha karmaşık tekniklerle karşılaştırılabilir başarı oranlarına, ancak daha az komplikasyona sahip olarak gerçekleştirildi.

Sonuç: Transüretral derin lateral insizyon, tekrarlayan mesane boynu kontraktürünün yönetiminde etkili ve minimal invaziv bir tekniktir. İntralezyonel ajanlara ihtiyaç duymadan yüksek başarı oranları sunar. Bu yaklaşım, daha invaziv cerrahi yöntemlere başvurulmadan önce birinci basamak tedavi seçeneği olarak değerlendirilebilir.

Anahtar Kelimeler: Mesane boynu kontraktürü, Derin lateral insizyon, Transüretral insizyon

INTRODUCTION

Bladder neck contractures are observed in 1-12% of patients following transurethral prostate surgeries and in 0.5-17.5% of men undergoing radical prostatectomy (1). Treatment options include urethral dilation, self-catheterization, endoscopic interventions, and reconstructive surgeries (2). Additionally, antifibrotic agent injections can be utilized to prevent recurrence (3).

In this study, we present our clinical experience in the surgical management of recurrent bladder neck contractures using a standard endoscopic approach with transurethral deep lateral incision, without the use of intralesional agents. The outcomes of this method were evaluated and compared with the existing literature

MATERIALS AND METHODS

Following institutional ethical committee approval, a retrospective review was conducted, evaluating 12 patients who underwent transurethral deep lateral incision for bladder neck contracture between January 2023 and June 2024. All patients had a prior diagnosis of bladder neck contracture and had been previously treated with endoscopic methods other than lateral deep incision. Patients with concomitant urethral stricture were excluded from the study.

Data collected included age, comorbidities, post-void residual urine volume, previous surgeries, prior dilations, energy modality used for incision, type of incision, and operative duration. Early postoperative complications were assessed within 30 days and classified according to the modified Clavien-Dindo classification. Late complications were evaluated for up to 6 months. Success was defined as the absence of a need for urethral dilation within 6 months and the lack of an obstructive pattern in uroflowmetric assessments.

Demographic characteristics and clinical parameters of the patients were summarized using descriptive statistics. For comparisons of baseline and outcome variables, the paired t test and Shapiro-Wilk test were used. Statistically significant differences were assumed at a P value lower than .05. IBM SPSS 23.0 statistical package programs were used in the analysis of the data.

All information presented in the study was obtained retrospectively from the hospital registry system. Ethics

committee approval was received from Aksaray University (February 13, 2025, Ethics approval number: 2025/36).

Procedure

All surgeries were performed by a single urology specialist. Under general or spinal anesthesia, patients were placed in the lithotomy position and evaluated with cystourethroscopy, during which a guidewire was inserted to maintain lumen access. Initially, the bladder neck was incised at the 3 o'clock and 9 o'clock positions using a cold knife. Subsequently, a deep incision was made at the same positions using a 26-Fr resectoscope with a Collings knife, applying 30-50 watts of energy. The incision was extended to the perivesical adipose tissue (Figure 1).

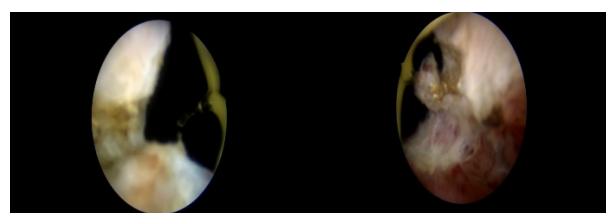


Figure 1. Bladder neck incision at the 3 o'clock and 9 o'clock positions

No local antifibrotic agents, such as mitomycin C or steroids, were injected. The procedure was concluded after achieving adequate lumen patency, allowing the resistance-free passage of the 26-Fr resectoscope, and ensuring hemostasis. A 22-Fr three-way catheter was then inserted to complete the procedure.

RESULTS

A total of 12 patients were included in the study. The mean age of the patients was 68.25 years (range: 61-77). Regarding the etiology of bladder neck contracture, it was observed that 5 cases developed after radical prostatectomy, 5 cases after transurethral resection of the prostate, and 2 cases had a history of both radical prostatectomy and subsequent radiotherapy. Additionally, 3 patients had a history of radiotherapy.

Ten of the patients presented after unsuccessful prior interventions for bladder neck contracture, either at our center or elsewhere. These 10 patients had a history of transurethral resection and incisions performed with a cold knife. Among these, 7 had undergone urethral dilation postoperatively. The mean duration of catheterization was 3.2 days (range: 2-5). The overall success rate was 83.3%.

One patient underwent repeat transurethral incision at 6 months postoperatively, with subsequent improvement in

symptoms. Another patient underwent urethral dilation after the procedure, but symptoms persisted, leading to bladder neck reconstruction surgery at another center. The urinary incontinence rate was 16.6%, and these cases were managed successfully with exercise and medical therapy. Detailed findings are summarized in Table 1.

Table-1. Baseline characteristics and perioperative and follow-up results of patients

Patients	N:12
Age (mean)	68.25
Etiology	
Radical prostatectomy	5
Radical prostatectomy + Radiation	2
Transurethral procedure for benign prostatic hyperplasia	5
Previous procedure for BNC	
Cold knife incision	10
Transurethral procedure	10
Urethral dilation	7
Operative time (minutes)	32.67 ± 11.50
Bladder irrigation time (hours)	20.41 ± 5.3
Postoperative catheter duration (days)	3.2 (2-5)
Postoperative hospital stays (days)	2.00 (1.00-4.00)
Success rate (%)	%83.3
30- days complications, n (%)	2 (% 16.6)
Urinary tract infection (Clavien 2)	1 (% 8.3)
Continuous bladder washout for persistent haematuria (Clavien 2)	1 (%8.3)
Delayed complications (up to 6 months), n (%)	2 (%16.6)
Urethroplasty for recalcitrant bladder neck stenosis	1 (%8.3)
Bladder neck stenosis, repeat incision	1 (% 8.3)
Overall postoperative incontinence, n (%)	2 (% 16.6)
Follow up (months)	11.2 ± 6.7

The uroflowmetric measurements and symptom scores recorded in the preoperative and postoperative periods are summarized in Table 2.

Table – 2. Data at baseline and 3- and 6-months after surgery.

Variable	Mean ± SD	Mean Difference	P value
Ipss Baseline	25.08 ± 2.35		
Ipss - 3. months	14.83 ± 3.27	10.25 ± 2.26	P<0.001
Ipss - 6. months	14.58 ± 2.81	10.5 ± 1.67	P<0.001
Qmax Baseline (mL/sec)	5.91 ± 1.83		
Qmax - 3. months	21.28 ± 4.48	15.36 ± 3.37	P<0.001
Qmax - 6. months	19.6 ± 4.47	13.68 ± 3.54	P<0.001
Pvr baseline (mL)	73.08 ± 25.5		
Pvr - 3. months	39.16 ± 14.89	-33.91 ± 13.76	P<0.001
Pvr - 6. months	27.08 ± 9.4	-46 ± 20.87	P<0.001

IPSS = International Prostate Symptom Score, Qmax = Peak Urinary Flow, Pvr = Post Voiding Residual volume

DISCUSSION

Bladder neck contracture (BNC) is a serious complication that can occur following surgeries for benign prostatic hyperplasia or prostate cancer. It typically develops within the first two months after the transurethral resection (4). Although the diagnosis of BNC can take longer, a study has shown that half of the patients presenting with symptoms of BNC do so within six months (5). The mechanisms behind bladder neck contracture following transurethral prostate resection remain unclear. However, excessive resection and fulguration of the bladder neck are likely contributing factors (6). Treatment options for BNC include urethral dilation with or without self-dilation, cold knife incision, transurethral resection, and reconstructive surgery. Additionally, intralesional mitomycin C injections following incision have demonstrated high success rates. However, these injections carry the risk of significant complications such as anaphylaxis, extravasation, or bladder neck necrosis (7). On the other hand, urethral dilation can lead to complications like false passage formation, urethral pain (urethralgia), and urinary tract infections (8). In our patient series, we observed a high success rate of 83.3% using the standardized procedure of transurethral deep lateral incision without the need for intralesional injections. This approach not only achieved comparable success rates to those reported in the literature but also avoided additional complications and costs associated with intralesional therapies.

In cases of recurrent bladder neck contractures, open reconstructive surgeries and transurethral lateral incision techniques can be utilized. A study demonstrated that a second incision procedure was successful in approximately half of the patients (9). In our series, one patient underwent reconstructive surgery, a more invasive option. For refractory cases where endoscopic methods fail, techniques such as YV-plasty and TV-plasty are recommended (10). These methods can now be performed robot-assisted laparoscopically, offering a minimally invasive alternative. A study reported a success rate of over 80% for robot-assisted laparoscopic YV-plasty. However, these procedures are not considered first-line treatments and are generally reserved for refractory cases (11).

The limitations of this study include its retrospective nature, and the relatively small number of patients included in the follow-up. Additionally, the short follow-up duration represents another limitation.

CONCLUSION

Most patients who develop bladder neck contractures following prostate surgeries can be treated with the transurethral bilateral deep lateral incision technique alone, without the need for intralesional drug injections or intermittent self-dilation. Lateral incision is one of the minimally invasive treatment methods with a high success rate for non-obliterative bladder neck contractures. This technique can be offered to patients after explaining the risks of urinary incontinence and recurrence, and it can be considered prior to more invasive treatment options.

Declarations

Ethics Committee Approval: Ethics committee approval was obtained from Aksaray University Health Sciences Scientific Research Ethics Committee (Date: February 13, 2025, Ethics approval number: 2025/36). This study was conducted according to the principles of the Declaration of Helsinki.

Authorship Contributions: Concept: MB, SG, VB. Design: MB, SG, VB. Data Collection or Processing: MB, SG. Analysis or Interpretation: VB, And Literature Search: MB, Writing: VB and MB. All authors approved the final version of the manuscript.

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