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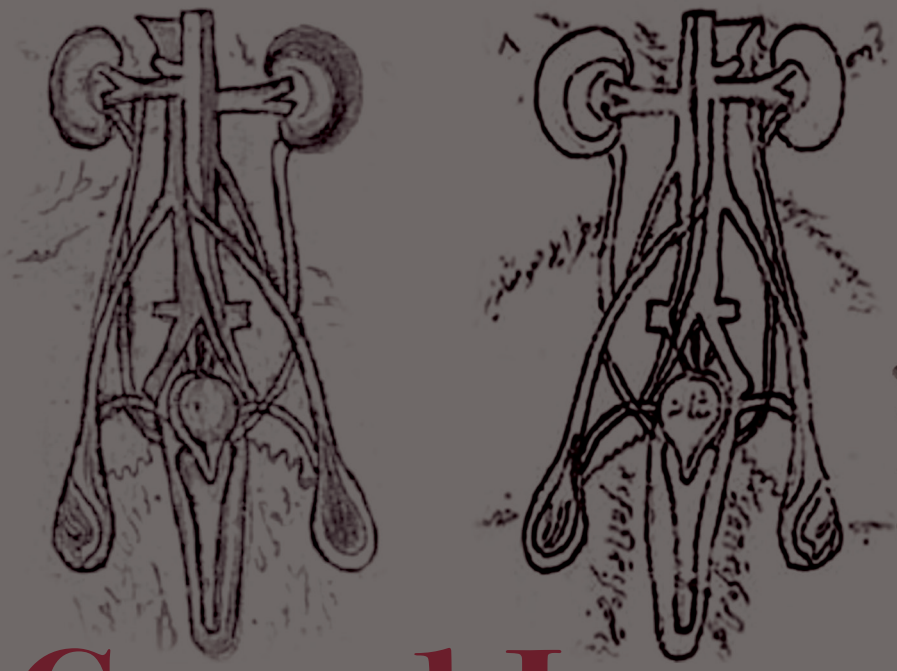

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Clinical Image	5	500	N/A	10	0	5
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[1], [3-5], [6,9], [8-12,16].

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[1] Guner E, Seker KG, Arikan Y, Huseynov C, Sam E, Ozdal OL. Aktuelle Urol. 2020; 51: 285-289. https://doi.org/10.1055/a-1117-2776.

- Article with more than six authors

[2] Karabulut D, Karabulut U, Caglar FN, Ekşi M, Yenice MG, Guner E, et al. The association between CHA2DS2-VASc score and erectile dysfunction: a cross-sectional study. Int Braz J Urol. 2019; 45: 1204-1208. https://doi.org/10.1590 / S1677-5538. IBJU.2019.0058.

- Book

[3] Sweetman SC. Martindale the Complete Drug Reference. 34th ed. London: Pharmaceutical Press; 2005.

- Book chapter

[4] McKenna K. Ejaculation. In: Knobil E, Neil J, editors. Encyclopedia of Reproduction, New York: Academic Press; 1999, p. 1002-8.

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We are applying the same steps to the double-blind peer-review process when we got the in-house submission.

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Contents

Editorial

Dear colleagues,

I am honored to share with you the second issue of 2025 (volume 5, issue 3) of the Grand Journal of Urology (Grand J Urol) with the contributions of many respected researchers and authors.

Grand Journal of Urology (GJU) aims to carry written and visualscientific urology studies to academic platforms and to make significant contributions to the science of urology. Our journal has been abstracted/indexed in Tubitak Ulakbim TR Index, EBSCOhost, J-Gate, SciLit, ResearchGate and Google Scholar international databases. As of these achievements, the Grand Journal of Urology (GJU) has taken its place among the journals indexed by national and international databases.

In this issue of our journal, there are many valuable articles under the subheadings of Andrology, Endourology, Functuional Urology, Pediatric Urology, Urolithiasis and Urologic Oncology. I hope that these carefully prepared articles will make important contributions to valuable readers, researchers and the urology literature.

On this occasion, I would like to express my heartfelt gratitude to our authors who have contributed to our journal with their articles, to our reviewers who have meticulously evaluate the articles.

Respectfully yours

September 2025

Assoc. Prof. Ekrem GUNER, MD

Editor-in-Chief

Original Article – Pediatric Urology
Grand J Urol 2025;5(3):70-5
DOI: 10.5505/GJU.2025.26818

Low Grade Urothelial Bladder Neoplasms in Pure Pediatric Population and Long-Term Follow-up Data

Pediatrik Popülasyonda Düşük Dereceli Ürotelyal Mesane Neoplazmaları ve Uzun Dönem Takip Verileri

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Abstract

Objective: Urothelial carcinomas (UC) of the bladder in the pediatric population are rare and differ from adult papillary neoplasms in terms of clinical, pathological outcomes, and prognoses. Therefore, standardized recommendations have not been clearly defined for their management. In this study, we aimed to report our experience and long-term follow-up data with low-grade urothelial bladder neoplasms in pediatric patients.
Materials and Methods: The data of patients treated for bladder tumors in two tertiary centers between December 2018 and December 2024 were analyzed retrospectively. Patients who were younger than 18 years of age at the time of diagnosis and whose pathology was reported as UC were included in the study. Transurethral resection of the bladder tumors was carried out on all patients. Age, gender, presentation symptoms, tobacco use or exposure, imaging method, number of tumors, tumor size, histological findings, hospitalization time, complications, tumor recurrence, and follow-up data were examined.
Results: Four female and three male patients were included in the study. The mean age of the patients was 14.8 ± 2.1 (12–17) years. The most common symptom was hematuria. Mean tumor size was 20.5 ± 9.8 (14–40) mm, and all were low-grade. No recurrence was detected at a mean of 58 ± 13.8 (44–76) months after resection.
Conclusion: Urothelial carcinoma of the bladder is rare in the pediatric population. These neoplasms are usually low grade, and recurrence is rare. The most common recurrences are seen in the first year. Strict follow-up is essential in this period. Less invasive tools can be used for follow-up after the first year on low-grade neoplasms.

Keywords: adolescent, bladder tumor, pediatric, transurethral resection, urothelial carcinoma

Özet

Amaç: Pediatrik popülasyonda mesanenin ürotelyal kanserleri (UK) nadirdir ve klinik, patolojik sonuçlar ve prognoz açısından erişkin papiller neoplazmlarından farklıdır. Bu nedenle UK yönetiminde standart öneriler net bir şekilde tanımlanmamıştır. Bu çalışmada, pediatrik hastalarda düşük dereceli ürotelyal mesane neoplazmları ile ilgili deneyimimizi ve uzun süreli takip verilerimizi paylaşmayı amaçladık.
Gereçler ve Yöntemler: Aralık 2018 ile Aralık 2024 arasında iki üçüncü basamak hastanede mesane tümörü nedeniyle tedavi edilen hastaların verileri retrospektif olarak incelendi. Tanı sırasında 18 yaşından küçük olan ve patolojisi UK olarak raporlanan hastalar çalışmaya dahil edildi. Tüm hastalara mesane tümörlerinin transüretral rezeksiyonu yapıldı. Yaş, cinsiyet, başvuru semptomu, tütün kullanımı veya maruziyeti, görüntüleme yöntemi, tümör sayısı, tümör boyutu, histolojik bulgular, hastanede kalış süresi, komplikasyonlar, tümör nüksü ve takip verileri incelendi.
Bulgular: Çalışmaya dört kız ve üç erkek hasta dahil edildi. Hastaların ortalama yaşı 14.8 ± 2.1 (12-17) yıldı. En sık görülen başvuru semptomu hematüriydi. Ortalama tümör boyutu 20.5 ± 9.8 (14-40) mm idi ve hepsi düşük dereceliydi. Rezeksiyondan ortalama 58 ± 13.8 (44-76) ay sonra hiçbir hastada nüks izlenmedi.
Sonuç: Ürotelyal mesane kanseri pediatrik popülasyonda nadir görülür. Bu neoplazmalar genellikle düşük derecelidir ve nüks ihtimali düşüktür. En sık nüksler birinci yılda görülür. Bu dönemde sık takip gereklidir. Düşük dereceli neoplazmalarda birinci yıldan sonra takip için daha az invaziv araçlar kullanılabilir.

Anahtar kelimeler: adölesan, mesane tümörü, pediatrik, transüretral rezeksiyon, ürotelyal karsinom

ORCID ID: **A. Sezer** 0000-0003-2904-2610 **M.S. Özkent** 0000-0002-6613-0671 **M.M. Pişkin** 0000-0002-0528-6699

Introduction

Urothelial papillary neoplasms of the bladder in children and adolescents are rare and differ from adult papillary neoplasms in terms of clinical, histological, and pathological outcomes and prognoses [1,2]. While 0.4% of urothelial carcinomas (UC) are observed in patients under 20 years of age, only 0.03% are witnessed in patients under 16 years of age [1].

The most common symptom at the time of diagnosis is hematuria. Dysuria, suprapubic pain, frequency, and obstructive symptoms are other less common symptoms [1]. Bladder tumors in the pediatric population are commonly detected by urinary system ultrasound (USG) [1,3]. A cystoscopy should be performed under general anesthesia for definitive diagnosis and treatment if a bladder tumor is suspected due to the patient's medical history and radiological imaging [4].

Urothelial carcinomas usually tend to be low grade and present a lower incidence of invasiveness in children and adolescents [2,5]. According to a World Health Organization (WHO) classification in 2004, approximately 3% of pediatric cases are high-grade diseases, while most cases are papillary urothelial neoplasms of low malignant potential (PUNLMP) [1,6]. Therefore, the incidence and recurrence rates of invasive tumors diverge from those of adults. There is also a higher disease-free survival rate in pediatric cases [2,7,8]. The recurrence rate ranges from 8% to 15%, and more than two-thirds of recurrences occur in the first year [1,3,4,8].

Urothelial carcinomas are rare in the pediatric population, so standardized recommendations have not been clearly defined for their management. Although some authors state that the adult follow-up protocol may be preferred, uncertainty remains in the management of pediatric bladder UC, which differs significantly from adults in terms of clinical, histological, and prognosis [3,4].

In this study, we report our experience and long-term follow-up data with low-grade urothelial bladder neoplasms in pediatric patients.

Materials and Methods

Patients

The data of patients treated for bladder tumors in two tertiary centers between December 2018 and December 2024 were analyzed retrospectively. Four female and three male patients were included who were younger than 18 years of age at the time of diagnosis whose pathology was reported as a urothelial carcinoma, according to the 2004 WHO grading system (papilloma, PUNLMP, or low-grade urothelial neoplasm). The study excluded one patient with a papilloma and unclear follow-up data, as well as a five-year-old male patient whose pathology was reported as an inflammatory myofibroblastic tumor.

Urinary ultrasounds were used as the first imaging method before treatment in all patients. A computed tomography was applied in two patients with tumor sizes of 25 mm and 40 mm and in one patient with a hematoma in the bladder.

Age, gender, presentation symptoms, tobacco use or exposure, number of tumors, tumor size, histological findings, hospitalization time, complications, tumor recurrence, and follow-up data were examined.

Surgery and Follow-up

The patients were prepared for a cystoscopy, which was performed under general anesthesia in the lithotomy position. Cystoscopies were performed using a 9.5 Fr 13 cm pediatric cystoscope in two prepubertal patients and a 17 Fr rigid cystoscope in five adolescent patients with an appropriate urethral caliber. The transurethral resection of bladder tumors (TURB) was conducted using a 9 Fr 12 cm monopolar pediatric resectoscope in two prepubertal patients and a 24 Fr bipolar resectoscope in five adolescent patients with an appropriate urethral caliber.

After resection, a 10 Fr Foley catheter was inserted in two prepubertal patients, and an 18 Fr three-way Foley catheter was inserted in five adolescent patients. In patients without macroscopic hematurias, the catheter was removed on the first to third postoperative days, and the patients were discharged. In the second postoperative week, the patients were called for a pathology.

For recurrence control, a urinanalysis, urinary USG, and cystoscopy were performed postoperatively at the third, sixth, and 12th months. Subsequently, urinanalyses and ultrasounds were performed every six months.

Statistical Analysis

The SPSS, v.23.0 statistical software (SPSS, Inc., Chicago, IL, USA) package program was utilized for statistical analysis. Descriptive statistical analyses were assessed by mean, standard deviation, and minimum and maximum values. Hospitalization time was expressed as the median value due to the standard deviation.

Ethics and Consent to Participate

All procedures performed in this study involving human participants were conducted in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. Consent, according to the Helsinki Declaration, was taken from the Necmettin Erbakan University Faculty of Medicine Ethics Committee before the study (No: 2022/3711). Consent to participate was obtained from all parents before the study.

Results

Four female and three male patients were included in the study. The mean age of the patients was 14.8 ± 2.1 (12–17) years. The presenting symptom was painless hematuria in five (71.4%) patients, dysuria in one (14.3%) patient, and suprapubic pain in one (14.3%) patient. Both active smoking and passive tobacco exposure were present in three (42.8%) patients. In other patients, there was no exposure either way **(Table 1,2)**. No lymph nodes or distant metastases were detected in three patients with preoperative computed tomography **(Figure 1)**.

While six (85.7%) patients had solitary papillary tumors, one patient with a total tumor diameter of 40 mm had three papillary tumors. The mean tumor size was 20.5 ± 9.8 (14–40) mm. According to the WHO classification (2004), papillomas were detected in two (28.6%) patients, PUNLMP in three

Table 1. Patients demographic and clinical data

	Age (years)	Gender (f/m)	Presenting symptom	Tobacco exposure or use	Lymph node or distant metastases	Number of tumors (n)	Tumor size (mm)	Tumor stage	Tumor grade	Hospitalisation time (day)	Complication (Clavien)	Recurrence (n)	Follow-up (months)
Patient 1	12	F	Haematuria	-	-	1	15		Papilloma	3	-	-	76
Patient 2	13	M	Haematuria	-	NA	1	20		PUNLMP	2	-	-	64
Patient 3	14	F	Dysuria	+	-	1	25		PUNLMP	3	-	-	58
Patient 4	14	M	Haematuria	-	NA	1	14	Ta	Low Grade	2	-	-	44
Patient 5	17	F	Haematuria	+	-	3	40		PUNLMP	3	-	-	74
Patient 6	17	F	Suprapubic pain	-	NA	1	10		Papilloma	1	-	-	46
Patient 7	17	M	Haematuria	+	NA	1	20	Ta	Low Grade	3	-	-	44

PUNLMP: papillary urothelial neoplasms of low malignant potential

(42.8%) patients, and non-invasive low-grade UC in two (28.6%) patients **(Table 1,2)**.

Patients were discharged on a median of 3 (2–3) days without complications. Intracavitary instillations were not performed on any patients. No recurrence was detected in patients at a mean of 58 ± 13.8 (44–76) months after their resections **(Table 2)**.

Discussion

Urothelial bladder carcinomas are very rare in pediatric and adolescent groups, compared to adults. Although these two centers are tertiary referral centers in the region, only seven children were operated on for bladder UC in six years. All these patients had low-grade UC, similar to the literature.

Table 2: Descriptive statistical analyses of the patients

Age (years)	14.8±2.1 (12-17)
Gender (f/m)	4 female, 3 male
Presenting symptom (n/%)	Painless hematuria in 5 patients (71.4%) Dysuria in 1 patient (14.3%) Suprapubic pain in 1 patient (14.3%)
Tobacco exposure or use (n/%)	3 (42.8%)
Number of tumors (n/%)	6 (85.7%) solitary papillary tumors 1 (14.3%) multiple papillary tumors
Tumor size (mm)	20.5±9.8 (14-40)
Tumor stage (n/%)	2 Ta (28.6%)
Tumor grade (n/%)	2 Papilloma (28.6%) 3 PUNLMP (42.8%) 2 Low-grade (28.6%)
Hospitalisation time (day)	3 (2-3)
Complication (Clavien)	None
Recurrence (n)	None
Follow-up (months)	58±13.8 (44-76)

PUNLMP: papillary urothelial neoplasms of low malignant potential

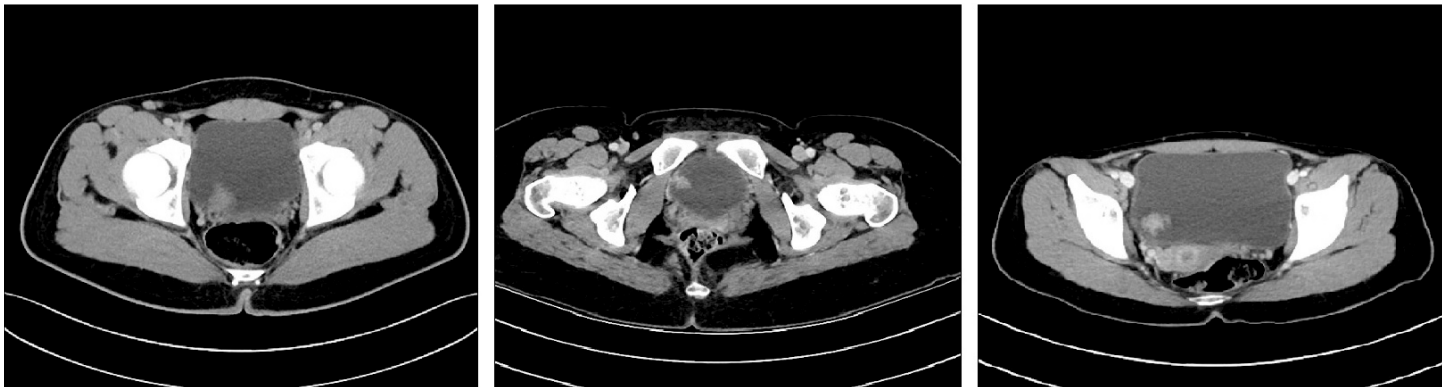

Figure 1. Patients preoperative computed tomography images

In addition, no recurrence was found in these patients during the long-term follow-up period. Most patients in our study had PUNLMP, which differed from low-grade UC, with minimal or no cytological atypia.

Most articles about pediatric bladder UC, including follow-up data in the literature, also include young adult patients. To the best of our knowledge, the largest pediatric series includes fewer than 20 patients [9]. According to the literature, approximately less than 5% of urothelial carcinomas in the pediatric group are high-grade tumors or have submucosal invasion [4,10]. In our study, most tumors were PUNLMP or low-grade UC, and no high-grade tumors were detected. Tumor genetics are thought to be the reason UCs have a benign course in the pediatric population, unlike adults. Wild et al. evaluated patients under 19 years of age. They stated that genetic changes such as FGFR 3 mutation, chromosome 9 alteration, aneuploidy, and TP53 mutation—high-grade tumors that are common in adults—are very rare in pediatric patients. Therefore, it may cause differences in tumor biology [10]. In addition, genetic changes, such as low microsatellite instability and low expression of MIB-1, a proliferation index, have been associated with a lower grade and noninvasive course of pediatric Ucs [11,12]. The common hypothesis of different genetic studies is that pediatric UC has greater "genetic stability" than adult UC [13]. A genetically stable tumor that is less biologically aggressive may lead to less invasion and a lower-grade benign course of the disease.

Tobacco use is a well-known risk factor for adult bladder neoplasms. It facilitates tumorigenesis by causing DNA methylation in genes related to bladder tumors [14,15]. Nevertheless, in the current literature, smoking is not considered an exact risk factor for pediatric bladder tumors. However, it has been stated that the age of smoking initiation in children has been decreasing [16]. In our study, 42.8% of the patients were smokers. Smoking might also be regarded as a risk factor in the pediatric population. To reduce smoking-related health problems, such as bladder tumors, national and international policies regarding the prevention and cessation of smoking, especially in children and adolescents, should be carefully determined and followed.

The most common presenting symptom in our study, similar to the literature on pediatric UCs, is painless hematuria [1,3,4,8]. However, unlike in adults, hematuria in children rarely indicates an underlying malignancy. The most common etiological factors of hematuria in children are infection, glomerulonephritis, and hypercalciuria [17]. Although bladder tumors are a rare etiological factor, they should be considered in the differential diagnosis of recurrent hematuria in the pediatric population. Therefore, urinanalyses and urinary ultrasounds are essential tools for the diagnosis of bladder tumors in children with recurrent and/or resistant hematuria. In addition, a urine microscopy and the evaluation of red cell morphology may aid diagnoses. Isomorphic blood cells may suggest that hematuria has bladder-related origins rather than glomerular or tubular origins. Bladder USG has a higher sensitivity in children and adolescents than adults due to its thinner abdominal fat and muscle layer [3]. In the present study, all tumors were detected with USG. Subsequently, the diagnosis was confirmed by a cystoscopy.

The transurethral resection of bladder tumors is an essential procedure for the diagnosis and treatment of bladder neoplasms [18]. A complete resection with clear negative margins and obtained muscularis propria will lead to a quality pathological evaluation and, therefore, more accurate disease management [19]. In our study, complete TURB was performed with negative margins, and muscularis propria was obtained in all patients. We did not observe complications in our patients. No residual tumors were detected in the long-term follow-up. Unlike adults, transurethral resections, especially in prepubertal patients, involve technical difficulties, such as the narrow urethral caliber and lack of drainage channels in the resectoscope. The narrow sheath of the resectoscope for the removal of resected materials is another challenging issue, especially in male patients. To overcome the drainage problem, we placed a feeding catheter into the urethra during resectioning in a prepubertal female patient.

Uncertainty related to follow-up remains [20]. The European Association of Urology (EAU) pediatric urology guidelines state that the adult follow-up protocol could be used for bladder UC follow-up in the pediatric patient group [18]. Conversely, some authors advocate that a less aggressive follow-up protocol could be applied in pediatric patients because pediatric UC has a lower recurrence rate than adults [9,21]. In addition, a cystoscopy is the gold standard for diagnosis; however, the use of a cystoscopy in follow-up is also controversial in pediatric patients [22]. It has disadvantages, such as being an invasive procedure and requiring anesthesia. Urinary cytology has high sensitivity (70%–80%) in high-grade UC, although sensitivity decreases to 6%–38% in low-grade tumors [23,24]. Because pediatric UCs on the bladder are usually low-grade tumors, cytology is far from routine [21,25]. The use of tomography in follow-ups is limited because

of ionizing radiation [26]. Ultrasonography is a highly sensitive and non-invasive tool in diagnosing pediatric bladder tumors and is the most frequently used tool in follow-up [22].

In this series, we chose to perform a stricter follow-up. A cystoscopy, USG, and urinalysis were performed postoperatively at the third, sixth, and 12th months in the first year when recurrences were most commonly witnessed [22]. Since high-grade and invasive UC was not detected in our patients after the first year, we performed a urinalysis and USG every six months to protect the patients from anesthesia. We did not prefer cytology in the follow-up due to its low sensitivity. With this follow-up protocol, we did not observe recurring tumors.

The main limitation of our study was its few patients. Given the very low incidence of urothelium bladder neoplasms originating in the pediatric population, the current limitation applies to most studies in the literature. Another limitation is that patients' family history of bladder tumors is not adequately questioned. Genetic predisposition is not a definitive risk factor for pediatric UC and should be studied further. Finally, genetic changes, such as FGFR 3 mutation, chromosome 9 alteration, and TP53 mutation, which are frequently observed in bladder tumors, have not been investigated. The genetic origins of pediatric UC have not been clearly defined, and there is insufficient data in the literature on the suitability of genetic tests for clinical use. Despite these limitations, the present study comprises purely pediatric UC patients with long-term follow-up data. We are confident that the data we share on the isolated pediatric population will contribute to the management approach of very rare bladder UC.

Conclusion

Urothelial carcinoma of the bladder is rare in the pediatric population. The most common symptom is hematuria. Cystoscopy and pathological evaluations of the tumor are crucial for diagnosis. These neoplasms are usually low grade, and recurrence is rare. The most common recurrences occur in the first year, and strict follow-up is essential in this period. Less invasive tools might be used for follow-up after the first year on low-grade neoplasms.

Ethics Committee Approval: Ethical approval for this study was obtained from Necmettin Erbakan University Faculty of Medicine Ethics Committee before the study (Ethics committee approval number: 2022/3711).
Informed Consent: An informed consent was obtained from all the patients.
Publication: The results of the study were not published in full or in part in form of abstracts.
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Original Article – Urolithiasis
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Impact of Extracorporeal Shock Wave Lithotripsy on Quality of Life in Pediatric Urinary Stone Patients

Ekstrakorporeal Şok Dalga Litotripsi'nin Pediatrik Üriner Taşı Olan Hastalarda Yaşam Kalitesi Üzerindeki Etkisi

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Abstract

Objective: This study aimed to evaluate the impact of extracorporeal shock wave lithotripsy (SWL), a commonly used treatment for pediatric urinary stone disease, on children's quality of life (QoL) using a validated and reliable QoL instrument (PedsQL™ 4.0).
Materials and Methods: In this prospective study, patients under the age of 18 who were scheduled for SWL due to kidney or ureteral stones between March 2018 and March 2020 were included. The age-appropriate PedsQL™ 4.0 questionnaire was administered before SWL, and on days 3 and 14 post-treatment. The relationship between QoL scores and parameters such as stone-free status, age, gender, stone location, and stone size was statistically analyzed.
Results: A total of 36 children (21 males and 15 females) were included. The stone-free rate after the first SWL session was 63.9%. QoL scores significantly decreased on day 3 post-SWL (p=0.031) but significantly improved by the second week compared to baseline (p=0.001). Notably, children aged 2–7 years, those with lower calyceal stones, stone size <1 cm, and stone-free status had significantly better QoL scores.
Conclusion: Although pediatric SWL may temporarily reduce QoL in the early postoperative period, it significantly improves QoL by the second week. Age, stone location, stone size, and achieving a stone-free status are important factors influencing QoL outcomes.

Keywords: extracorporeal shock wave lithotripsy, quality of life, pediatric, urinary system stone disease

Özet

Amaç: Bu çalışmada, çocukluk çağı üriner sistem taş hastalığında yaygın olarak kullanılan ekstrakorporeal şok dalga litotripsi (ESWL) tedavisinin çocukların yaşam kalitesi üzerindeki etkisinin, geçerli ve güvenilir bir yaşam kalitesi ölçeği (PedsQL™ 4.0) kullanılarak değerlendirilmesi amaçlandı.
Gereçler ve Yöntemler: Mart 2018 - Mart 2020 tarihleri arasında böbrek veya üreter taşı nedeniyle ESWL planlanan 18 yaş altı hastalar prospektif olarak çalışmaya dahil edildi. Tüm hastalara tedavi öncesi, tedaviden 3 gün sonra ve 14 gün sonra yaşa uygun PedsQL™ 4.0 ölçeği uygulandı. Taşsızlık oranı, yaş, cinsiyet, taş lokalizasyonu ve taş boyutu gibi parametrelerle yaşam kalitesi skorları arasındaki ilişki istatistiksel olarak değerlendirildi.
Bulgular: Çalışmaya 36 çocuk (21 erkek, 15 kız) dahil edildi. İlk ESWL seansı sonrası taşsızlık oranı %63.9 idi. Tedavinin üçüncü gününde yaşam kalitesi puanlarında anlamlı bir düşüş görülürken (p=0.031), ikinci haftada yaşam kalitesi puanlarında anlamlı bir artış tespit edildi (p=0.001). Özellikle 2-7 yaş arası, alt kaliks taşları, <1 cm taş boyutu ve taşsız olan hastalarda yaşam kalitesi skorları belirgin olarak daha yüksekti.
Sonuç: Pediatrik ESWL tedavisi kısa dönemde yaşam kalitesini olumsuz etkileyebilse de, ikinci hafta itibariyle yaşam kalitesinde belirgin bir iyileşme sağlamaktadır. Yaş, taş lokalizasyonu, taş boyutu ve taşsızlık durumu yaşam kalitesini etkileyen önemli faktörlerdir.

Anahtar kelimeler: ekstrakorporeal şok dalga litotripsi, yaşam kalitesi, pediatrik, ürolityazis

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Introduction

Urinary system stone disease; is a common health problem prevalence ranging from 1-20%. The prevalence of urolithiasis is increasing and children are more likely to experience recurrence [1,2]. Although endourological treatments are becoming widespread with the miniaturization of endoscopic instruments, extracorporeal shock wave lithotripsy (SWL) is widely used in the treatment of pediatric urinary stone disease. SWL is a noninvasive, effective and reliable method [3]. It is easier for children to reduce shock wave transmission due to the smaller body volume, shorter ureter length and high ureter compliance facilitating spontaneous disposal of stone fragments [4]. According to the European Urology Association; SWL is the first-choice method in children with renal and ureteral stones up to 20 millimeters [5].

In pediatric patients with urinary stone disease, the stone-free rate of SWL has been reported as 67-93% in the short term and 57-92% in long-term follow-up studies [6]. However, the complication rates of SWL are very low [7]. Pediatric SWL is a painful procedure. It is often performed under sedation or general anesthesia to reduce pain and ensure patient immobility. Both the SWL procedure itself and the anesthesia administered may affect the quality of life (QoL) of the child. Although there are many studies on the efficacy and safety of pediatric SWL, to the best of our knowledge, no published studies have explored the association between SWL and QoL in pediatric patients.

Assessing QoL in children is critical, as it impacts their physical, emotional, and social development, as well as family dynamics. In this study, we aimed to determine the relationship between pediatric SWL and patients' QoL using a validated QoL scale.

Materials and Methods

After obtaining institutional ethics committee approval (No:48670771-514.10), patients under 18 years of age with kidney or ureteral stones scheduled for SWL were included between March 2018 and March 2020 in this prospective study. The research was conducted according to the principles of the World Medical Association Declaration of Helsinki "Ethical Principles for Medical Research Involving Human Subjects." A priori power analysis was conducted using an effect size of 0.8, alpha of 0.05, and power of 0.80 for a paired t-test design. The analysis revealed that a minimum of 14 participants would be required.

All patients were evaluated by ultrasonography (USG), and kidney, ureter, and bladder (KUB) radiography, with computed tomography (CT) employed in cases of diagnostic uncertainty. Patients with anomalies of urinary tract, internal and external diversion, coagulopathy, chronic or other acute active disease were excluded from the study. Patients with multiple stones, known cystine stone disease, non-opaque stones were excluded to ensure homogeneity in stone characteristics and imaging accuracy. Pre-SWL workups included urinalysis, urine culture, complete blood count, creatinine levels and coagulation tests. Stone size was measured as the longest diameter on USG, KUB or CT imaging. All patients were requested to complete the validated age matched QoL scale at baseline, and at 3 and 14 day after SWL.

QoL Measurements

Pediatric Quality of Life Inventory™ 4.0 (PedsQL™ 4.0) was used as a health-related QoL instrument. This scale has been developed and validated as a valid and reliable tool that can be used for self-reports and proxy-reports in children under the age of 18 [8-11]. Studies have shown that there is no difference between the completion of the PedsQL scoring system by the child and the parent. In order to ensure homogeneity, the forms of all patients were filled by their parents in our study.

PedsQL ™ 4.0 is a five-point Likert scale, consisting of five different forms by different ages; under 2 years of age, for 2-4, 5-7, 8-12 and 13-18 years of age. Each form consists of a total of 23 items, which are physical functioning (eight items), emotional functioning (five items), social functioning (five items) and school/cognititve functioning (five items). The sum of the emotional, social and school/cognitive functionality subgroups forms the psychosocial subgroup. There are five options in each item; never (100 point), rarely (75 point), sometimes (50 point), often (25 point) and almost always (0 point). The total score is calculated by dividing the number of items. Thus, a PedsQL score between 0-100 is obtained. A higher score indicates better QoL.

SWL Technique

SWL was performed by a single experienced urologist using the Dornier Compact Sigma lithotripter (Dornier MedTech, Wessling, Germany) under intravenous sedation or general anesthesia. All patients received standardized intravenous sedation or general anesthesia based on age and clinical needs. Both fluoroscopy and USG imaging were used to locate stones. The procedure was started with a low voltage of 13 kV and was gradually increased to 20 kV. SWL session was terminated when full stone fragmentation was achieved, or 2000 shock wave counts were reached. KUB graphy and USG was done at the first week after SWL for follow-up. If a complete stone clearance was obtained, the patients were considered as stone-free. If stone-free was not achieved, a second SWL session was planned.

Statistical Analysis

Independent t test was used to compare independent groups, pearson correlation test to examine the relationship between variables and pearson chi-square, chi-square and fisher exact tests were used to compare categorical data. A paired sample t-test or Wilcoxon test was used to compare the dependent groups. Quantitative data were expressed as mean ± standard deviation values on tables. Categorical data are expressed as n (frequency) and percentages (%). Data were analyzed at 95% confidence level and it was considered significant when p value was less than 0.05.

Results

The study included a total of 36 children, comprising 21 males and 15 females. The mean age of the participants was 70.1 months, and the mean stone size measured 10.2 mm. Following the initial session of SWL, the stone-free rate was 63.9%, corresponding to 23 patients **(Table 1)**.

Upon comparing baseline and postoperative PedsQL scores and subscores, it was observed that the PedsQL scores on the third postoperative day were significantly lower than

the baseline scores (85.2 and 83.9, respectively, p= 0.031). Conversely, the PedsQL scores in the second postoperative week were significantly higher than the baseline scores (91.9 and 83.9, respectively, p= 0.001) **(Table 2)**.

When the baseline QoL values of the patients were compared, it was found that there was no difference between the male and female patients, between the age groups, according to the location of the stone and the stone size (p> 0.05) **(Table 3)**.

Table 3 shows comparison of PedsQL scores baseline and after SWL according to gender, age, stone location, stone size and stone-free rate. On day 3 after SWL; PedsQL scores were found to be significantly lower in patients 2-4 years age, 8-12 years age, ≥ 1 cm stone size and stone-free patients (p< 0.05). However, 2 weeks after SWL; the PedsQL scores were significantly higher in both female and male patients, 2-7 years of age, lower calyceal stones, less than 1 cm of stone size and stone-free patients (p< 0.05) **(Table 3)**.

There was no complication during SWL. In the first 2 weeks follow-up, urinary tract infection (UTI) was observed in 2 patients. The patients were treated with appropriate antibiotic treatment.

Table 1. Demographic characteristics of the patients

Gender	
Female	15 (41.7%)
Male	21 (58.3%)
Age* (month)	70.1 ± 48.1
Operation side (right/left)	20/16
Stone location	
Upper calyx	3 (8.3%)
Middle calyx	8 (22.2%)
Lower calyx	11 (30.6%)
Renal pelvis	9 (25.0%)
Proximal ureter	5 (13.9%)
Stone size* (mm)	10.2 ± 3.9
Stone free rate	23 (63.9%)

*: mean ± standard deviation

Discussion

Urinary stone disease is a chronic condition that adversely impacts QoL due to its propensity for recurrence and the necessity for surgical interventions. According to Hall et al., the recurrence rate of urinary stone disease ranges from 10% to 48% [12]. Similar to other chronic conditions, there is an association between urinary stone disease and psychological factors such as stress, depression, and other mental health disorders. Patients experiencing recurrent urinary stone disease exhibit elevated stress levels compared to healthy individuals [13]. Miyaoka et al. reported that stress levels were significantly heightened during episodes of painful renal colic [14].

In quality of life assessments, patients with urinary stone disease exhibited significantly poorer scores in pain, physical functioning, social functioning, and general health compared to healthy individuals [15,16]. While existing studies on the QoL in urinary stone patients have focused exclusively on adults, there is a notable absence of research concerning pediatric patients with urinary stones [17]. To the best of our knowledge, our study represents the first investigation into the QoL in pediatric patients undergoing SWL.

In a study conducted by Penniston et al., it was observed that the QoL scores for men and women with urinary stone disease were comparable [16]. Bensalah et al. identified obesity, age, and surgical history as factors influencing the QoL in patients with urinary stones [15]. In our study, no significant association was found between QoL and variables such as gender, age, stone size, and stone location.

SWL is widely used as an effective and reliable method in patients with pediatric urinary stone disease. In pediatric patients, the stone-free rate of SWL ranges from 50% to 90% [18,19]. Factors affecting the success of SWL include age, stone size, location and composition, patient habits and lithotriptor activity [20]. The most important factor affecting the success of SWL is the stone size. According to the study by Dogan et al, stone-free rates in pediatric SWL; for stones <1 cm, 1-2 cm and> 2 cm, it is about 90%, 80% and 60% respectively [21].

Kurahashi et al. conducted an examination of patients who had undergone SWL at least three months prior due to urinary stone disease. The study found no significant difference in

Table 2. Comparison of PedsQL subscores

	Baseline	**Post-op 3rd day**	**P$^{\alpha}$**	**Post-op 14th day**	**P$^{\beta}$**
Physical*	85.5 ± 15.1	80.3 ± 15.8	**0.001**	92.0 ± 10.4	**0.003**
Emotional*	84.4 ± 21.0	83.6 ± 21.1	1.000	92.0 ± 13.0	**0.007**
Social*	92.8 ± 14.7	93.1 ± 14.7	0.317	97.3 ± 8.2	**0.012**
Cognitive/School *	84.3 ± 15.2	84.1 ± 15.8	0.833	89.4 ± 13.8	**0.015**
Psychosocial *	87.3 ± 14.2	87.0 ± 14.2	0.674	93.0 ± 9.4	**0.001**
Total*	85.2 ± 13.7	83.9 ± 13.5	0.031	91.9 ± 9.7	**0.001**

*: mean ± standard deviation, PedsQL: Pediatric quality of life inventory; α: Postoperative 3rd day vs baseline; β: Postoperative 14th day vs baseline

Table 3. The effect of variables on PedsQL score

	Baseline	P	Postoperative 3rd day	P^{α}	Postoperative 14th day	P^{β}
Gender						
Female	87.3 ± 13.4	0.303	85.5 ± 13.4	0.123	91.9 ± 11.1	**0.004**
Male	82.4 ± 14.1		81.7 ± 13.8	0.108	91.8 ± 7.7	**0.011**
Age						
<2 years	77.6 ± 18.9	0.672	78.6 ± 19.3	1.000	87.6 ± 8.6	0.144
2-4 years	90.6 ± 7.8		88.9 ± 8.1	**0.026**	97.5 ± 2.1	**0.008**
5-7 years	83.9 ± 18.2		83.6 ± 18.7	0.317	89.9 ± 14.0	**0.043**
8-12 years	87.4 ± 11.7		82.2 ± 11.8	**0.042**	92.0 ± 8.5	0.107
13-18 years	80.2 ± 11.9		82.0 ± 10.3	0.655	85.9 ± 13.8	0.655
Stone location						
Upper calyx	86.2 ± 12.3	0.228	84.7 ± 12.0	0.317	86.4 ± 9.6	0.655
Middle calyx	76.8 ± 14.9		78.1 ± 15.3	0.916	85.8 ± 12.2	0.075
Lower calyx	88.6 ± 9.9		87.7 ± 10.2	0.068	93.9 ± 9.9	**0.017**
Renal pelvis	86.3 ± 16.3		84.9 ± 15.5	0.066	95.3 ± 3.8	**0.050**
Proximal ureter	88.7 ± 14.5		82.6 ± 16.3	0.180	94.1 ± 10.1	0.068
Stone size						
<1 cm	84.2 ± 15.1	0.590	84.6 ± 14.8	0.511	91.2 ± 11.4	**0.001**
≥1 cm	86.8 ± 11.6		82.8 ± 11.7	**0.012**	92.9 ± 6.4	0.075
Success						
Stone free	84.9 ± 15.1	0.912	83.1 ± 15.1	**0.027**	94.8 ± 7.9	**0.001**
Not stone free	85.8 ± 11.5		85.3 ± 10.7	0.500	86.8 ± 10.8	0.612

*: mean ± standard deviation, PedsQL: Pediatric Quality of Life Inventory; α: Postoperative 3rd day vs baseline; β: Postoperative 14th day vs baseline

QoL between these patients and the general population. In this investigation, SWL was compared with percutaneous nephrolithotomy (PNL) and ureterorenoscopy (URS), with SWL demonstrating a higher overall health score than the other treatment methods [22]. Similarly, Arafa et al. assessed patients who had undergone SWL at least three months earlier for urinary stone disease. The QoL scores of these patients were found to be superior to those of the general population. In the same study, when SWL was compared to PNL and URS, SWL's QoL score was higher than those of the other treatment methods [23].

In our study, on the third day following SWL, the physical and overall QoL metrics were significantly lower than the preoperative values. This outcome may be attributed to the impact of SWL on the body, as well as the effect of renal colic-induced fragments post-SWL. However, by the second week after SWL, all QoL metrics were significantly higher than the preoperative values. This finding suggests that SWL can enhance QoL even in the early stages by effectively treating urinary stone disease.

Regrettably, research concerning the parameters influencing the QoL—such as age, gender, and stone location—in patients undergoing SWL remains insufficient. Sahin et al. identified that patients with stones exceeding 2 cm in size experienced a diminished QoL and had a higher frequency of emergency room visits [24]. In alignment with these findings, our study determined that the QoL was notably improved in patients with stones measuring less than 1 cm.

The limitations of this study include the small sample size and the absence of a control group. It is imperative to conduct further studies with larger sample sizes and the inclusion of control groups. This would enable the provision of comprehensive information to parents regarding the potential impact of SWL on their child's QoL. As PedsQL scores were reported by parents, the results may reflect parental perceptions rather than the child's direct experience, which could introduce bias. Additionally, the evaluation of only the initial SWL session may present a limitation.

Conclusion

Pediatric SWL may temporarily reduce QoL in the early postoperative period, likely attributable to the reduction in stone fragments. However, by the second week post-SWL, there is a notable improvement in the child's quality of life. Factors influencing this quality of life include age range of 2-7 years, presence of lower calyceal stones, stone size less than 1 cm, and achieving a stone-free status. Future research should explore

long-term QoL outcomes and the impact of repeated SWL sessions in pediatric patients.

Ethics Committee Approval: Ethical approval for this study was obtained from University of Health Sciences, Okmeydanı Training and Research Hospital Clinical Research Ethics Committee (Approval number and date: 48670771-514.10 and 01.08.2018).

Informed Consent: An informed consent was obtained from all the patients.

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A Comparative Analysis of Heineke-Mikulicz and V-Y Scrotoplasty Techniques in the Surgical Correction of Congenital Penoscrotal Webbing

Konjenital Penoskrotal Web Onarımında Heineke-Mikulicz ve V-Y Skrotoplasti Tekniklerinin Karşılaştırılması

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Abstract

Objective: The penoscrotal web is a congenital cutaneous anomaly in which scrotal skin extends onto the ventral surface of the penis, potentially leading to deformity and, in adulthood, sexual dysfunction. This study aimed to compare the clinical outcomes of two commonly used techniques—Heineke-Mikulicz and V-Y scrotoplasty—in the surgical management of penoscrotal webbing.
Materials and Methods: Between 2018 and 2022, data from 87 patients who underwent circumcision and penoscrotal web repair during circumcision examinations at our clinic, aged between 6 months and 6 years, were retrospectively analyzed. Two groups were formed: Group 1 consisted of 49 patients who underwent Heineke-Mikulicz scrotoplasty, and Group 2 consisted of 38 patients who underwent V-Y scrotoplasty. After the operation, the cases were evaluated in terms of scrotal or penile edema, hematoma, recurrent web, wound site contracture, and cosmetic results.
Results: There was no statistically significant difference between the two groups in terms of age or body weight ($p>0.05$). When the two groups were compared in terms of mean operation time, statistical significance was observed ($p<0.05$). A statistically significant association was also found between the severity of the penoscrotal web and the choice of surgical technique ($p<0.05$). No significant differences were observed between the two groups regarding penile or scrotal edema and postoperative wound contracture ($p>0.05$). However, the comparison revealed a statistically significant difference in web recurrence between the two techniques ($p<0.05$).
Conclusion: The findings suggest that Heineke-Mikulicz scrotoplasty is more effective in patients with grade 1 and 2 webbing, whereas V-Y scrotoplasty yields better results in grade 2 and 3 cases.

Keywords: penoscrotal web, pediatrics, Heineke-Mikulicz, V-Y, scrotoplasty

Özet

Amaç: Penoskrotal web peniste şekil bozukluğuna neden olan ve erişkinlikte cinsel ilişki sırasında sorunlara yol açabilen skrotum cildinden penis ventral derisine uzanan deri uzantısıdır. Bu çalışmada, Heineke-Mikulicz ve V-Y skrotoplasti tekniği ile penoskrotal web onarımı yapılan hastaların sonuçlarının karşılaştırılması amaçlanmıştır.
Gereçler ve Yöntemler: 2018-2022 yılları arasında kliniğimizde 6 ay ile 6 yaş arasında sünnet muayenesi değerlendirmesi sırasında penoskrotal web saptanan ve sünnet ile beraber web onarımı yapılan 87 hastanın verileri retrospektif olarak incelendi. Grup 1; Heineke-Mikulicz skrotoplasti uygulanan 49 hasta, Grup 2; V-Y skrotoplasti uygulanan 38 hasta olmak üzere iki grup oluşturuldu. Operasyondan sonra olgular skrotal veya penil ödem, hematom, tekrarlayan web, yara yeri kontraktürü ve kozmetik sonuçlar açısından değerlendirildi.
Bulgular: Her iki grupta yaş ortalaması ve vücut ağırlıkları açısından karşılaştırıldığında istatistiksel olarak anlamlılık görülmedi ($p>0,05$). Her iki grupta ortalama operasyon süresi açısından karşılaştırıldığında istatistiksel olarak anlamlılık görüldü ($p<0,05$). Penoskrotal web derecesine göre operasyon tekniğinin seçiminde ise her iki grup arasında istatistiksel olarak anlamlılık görüldü ($p<0,05$). Her iki teknikte komplikasyon olarak penil veya skrotal ödemde ve postoperatif yara kontraktüründe istatistiksel olarak anlamlılık görülmedi ($p>0,05$). Tekrarlayan web açısından ise her iki teknik karşılaştırıldığında istatistiksel olarak anlamlılık görüldü ($p<0,05$).
Sonuç: Penoskrotal web onarımında grade 1 ve grade 2 dereceli olgularda Heineke-Mikulicz skrotoplasti tekniğin daha etkin olduğu, grade 2 ve grade 3 dereceli olgularda ise V-Y skrotoplasti tekniğinin daha etkin olduğu çalışmamızda bulunmuştur.

Anahtar kelimeler: penoskrotal web, çocuk, Heineke-Mikulicz, V-Y, skrotoplasti

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Introduction

Webbed penis is a congenital anomaly in which a fold of skin extends from the scrotum to the ventral surface of the penile shaft, obscuring the penoscrotal angle [1]. It is most commonly identified during infancy or at the time of circumcision. This condition may result in a visually shortened penis and is recognized as a frequent cause for delayed circumcision [2]. Performing circumcision without correcting the web can lead to downward urine flow during childhood and may impair sexual function in adulthood. Therefore, surgical correction of the web is generally considered mandatory prior to circumcision [3]. However, correcting the web post-circumcision is often more challenging due to the loss of preputial tissue.

In Turkey, circumcision is a nearly universal practice performed for cultural and religious reasons. In some cases, it is carried out by non-specialist practitioners, which may lead to underdiagnosis of such anomalies [4,5]. Numerous studies have investigated the surgical correction of primary webbed penis [2,6-8]. The main goal of treating penoscrotal webbing is to elongate the ventral penile skin by transecting the web. This is traditionally achieved using a transverse incision followed by vertical closure—commonly referred to as the Heineke-Mikulicz technique [9]. Other surgical methods have also been introduced, including V-Y plasty, Z-plasty, lateral parapenile incisions, and preputial flap rotation [8].

The present study aims to compare the clinical outcomes of Heineke-Mikulicz and V-Y scrotoplasty techniques in the surgical correction of penoscrotal webbing in pediatric patients with varying grades of severity.

Materials and Methods

Between 2018 and 2022, 87 pediatric patients aged between 6 months and 6 years were diagnosed with penoscrotal webbing during circumcision evaluations at our clinic and underwent simultaneous surgical correction. The medical records of these cases were reviewed. This study was retrospective and conducted in accordance with the Declaration of Helsinki. Patients were informed that their data would be used for scientific purposes, and written consent was obtained from all participants.

Ethics Committee Approval: The study was approved by the Non-Interventional Clinical Research Ethics Committee of Tokat Gaziosmanpaşa University Faculty of Medicine (Approval Date and Number: 13.05.2025/ 25-MOBAEK-169)

Web severity was graded using the classification system proposed by El Koutby and El Gohary [10]:

Grade 1: Web extends up to the proximal third of the penis

Grade 2: Web extends to the middle or distal third

Grade 3: Broad web extending to the distal third

Patients were divided into two groups: Group 1 included 49 patients treated with Heineke-Mikulicz scrotoplasty, mostly comprising Grade 1 and 2 cases; Group 2 consisted of 38 patients treated with V-Y scrotoplasty, primarily comprising Grade 2 and 3 cases. Patients with hypospadias, previous circumcision, micropenis and/or torsion, buried penis, or history of prior surgical correction for penoscrotal webbing were excluded from the study. Web correction was carried out using either Heineke-Mikulicz or V-Y scrotoplasty, followed by circumcision via the dorsal slit technique. The following data were recorded: patient age, operative duration, body weight, length of hospital stay, presence of penile or scrotal edema, hematoma, recurrence, wound contracture, and cosmetic outcomes as subjectively evaluated. All surgical procedures were performed by the same surgeon.

Surgical Technique

All procedures were performed under general anesthesia. As prophylaxis, all patients received a third-generation cephalosporin antibiotic (50–100 mg/kg) prior to surgery. A preoperative assessment was conducted under anesthesia.

Heineke-Mikulicz Scrotoplasty Technique

A transverse incision was made along the web at the penoscrotal junction. The skin flaps were carefully dissected proximally and distally to preserve vascularity and allow for a tension-free vertical closure. After achieving adequate hemostasis, a simple longitudinal closure was performed at the midline using absorbable synthetic polyglactin sutures (**Figure 1a-e**).

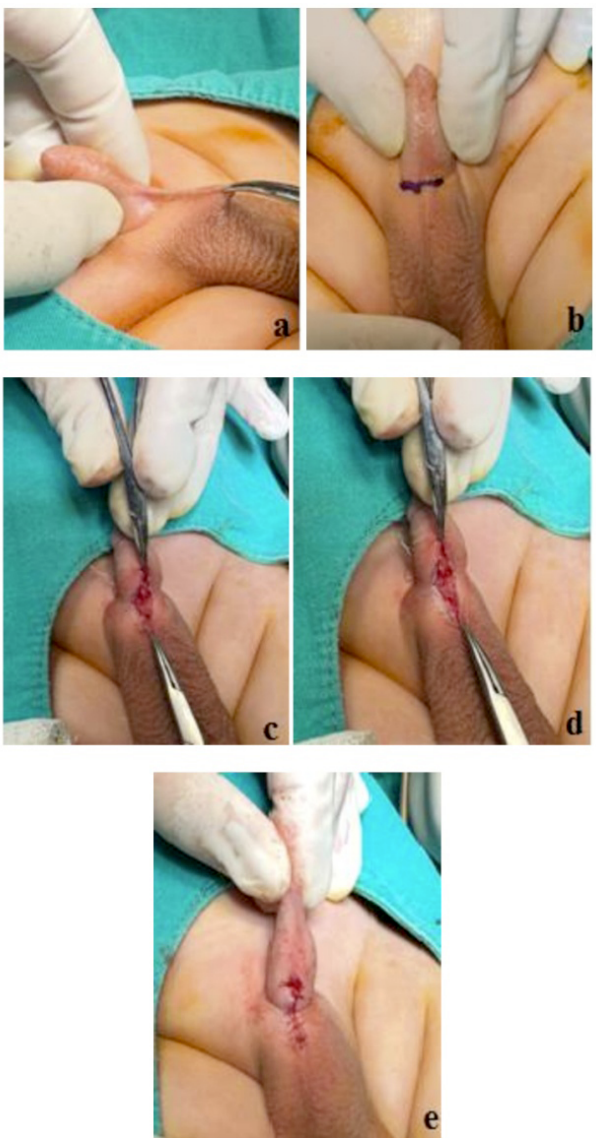

Figure 1. Intraoperative stages of Heineke-Mikulicz scrotoplasty technique

V-Y Scrotoplasty Technique

An inverted V-shaped incision was made at the penoscrotal junction at an angle of approximately 60°, with the limb lengths adjusted according to the penile length. The skin flaps were carefully dissected proximally and distally to preserve vascularity and allow for a tension-free vertical closure. Following hemostasis, the incision along the median raphe was vertically sutured using absorbable polyglactin sutures. The lateral arms of the V were then closed in a straight line using the same suture material (**Figure 2a-e**).

In both groups, a light compressive dressing with elastic bandage was applied postoperatively. Patients were discharged the following day. Follow-up visits were scheduled at 1 week, 1 month, 3 months, and 6 months postoperatively. During follow-up, clinical evaluation and patient history were used to assess the surgical outcome. Successful repair was defined as the absence of recurrence and satisfactory cosmetic results as reported by the parents.

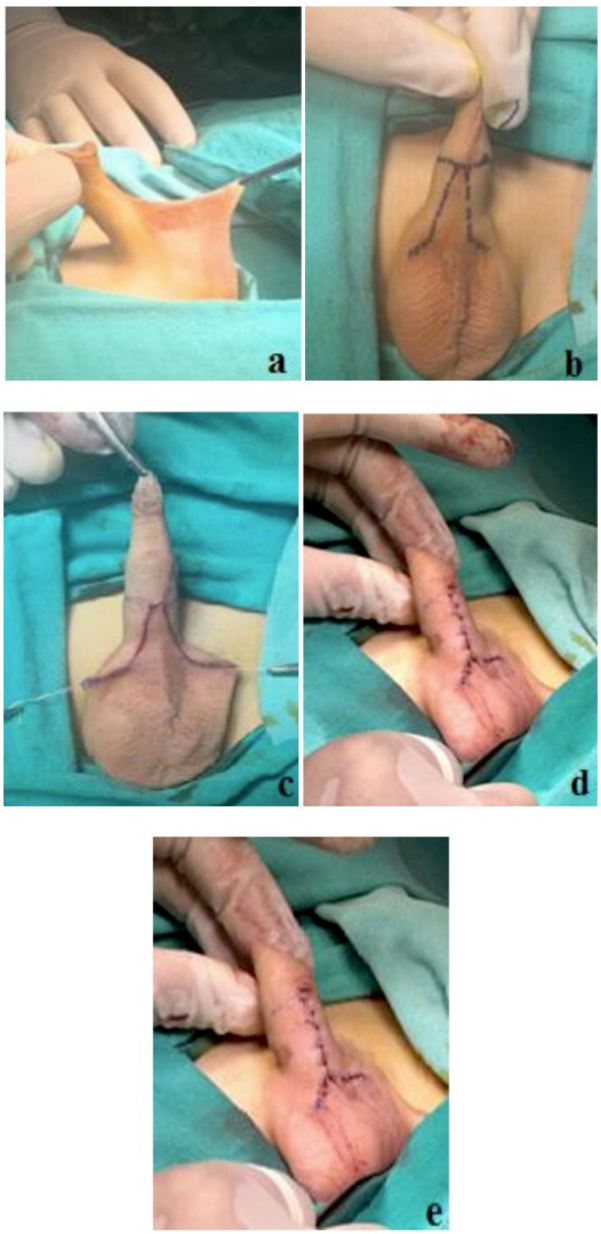

Figure 2. Intraoperative stages of V-Y scrotoplasty technique

Statistical Analysis

All data were analyzed using MedCalc software package, version 20.009 (Ostend, Belgium). Qualitative variables were expressed as frequencies and percentages, while quantitative variables were presented as mean ± standard deviation (SD), median, and interquartile range (IQR). The Kolmogorov-Smirnov test was used to assess the normality of data distribution. For comparisons between the two groups: The Mann-Whitney U test was applied to non-normally distributed continuous variables. The Chi-square test was used to evaluate differences in categorical variables. A p-value of less than 0.05 was considered statistically significant.

Results

The mean age of patients in Group 1 was 31.9±16.4 months while that of Group 2 was 29.8±17.3 months. The corresponding average body weights were 14.4±4.3 kg and 13.6±4.3 kg respectively. There were no statistically significant differences between the two groups in terms of age or weight ($p>0.05$). The mean operative duration was significantly shorter in Group 1 (42.7±7.2 minutes) than in Group 2 (68.1±13.3 minutes), and this difference was statistically significant ($p<0.05$). The difference in operative duration between the two groups was statistically significant ($p<0.05$) **(Table 1).** A statistically significant association was also found between the severity of the penoscrotal web and the selection of surgical technique ($p<0.05$). No statistically significant differences were observed between the two techniques in terms of penile or scrotal edema and postoperative wound contracture ($p>0.05$). However, a statistically significant difference was observed between the two techniques regarding web recurrence, with a higher rate noted in Group 1 ($p<0.05$) **(Table 2).**

Complications thought to be related to circumcision were separated from both groups and were not included in the study. In the early postoperative period, penile or scrotal edema was observed in 4 patients (8.2%) in Group 1 and in 7 patients (18.4%) in Group 2. The edema resolved with conservative measures such as warm baths and oral anti-inflammatory medications. Tension at the dorsal penoscrotal junction following ventral skin closure was noted in 2 patients (4.1%) in Group 1 and 5 patients (13.2%) in Group 2. This was managed with a 3–4 mm longitudinal midline relaxing incision on the dorsal side. All Grade 3 cases in Group 1 (9 patients, 18.4%) experienced recurrence of the web. In contrast, no recurrence was observed in any of the patients in Group 2. The recurrent cases in Group 1 were subsequently corrected using the V-Y scrotoplasty technique in separate sessions. At the 6-month postoperative follow-up, cosmetic outcomes were evaluated. The web had resolved in all patients. No postoperative wound contracture or recurrent web was observed in any patient. The circumcision incision and the penoscrotal surgical sites had healed without complications.

Discussion

Congenital penoscrotal webbing is considered part of the broader spectrum of male genital anatomical anomalies, often described as an inconspicuous or concealed penis. Although its

Table 1. Difference between the two studied groups according to demographic data and operative duration

		Heineke-Mikulicz scrotoplasty	V-Y scrotoplasty	Test of significance	P
		N = 49	N = 38		
Age at operation (month)	Mean ± SD	31.9±16.4	29.8±17.3	U= 854.00	0.507
	Median (IQR)	30 (18.0 - 42.0)	30 (12.0 - 42.0)		
Weight at operation (Kg)	Mean ± SD	14.4±4.3	13.6±4.3	U= 808.00	0.290
	Median (IQR)	14 (12.0 - 17.0)	13.5 (11.0 - 16.0)		
Operative duration (min)	Mean ± SD	42.7±7.2	68.1±13.3	U= 118.50	**<0.0001***
	Median (IQR)	43 (36.0 - 46.3)	70 (60.0 - 80.0)		

* Mann-Whitney U test results indicate a significant difference at the <0.05 level

Table 2. Comparison of the two groups according to the postoperative follow-up parameters

		Heineke-Mikulicz scrotoplasty		V-Y scrotoplasty		Test of significance	P
		n	%	n	%		
Degree of web	Grade 1	27	55.1	7	18.4	X^2= 14.952	**0.001***
	Grade 2	13	26.5	11	28.9		
	Grade 3	9	18.4	20	52.6		
Penile or scrotal edema	Not present	45	91.8	31	81.6	X^2= 2.015	0.156
	Present	4	8.2	7	18.4		
Postoperative wound contracture	Not present	47	95.9	33	86.8	X^2= 2.356	0.125
	Present	2	4.1	5	13.2		
Recurrence of the web	Not present	40	81.6	38	100	X^2= 7.695	**0.006***
	Present	9	18.4	0	0		

* Chi-square test results indicate a significant difference at the <0.05 level

exact etiology remains unclear, one prevailing theory suggests that a congenital deficiency in the development of the ventral penile skin may lead to a compensatory extension of scrotal tissue, resulting in web formation [11]. Previous studies have reported a prevalence of approximately 4% for this condition. While it may not cause significant problems during childhood aside from abnormal urinary flow, untreated penoscrotal webbing can lead to painful erections and sexual dysfunction in adulthood, necessitating surgical correction [10].

Maizels et al. [1] initially proposed a classification system distinguishing between buried, trapped, webbed, and micropenis. More recently, El-Koutby et al. [10] further subclassified webbed penis into simple, compound, and secondary forms. Although some authors argue that the severity of the web influences the complexity of surgical correction [1], others maintain that the classification proposed by El-Koutby and El-Gohary does not necessarily correlate with the complexity or choice of surgical approach [6]. These authors do not apply these classification criteria in the preoperative setting, and the choice of surgical approach is typically made regardless of the complexity of the diagnos. In our study, the choice of surgical technique was not strictly determined by the severity of the web, and treatment decisions did not always align with the classification.

Various surgical methods have been described for the correction of webbed penis. R.P. Bonitz et al. [2] compared three surgical techniques used for web correction—Heineke-Mikulicz scrotoplasty, V-Y scrotoplasty, and Z-plasty—and reported no significant differences in follow-up outcomes. They concluded that all three techniques are safe and effective, with the choice among them largely depending on the surgeon's individual preference. Similarly, Negm MA and Nagla SA reported that the Heineke-Mikulicz technique was effective for grade 1 cases, while multiple Z-plasty was more suitable for grades 2 and 3 [9]. Elrouby A. compared the Heineke-Mikulicz and Z-plasty methods and found no significant differences in outcomes, although operative duration was longer with Z-plasty [12]. Alkış O et al. [13] also reported favorable results with the double V technique. In our study, Heineke-Mikulicz and V-Y scrotoplasty techniques were compared. The operative time was found to be significantly longer in the V-Y scrotoplasty group. Heineke-Mikulicz scrotoplasty was more effective in Grade 1 and Grade 2 cases, whereas V-Y scrotoplasty showed superior outcomes in Grade 2 and Grade 3 cases—findings that were statistically significant. All Grade 3 web cases that were initially repaired using the Heineke-Mikulicz technique experienced recurrence and required revision surgery with the V-Y scrotoplasty method. These findings highlight the importance and utility of V-Y scrotoplasty in managing recurrent web cases.

R.P. Bonitz et al. [2] reported a complication rate of 5.3% in the Heineke-Mikulicz group in a study comparing three different techniques for repairing different grades of the uncircumcised webbed penis. In our study, the complication rates were comparable, with 4.1% of patients experiencing postoperative wound contracture and 8.2% presenting with penile or scrotal edema. However, the recurrence rate of penoscrotal web was relatively high at 18.4%. This elevated recurrence may be attributed to the limited suitability of the Heineke-Mikulicz technique for Grade 3 cases. Additionally, Bonitz et al. reported

complication rates of 7.8% in the V-Y group and 2.9% in the Z-plasty group. In our V-Y group, postoperative wound contracture occurred in 13.2% and penile/scrotal edema in 18.4% of patients. These complications were effectively managed with conservative treatments or minor surgical revisions.

R.P. Bonitz et al. [2] also found that the mean operative duration was significantly shorter in the Heineke-Mikulicz group (22.90 ± 4.58 minutes) compared to the Z-plasty group (45.50 ± 6.67 minutes), recommending the former technique to reduce anesthesia time. Elrouby A. conducted a comparative study evaluating two surgical techniques for web correction and reported that the Heineke-Mikulicz method was associated with a shorter operative duration [12]. Our findings are consistent with those in the literature, as cases treated with the Heineke-Mikulicz technique demonstrated a significantly shorter operative time. Notably, the method also proved effective in Grade 2 cases, making it a favorable option due to its efficiency and simplicity. Although the V-Y scrotoplasty technique is effective even in Grade 1 cases, its relatively longer operative time suggests that it may not be the most suitable choice for less severe presentations.

The limitations of the study include the small number of patients, the single-center and retrospective nature of the study, the need to compare more surgical techniques, and the short follow-up period.

Conclusion

This study demonstrated that Heineke-Mikulicz scrotoplasty is more effective and requires a shorter operative time in cases of Grade 1 and 2 penoscrotal webbing, while the V-Y scrotoplasty technique yields better outcomes in Grade 2 and 3 cases, despite a longer surgical duration. Although effective in Grade 1 cases, the use of V-Y scrotoplasty is not recommended in such patients due to its extended operative time. Further prospective, randomized, and controlled studies are necessary to more comprehensively assess the efficacy of these surgical techniques.

Ethics Committee Approval: The study was approved by the Non-Interventional Clinical Research Ethics Committee of Tokat Gaziosmanpaşa University Faculty of Medicine (Approval Date and Number: 13.05.2025/ 25-MOBAEK-169)

Informed Consent: Patients were informed that their data would be used for scientific purposes, and written consent was obtained from all participants.

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Penile Prosthesis Implantation Revision Surgery: Feasibility and Safety

Penil Protez İmplantasyonu Revizyon Cerrahisi: Uygulanabilirlik ve Güvenlik

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Abstract

Objective: This study aims to evaluate the feasibility and safety of penile prosthesis implantation (PPI) revision surgery in a high-volume center.
Materials and Methods: We retrospectively analyzed data from 30 patients undergoing PPI revision between January 2021 and September 2024, performed by two experienced andrology-trained surgeons at two centers. Patient demographics, comorbidities, surgical details, and complications were recorded. Quality of life was assessed at three months using the Quality of Life and Sexuality with Penile Prosthesis (QoLSPP) questionnaire. Complications were classified using the Clavien-Dindo system.
Results: Revision indications included non-functioning prostheses (33.3%), visible deformity (16.7%), inadequate inflation (20%), conversion from malleable to inflatable penile prosthesis (IPP) (13.3%), and infection (16.7%). Infrapubic (40%) or penoscrotal (60%) approaches were used. Mean operative time was 101.8 minutes, hospital stay was 2.1 days, and follow-up was 9 months. Complications (Clavien-Dindo Grade I-II) included orchitis (10%), wound infection (6.7%), and scrotal/perineal ecchymosis (13.3%), all resolved conservatively. Staphylococcus epidermidis was the most common pathogen in infections. Patients transitioning to IPPs reported high QoLSPP scores.
Conclusion: PPI revision surgery, when performed by skilled surgeons, is safe and effective, with high patient satisfaction, particularly for IPP transitions. Larger studies with longer follow-up are needed to assess long-term outcomes.

Keywords: penil prosthesis, revision surgery, patient satisfaction, malleable penil prosthesis, inflatable penil prosthesis

Özet

Amaç: Bu çalışma, yüksek hacimli bir merkezde penil protez implantasyonu (PPI) revizyon cerrahisinin uygulanabilirliğini ve güvenilirliğini değerlendirmeyi amaçlamaktadır.
Gereçler ve Yöntemler: Ocak 2021 ile Eylül 2024 arasında PPI revizyonu geçiren 30 hastanın verileri retrospektif olarak analiz edilmiştir. Operasyonlar, androloji alanında deneyimli iki cerrah tarafından iki merkezde gerçekleştirilmiştir. Hasta demografisi, komorbiditeler, cerrahi detaylar ve komplikasyonlar kaydedilmiştir. Yaşam kalitesi, üç ayda Penil Protez ile Yaşam Kalitesi ve Cinsellik (QoLSPP) anketi ile değerlendirilmiştir. Komplikasyonlar Clavien-Dindo sistemiyle sınıflandırılmıştır.
Bulgular: Revizyon endikasyonları arasında çalışmayan protez (%33,3), görünür deformite (%16,7), yetersiz şişme (%20), malleable protezden şişirilebilir penil proteze (IPP) geçiş (%13,3) ve enfeksiyon (%16,7) yer almıştır. İnfrapubik (%40) veya penoskrotal (%60) yaklaşımlar kullanılmıştır. Ortalama operasyon süresi 101,8 dakika, hastanede kalış süresi 2,1 gün ve takip süresi 9 ay olmuştur. Komplikasyonlar (Clavien-Dindo Grade I-II) orşit (%10), yara enfeksiyonu (%6,7) ve skrotal/perineal ekimoz (%13,3) şeklindeydi ve tümü konservatif yöntemlerle düzelmiştir. Enfeksiyonlarda en sık Staphylococcus epidermidis saptanmıştır. IPP'ye geçen hastalar yüksek QoLSPP skorları bildirmiştir.
Sonuç: Deneyimli cerrahlar tarafından yapılan PPI revizyon cerrahisi güvenli ve etkilidir; özellikle IPP'ye geçiş yapan hastalarda yüksek memnuniyet sağlar. Uzun vadeli sonuçları değerlendirmek için daha büyük ve uzun takipli çalışmalara ihtiyaç vardır.

Anahtar kelimeler: penil protez, revizyon cerrahisi, hasta memnuniyeti, tek parçalı penil protez, şişirebilir penil protez

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Introduction

Penile prosthesis implantation (PPI) is a highly effective treatment for men with erectile dysfunction (ED) who fail first- and second-line therapies [1]. The modern inflatable penile prosthesis (IPP) era began in 1973 when Brantley Scott reported implanting silicone bodies, a reservoir, and a control pump in five patients [2]. Early IPPs, while effective for organic ED, had mechanical failure rates up to 50% within five years [3]. Prosthesis infection, a severe complication in andrological surgery, increases morbidity and healthcare costs, exceeding initial implant costs by over six times [4]. Infection rates range from 2% for primary implantations to 18% for replacements [5].

Despite high patient satisfaction with IPPs, issues like discomfort, inadequate inflation, deformity, palpable abnormalities, or painful intercourse may require revision surgery [6]. Revision surgery effectively addresses infections, mechanical failures, or patient dissatisfaction, with most patients satisfied post-revision [7]. Most patients undergoing IPP replacement report satisfaction and need no further intervention [8]. However, revision surgery carries higher risks of infection and complications than primary surgery [9], posing challenges for patients, surgeons, and healthcare systems [10]. This study evaluates the feasibility and safety of PPI revision surgery.

Materials and Methods

Following ethics committee approval from Başakşehir Çam ve Sakura City Hospital Ethics Committee (Approval No:05032025.81). We retrospectively analyzed data from patients undergoing PPI between January 2021 and September 2024. A total of 30 patients who underwent penile prosthesis revision surgery were included in the study. Surgeries were performed by two experienced surgeons with andrology fellowship training at two centers. We recorded age, body mass index (BMI), comorbidities, surgical history, prostate surgery, pelvic radiation therapy, ED duration before initial PPI, and prior ED treatments.

Patients received standardized antibiotic prophylaxis consisting of ceftriaxone 1 g, vancomycin 500 mg, and fluconazole 150 mg, administered per institutional guidelines. This regimen was selected based on local microbiological data identifying Staphylococcus epidermidis as a prevalent pathogen in prosthetic infections, combined with the elevated infection risk in revision surgeries compared to primary implantations, as supported by Mulcahy et al. [11]. Ceftriaxone and vancomycin were chosen to provide broad-spectrum coverage against gram-positive and gram-negative organisms, while fluconazole addressed potential fungal contamination, particularly in patients with comorbidities such as diabetes mellitus. Antiplatelet therapy was stopped preoperatively per departmental guidelines. Patients had either malleable penile prostheses (PP) or IPPs. Before revision, a 15-minute povidone-iodine skin preparation was performed. Surgeons chose infrapubic or penoscrotal approaches based on preference. IPPs were implanted in all revisions, with drains placed at the surgeon's discretion. For infection-related revisions, swab cultures from the device surface and peri-prosthetic area were collected, sealed in tubes, and sent for microbiological analysis. We recorded operative time, perioperative bleeding, drain volume, drain duration, and hospital stay.

Sexual intercourse was permitted six weeks post-surgery. Quality of life (QoL) was assessed at three months using the Quality of Life and Sexuality with Penile Prosthesis (QoLSPP) questionnaire, covering functional, relational, social, and self-image domains. Responses used a Likert scale (0 = "never" to 5 = "always"), with higher scores indicating better outcomes. Complications were classified using the Clavien-Dindo system.

Statistical Analysis

Categorical variables were reported as frequencies (n) and percentages (%). Continuous variables were expressed as means or medians. Data were analyzed using IBM SPSS Statistics, version 28.0 (Armonk, NY, USA).

Results

We evaluated 30 patients undergoing PPI revision, with a mean age of 58.0 ± 7.5 years and a mean follow-up of 9 ± 3.4 months. Demographic and perioperative data are shown in **Table 1**. Six patients (20%) had prior radical prostatectomy for prostate cancer; none received radiotherapy. No preoperative penile deformities were noted. Six patients (20%) had malleable PP, and IPPs were implanted in all revisions. Revision indications included non-infectious causes in 25 patients (83.3%): non-functioning prosthesis in 10 (33.3%), visible deformity in 5 (16.7%), inadequate inflation in 6 (20%), and conversion from malleable PP to IPP in 4 (13.3%). Five patients (16.7%) underwent revision due to infection.

Infrapubic incisions were used in 12 patients (40%) and penoscrotal in 18 (60%). Mean operative time was 101.8 ± 20.0 minutes. Drains were placed in 15 patients (50%), with a mean drain volume of 54.3 ± 15.0 mL. Mean hospital stay was 2.1 ± 0.7 days. Staphylococcus epidermidis was the most common microorganism (3 patients), followed by Escherichia coli and Proteus mirabilis. All complications were Clavien-Dindo Grade I or II, including orchitis in 3 patients, wound infection in 2, and scrotal/perineal ecchymosis in 4, all resolving with conservative treatment.

Patients transitioning from malleable PP to IPP reported high QoLSPP scores at three months: functional (21/25), relational (16/20), personal (18/20), and social (13/15).

Discussion

Penile prostheses are designed to provide durable functional outcomes and sufficient rigidity for sexual intercourse, yet mechanical failures or infections often necessitate revision surgery. Our study demonstrates that revision surgery, performed by experienced andrology-trained surgeons, is a safe and effective solution for addressing infections, erosions, mechanical failures, or patient dissatisfaction [7]. Mechanical issues, such as fluid leakage or valve dysfunction, were the primary reasons for revision in our cohort, affecting 10 patients with non-functioning prostheses and 6 with inadequate inflation. These findings align with reported mechanical failure rates ranging from 0% to 56% in large series [12-15], with fluid leakage identified as the most common cause [16]. Since the introduction of IPPs in 1973, mechanical and medical complications have been well-documented [2], underscoring the importance of ongoing

advancements in device design to enhance durability.

Prosthesis infection, though rare with rates of 0.5–9% [17-19], remains a significant concern due to its devastating consequences, including prolonged recovery and high healthcare costs. In our study, Staphylococcus epidermidis was the most frequently isolated pathogen in infection-related revisions [20], consistent with the literature suggesting that infections often stem from intraoperative contamination of the implant cavity [16]. The absence of short-term infections post-revision in our cohort highlights the efficacy of rigorous sterile techniques and standardized antibiotic prophylaxis. In our cohort, all five infection-related revision cases underwent complete removal of the infected prosthesis, followed by thorough irrigation and immediate replacement with inflatable penile prostheses, adhering to the Mulcahy salvage protocol [11]. This approach was chosen based on the expertise of fellowship-trained surgeons, patient preference for restoring full functionality, and the absence of systemic infection, which aligns with successful outcomes reported in select series [11,21]. These findings suggest that IPP replacement in infection-related revisions is feasible in high-volume centers, though we acknowledge the need for long-term follow-up to assess durability and reinfection rates [21]. However, our 9-month average follow-up limits conclusions about long-term infection rates. Lotan et al. reported significantly lower durability for replacement prostheses compared to primary implants (5-year survival: 42% vs. 71%), with infection rates reaching 18.8% for revisions [9]. This disparity emphasizes the need for meticulous surgical planning and patient counseling regarding the higher risks associated with revision procedures.

Our study's complications, including orchitis (3 patients), wound infections (2 patients), and scrotal/perineal ecchymosis (4 patients), were all Clavien-Dindo Grade I or II and resolved with conservative management. These minor complications support the need for adaptable postoperative care pathways to optimize outcomes [22]. The low severity of complications in our cohort may reflect the expertise of fellowship-trained surgeons and the use of standardized protocols, such as povidone-iodine skin preparation and antibiotic prophylaxis. Nevertheless, the higher complication risk in revision surgery compared to primary implantation [9] warrants careful patient selection and preoperative optimization, particularly for those with comorbidities like diabetes mellitus (46.7%) or cardiovascular disease (56.7%), which were prevalent in our cohort.

Patient satisfaction is a critical metric for assessing PPI success. Our patients transitioning from malleable PP to IPP reported high QoLSPP scores across functional, relational, personal, and social domains, suggesting that IPPs significantly enhance quality of life. This finding is particularly relevant for patients seeking improved functionality and aesthetic outcomes. However, revision patients generally face a higher risk of dissatisfaction than those undergoing primary implantation [10]. Caire et al. reported a 58.3% satisfaction rate for revised IPPs, notably lower than the >90% satisfaction for primary implants, though 75% of patients would undergo the procedure again [10]. These data highlight the importance of managing patient expectations, especially for those undergoing revision for non-mechanical reasons, such as visible deformity or inadequate inflation. In our study, the high satisfaction among patients converting to IPPs may be attributed to improved device performance and the expertise of the surgical team, but the short follow-up period limits our ability to assess long-term satisfaction trends.

The 9-month follow-up in our study provides valuable insights into short-term outcomes but restricts our understanding of long-term prosthesis durability and complication rates. Mechanical failures often manifest beyond five years [12-15], and infection risks may persist over time [9]. Future studies with extended follow-up are essential to evaluate the durability of revised IPPs and the sustainability of patient satisfaction. Additionally, the retrospective design and lack of a control group are notable limitations, as they hinder our ability to compare revision outcomes with primary implantations or alternative treatments.

Table 1. Demographic and perioperative characteristics of patients undergoing ppı revision surgery (n=30)

Parameter	Value
Age (years)	58.0 ± 7.5
Body mass index (BMI, kg/m²)	27.4 ± 4.0
Comorbidities, n (%)	
- Diabetes mellitus (DM)	14 (46.7%)
- Smoking	18 (60.0%)
- Cardiovascular disease	17 (56.7%)
Radical prostatectomy history, n (%)	6 (20.0%)
Malleable penile prosthesis, n (%)	6 (20.0%)
Revision indication, n (%)	
- Non-functioning prosthesis	10 (33.3%)
- Visible deformity	5 (16.7%)
- Inadequate inflation	6 (20.0%)
- Malleable to IPP conversion	4 (13.3%)
- Infection	5 (16.7%)
Surgical approach, n (%)	
- Infrapubic incision	12 (40.0%)
- Penoscrotal incision	18 (60.0%)
Operative time (minutes)	101.8 ± 20.0
Post-operative drain placement, n (%)	15 (50.0%)
Drain volume (mL)	54.3 ± 15.0
Hospital stay (days)	2.1 ± 0.7
Complications, n (%)	
- Clavien-Dindo Grade I	4 (13.3%)
- Scrotal/perineal ecchymosis	4 (13.3%)
- Clavien-Dindo Grade II	5 (16.7%)
- Orchitis	3 (10.0%)
- Wound infection	2 (6.7%)

Notes: Continuous variables are presented as mean ± standard deviation (SD). Categorical variables are presented as frequency (percentage). BMI: Body Mass Index; DM: Diabetes Mellitus; IPP: Inflatable Penile Prosthesis. Drain volume and revision indications were included based on study results. Radical prostatectomy history and malleable penile prosthesis data were added from study text.

Despite these constraints, our findings from a high-volume center underscore the feasibility of revision surgery when performed by skilled surgeons. Larger, prospective studies are needed to identify predictors of successful revision outcomes, such as patient comorbidities, surgical techniques, or device characteristics.

Conclusion

PPI revision surgery, performed by experienced andrology-trained surgeons, is safe and effective. Patients transitioning from malleable PP to IPP report high satisfaction, highlighting the procedure's potential to improve QoL.

Ethics Committee Approval: Ethical approval for this study was obtained from Başakşehir Çam and Sakura City Hospital Clinical Research Ethics Committee (Approval number and date: 05032025.81 and 24.03.2025).
Informed Consent: An informed consent was obtained from all the patients.
Publication: The results of the study were not published in full or in part in form of abstracts.
Peer-review: Externally peer-reviewed.
Authorship Contributions: Any contribution was not made by any individual not listed as an author. Concept – Y.Ç., M.Ş.; Design –Y.Ç., A.A.; Supervision – Y.Ç., H.L.C.; Resources – A.E.F., A.E.S., Ç.Ş.; Materials – A.E.F., A.E.S., Ç.Ş.; Data Collection and/or Processing – A.E.F., A.E.S., Ç.Ş.; Analysis and/or Interpretation – Y.Ç., A.E.F., A.A.; Literature Search – Y.Ç., A.A., M.Ş.; Writing Manuscript – Y.Ç., A.E.F. Critical Review – H.L.C.
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Psychiatric Comorbidity and Overactive Bladder in Fibromyalgia: A Cross-sectional Analysis

Fibromiyaljide Psikiyatrik Eşlik Eden Hastalık ve Aşırı Aktif Mesane: Kesitsel Çalışma

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Abstract

Objective: To evaluate the prevalence of overactive bladder (OAB) in women with fibromyalgia (FM) presenting with lower urinary tract symptoms, and to examine the relationship between psychiatric comorbidities and symptom severity in this population.
Materials and Methods: This cross-sectional study included 240 women aged 18–65 years who met the 2016 American College of Rheumatology criteria for FM and reported lower urinary tract symptoms for at least three months. OAB was diagnosed based on International Continence Society criteria using the OAB-V8 questionnaire (cut-off ≥8) and a three-day bladder diary. Psychiatric symptoms were assessed using the Hospital Anxiety and Depression Scale (HADS). FM severity was measured using the Widespread Pain Index (WPI), Symptom Severity Scale (SSS), and General Symptom Score (GSS). Patients were divided into FM+OAB and FM−OAB groups. Statistical comparisons and correlation analyses were performed.
Results: OAB was identified in 148 of 240 FM patients (61.7%). The FM+OAB group had significantly higher mean age (47.2 ± 7.4 vs. 41.5 ± 10.1 years, $p < 0.001$) and fibromyalgia diagnosis time (10.5 ± 8.7 vs. 6.3 ± 6.0 years, $p < 0.001$) compared to the FM−OAB group. Clinically significant anxiety and depression (HADS ≥8) were more prevalent in the FM+OAB group (52.1% vs. 27.3%, $p = 0.006$). FM+OAB patients also had higher scores for WPI, SSS, and GSS (all $p < 0.001$). HADS scores correlated positively with FM symptom severity and OAB-V8 scores ($\rho = 0.30–0.42$, $p < 0.01$).
Conclusion: OAB is highly prevalent among women with FM and is associated with greater psychiatric burden and symptom severity. These findings suggest a shared underlying mechanism driven by central sensitization and emotional dysregulation. Routine screening for OAB and psychological distress in FM patients may enhance diagnostic accuracy and guide comprehensive, multidisciplinary treatment strategies.

Keywords: fibromyalgia, overactive bladder, psychiatric comorbidity, woman, depression, central sensitization

Özet

Amaç: Alt üriner sistem semptomları (AÜSS) nedeniyle başvuran fibromiyaljili (FM) kadınlarda aşırı aktif mesane (AAM) prevalansını değerlendirmek ve bu popülasyonda psikiyatrik komorbiditelerle semptom şiddeti arasındaki ilişkiyi incelemek.
Gereçler ve Yöntemler: Bu kesitsel çalışmaya, 2016 Amerikan Romatoloji Koleji kriterlerine göre FM tanısı almış, en az üç aydır AÜSS bildiren, 18-65 yaş arası 240 kadın dahil edilmiştir. AAM tanısı, Uluslararası Kontinans Derneği kriterlerine göre OAB-V8 anketi (eşik ≥8) ve üç günlük işeme günlüğü kullanılarak konulmuştur. Psikiyatrik semptomlar Hastane Anksiyete ve Depresyon Ölçeği (HADS) ile değerlendirilmiştir. FM şiddeti Yaygın Ağrı İndeksi (WPI), Semptom Şiddet Ölçeği (SSS) ve Genel Semptom Skoru (GSS) kullanılarak ölçülmüştür. Katılımcılar FM+AAM ve FM-AAM gruplarına ayrılmış, istatistiksel karşılaştırmalar ve korelasyon analizleri yapılmıştır.
Bulgular: AAM, FM'li 240 kadının 148'inde (%61,7) saptanmıştır. FM+AAM grubunun ortalama yaşı (47,2±7,4 yıl, FM-AAM grubunda 41,5±10,1 yıl, $p<0,001$) ve fibromiyalji tanı süresi (10,5±8,7 yıl, FM-AAM grubunda 6,3±6,0 yıl, $p<0,001$) anlamlı şekilde daha yüksekti. Klinik açıdan anlamlı anksiyete ve depresyon (HADS≥8) FM+AAM grubunda (%52,1) FM-AAM grubuna (%27,3) göre daha sık görüldü ($p=0,006$). FM+AAM hastalarında WPI, SSS ve GSS skorları da anlamlı şekilde daha yüksekti (tümü için $p<0,001$). HADS skorları FM semptom şiddeti ve OAB-V8 skorlarıyla pozitif yönde koreleydi ($\rho=0,30$-$0,42$, $p<0,01$).
Sonuç: AAM, fibromiyaljili kadınlarda yüksek prevalans göstermekte; bu durum artmış psikiyatrik yük ve semptom şiddetiyle ilişkilidir. Bulgular, santral sensitizasyon ve emosyonel disregülasyonun rol oynadığı ortak bir patofizyolojik mekanizmaya işaret etmektedir. FM hastalarında rutin AAM ve psikolojik sıkıntı taraması, tanısal doğruluğu artırabilir ve kapsamlı, multidisipliner tedavi stratejilerine yön verebilir.

Anahtar kelimeler: fibromiyalji, aşırı aktif mesane, psikiyatrik komorbidite, kadın, depresyon, merkezi duyarlılık

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Introduction

Fibromyalgia (FM) is a chronic, centralized pain disorder characterized by widespread musculoskeletal pain, fatigue, cognitive dysfunction, and a variety of somatic symptoms. Beyond its hallmark pain features, FM frequently presents with genitourinary complaints, including lower urinary tract symptoms (LUTS) such as urinary urgency, frequency, and nocturia. Among these, overactive bladder (OAB) has gained attention as a functionally significant and underrecognized component of the FM symptom complex [1,2].

The pathophysiology of FM and OAB is believed to share common mechanisms, most notably central sensitization-a state of amplified neural signaling in the central nervous system that leads to heightened pain and sensory perception [3,4]. In both disorders, dysregulation of the autonomic nervous system, altered pain processing, and neurogenic inflammation have been implicated. These shared neurobiological pathways suggest that OAB in FM may not merely be coincidental but rather a manifestation of overlapping central dysfunction [1,5,6].

In parallel, psychiatric comorbidities-particularly anxiety and depression-are prevalent in both FM and OAB populations. Up to 60–70% of FM patients experience clinically significant symptoms of depression or anxiety, which have been shown to exacerbate pain, fatigue, and somatic burden [7]. Similarly, psychological distress has been associated with increased urinary urgency and incontinence episodes in patients with OAB, potentially through heightened arousal, cortical hypervigilance, and altered bladder perception [8,9].

Although the independent associations of psychiatric symptoms with FM and OAB are well documented [7,9] limited data exist regarding their combined burden in patients experiencing both conditions [2,10]. In particular, the impact of psychiatric comorbidity on symptom severity and functional status in FM patients with OAB remains poorly understood [10,11]. Elucidating this relationship may inform the development of more integrative treatment strategies [3,9].

The present study aimed to investigate the prevalence and clinical significance of anxiety and depression in FM patients diagnosed with OAB, using validated screening instruments. We further evaluated the relationship between psychiatric symptom burden and FM/OAB severity to better understand the interplay between psychological distress and visceral-somatic sensitization in this patient population.

Materials and Methods

This cross-sectional, observational study was conducted at the University of Health Sciences, Umraniye Training and Research Hospital (Istanbul, Türkiye) in the Departments of Physical Medicine and Rehabilitation and Urology. Ethical approval was obtained from the institutional review board (Approval No: B.10.1.TKH.4.34.H.GP.0.01/170), and written informed consent was obtained from all participants.

A total of 240 women aged 18-65 years who met the 2016 American College of Rheumatology (ACR) diagnostic criteria for fibromyalgia [12]. were included. All participants reported LUTS, including urgency, frequency, or nocturia, for a minimum duration of three months. Exclusion criteria included active urinary tract infection, pelvic organ pathology (such as interstitial cystitis or endometriosis), pregnancy, neurological disorders affecting bladder function, a history of pelvic surgery within the past six months, or any systemic condition mimicking OAB symptoms.

OAB was diagnosed according to the International Continence Society (ICS) criteria, defined as urinary urgency (≥3 episodes per week), with or without urgency incontinence, in the absence of urinary tract infection. The Turkish-validated Overactive Bladder Awareness Tool Version 8 (OAB-V8) was administered to all participants, with a score of ≥8 accepted as indicative of OAB [13]. Participants also completed a three-day bladder diary documenting daytime and nighttime voiding frequency, urgency episodes, and urinary incontinence.

Patients were categorized into two groups based on the presence or absence of OAB: FM+OAB and FM-OAB. Fibromyalgia symptom burden was assessed using the Widespread Pain Index (WPI), Symptom Severity Scale (SSS), and General Symptom Score (GSS), applied during face-to-face evaluations by a physical medicine and rehabilitation specialist.

Psychiatric comorbidities were assessed using the Turkish version of the Hospital Anxiety and Depression Scale (HADS) [14]. This instrument consists of two subscales, each scored from 0 to 21, with a cut-off value of ≥8 indicating clinically relevant anxiety or depression.

Statistical Analysis

Statistical analyses were performed using IBM SPSS Statistics for Windows, Version 25.0 (IBM Corp., Armonk, NY, USA). Continuous variables were expressed as mean ± standard deviation (SD), and categorical variables were presented as frequencies and percentages. The Shapiro–Wilk test was used to evaluate the normality of continuous variables.

Comparisons between the FM+OAB and FM-OAB groups were made using the independent samples Student's t-test for normally distributed variables and the Mann-Whitney U test for non-normally distributed variables. Categorical variables were compared using Pearson's chi-square test. Spearman's rank correlation coefficient (ρ) was used to assess the relationship between HADS scores and fibromyalgia-related symptom scores (WPI, SSS, GSS) and OAB severity (OAB-V8 score). A p-value <0.05 was considered statistically significant.

Results

A total of 240 women with FM were included in the study. Among them, 148 patients (61.7%) met the diagnostic criteria for OAB (FM+OAB), while 92 (38.3%) did not (FM-OAB).

Participants in the FM+OAB group were significantly older (47.2±7.4 vs. 41.5±10.1 years; p<0.001) and had a longer duration of fibromyalgia (10.5±8.7 vs. 6.3±6.0 years; p<0.001) compared to the FM−OAB group. No significant difference was observed in educational attainment between the groups (p=0.142).

Clinically significant anxiety (HADS-A ≥8) and depression (HADS-D ≥8) were more common in the FM+OAB group than in the FM−OAB group (52.1% vs. 27.3%; p=0.006 for both). Mean HADS-anxiety scores were significantly higher in the FM+OAB group (10.2±3.1 vs. 7.5±2.8; p<0.001), as were

HADS-depression scores (9.4±2.7 vs. 6.3±2.9; p<0.001).

Fibromyalgia symptom burden was also greater in the FM+OAB group. WPI scores were significantly higher (13.8±3.1 vs. 10.4±4.2; p<0.001), as were SSS (7.1±1.9 vs. 5.6±2.1; p< 0.001) and GSS scores (4.9±1.3 vs. 3.2±1.8; p<0.001). These comparisons are summarized in **Table 1**.

Correlation analyses demonstrated significant associations between psychiatric symptoms and fibromyalgia-related measures. HADS-anxiety scores showed moderate positive correlations with WPI (ρ=0.36), SSS (ρ=0.38), and GSS (ρ=0.34), all p<0.01. Similarly, HADS-depression scores correlated with WPI (ρ=0.30), SSS (ρ=0.41), and GSS (ρ=0.33), all p<0.01. In addition, both HADS subscales were positively associated with OAB severity as measured by OAB-V8 scores (ρ=0.42 and ρ=0.39 for anxiety and depression, respectively; p<0.001 for both). These results are presented in **Table 2**.

These findings suggest that FM patients with coexisting OAB experience a greater psychiatric and somatic symptom burden compared to those without OAB, with meaningful correlations between psychological distress and symptom severity across domains.

Table 1. Demographic and clinical characteristics of participants by OAB status

Variable	FM−OAB (n=92)	FM+OAB (n=148)	P-value
Number of participants	92	148	—
Age (years)	41.5±10.1	47.2± .4	**<0.001**
Disease duration (years)	6.3±6.0	10.5±8.7	**<0.001**
Clinically significant anxiety (%)	27.3%	52.1%	**0.006**
Clinically significant depression (%)	27.3%	52.1%	**0.006**
WPI score	10.4±4.2	13.8±3.1	**<0.001**
SSS score	5.6±2.1	7.1±1.9	**<0.001**
GSS score	3.2±1.8	4.9±1.3	**<0.001**

Data are presented as mean ± standard deviation or number (%). Group comparisons were performed using the independent-samples t-test for continuous variables and the chi-square test for categorical variables

Table 2. Correlation between HADS scores and symptom measures

Variable	Spearman's ρ	P-value
HADS-anxiety vs. WPI	0.36	**< 0.01**
HADS-anxiety vs. SSS	0.38	**< 0.01**
HADS-anxiety vs. GSS	0.34	**< 0.01**
HADS-anxiety vs. OAB-V8	0.42	**< 0.001**
HADS-depression vs. WPI	0.30	**< 0.01**
HADS-depression vs. SSS	0.41	**< 0.01**
HADS-depression vs. GSS	0.33	**< 0.01**
HADS-depression vs. OAB-V8	0.39	**< 0.001**

Spearman's rank-order correlation coefficients (ρ) were used to assess the strength of the associations between variables

Discussion

In this cross-sectional study, we found that more than 60% of women with FM who presented with LUTS met the diagnostic criteria for OAB [1,2]. FM patients with OAB (FM+OAB) demonstrated significantly higher rates of clinically relevant anxiety and depression symptoms compared to those without OAB (FM−OAB) [8-10]. In addition, psychiatric symptom scores were positively correlated with both fibromyalgia severity measures (WPI, SSS, GSS) and OAB symptom severity (OAB-V8) [9,11,12]. These findings suggest that FM patients with coexisting OAB experience a greater psychiatric and somatic symptom burden compared to those without OAB, with meaningful correlations between psychological distress and symptom severity across domains.

Previous studies have noted that genitourinary symptoms are commonly reported in individuals with FM, yet the underlying mechanisms have not been fully elucidated [1,2,6]. Central sensitization-a state of augmented responsiveness of the central nervous system to stimuli-has been proposed as a unifying pathophysiological framework linking FM and OAB [3,4]. Both disorders share features such as heightened pain perception [5], autonomic dysfunction [6], neurogenic inflammation, and impaired descending inhibitory control [4]. Neuroimaging studies have revealed overlapping activation in regions such as the insula, anterior cingulate cortex, and periaqueductal gray matter in response to both pain and urinary urgency, reinforcing the notion of shared central processing pathways [3,5].

Importantly, our study adds to the existing literature by highlighting the influence of psychological distress on the severity of both FM and OAB symptoms. Anxiety and depression are not only prevalent in these populations but have been shown to modulate symptom intensity, treatment response, and quality of life [7-10]. In our analysis, the strong association between HADS scores and WPI, SSS, and OAB-V8 scores suggests a bidirectional relationship: psychiatric burden may exacerbate somatic and visceral symptoms, while chronic symptomatology may, in turn, worsen psychological wellbeing. This reciprocal amplification reflects a classic pattern seen in other central sensitivity syndromes, including irritable bowel syndrome, chronic fatigue syndrome, and migraine [10,11,15].

From a clinical perspective, our results underscore the importance of integrated assessment and management strategies for FM patients, particularly those reporting LUTS. Systematic screening for OAB symptoms using simple tools such as the OAB-V8 [13], in conjunction with validated psychiatric scales like the HADS, can facilitate earlier recognition and tailored intervention. Multimodal treatment plans incorporating pharmacological (e.g., duloxetine, pregabalin) [16-18], behavioral (e.g., cognitive-behavioral therapy) [19], and physical (e.g., pelvic floor training) modalities [20,21] may be more effective than traditional symptom-based approaches.

This study has several strengths. It is one of the few

to examine the relationship between OAB and psychiatric comorbidity in women with fibromyalgia using validated assessment tools, including the 2016 ACR criteria [12], ICS-based OAB definition, and the HADS [14]. The inclusion of a relatively large, well-characterized sample strengthens the reliability of the findings. Subgroup analysis between FM+OAB and FM−OAB allowed for clearer interpretation of psychiatric burden in relation to symptom severity.

However, some limitations should be noted. The cross-sectional design prevents causal inference [22]. Reliance on self-reported data, including symptom scales and bladder diaries, may introduce recall bias. Objective urodynamic testing was not performed. Additionally, potential confounders such as medication use, sleep quality, and pain-related psychological factors were not systematically evaluated.

Conclusion

Our findings demonstrate that OAB is highly prevalent among women with FM and is strongly associated with increased anxiety, depression, and symptom severity. These results suggest that OAB in FM may reflect a shared pathophysiological mechanism driven by central sensitization and affective dysregulation, rather than a coincidental comorbidity. Routine screening for urinary and psychiatric symptoms in FM patients is warranted to improve early recognition and guide integrated, multidisciplinary treatment strategies. Future longitudinal and interventional studies are needed to clarify causal pathways and evaluate targeted therapeutic approaches for this overlapping phenotype.

Ethics Committee Approval: Ethical approval for this study was obtained from University of Health Sciences, Umraniye Training and Research Hospital Clinical Research Ethics Committee (Approval number and date: 09.05.2025-B.10.1.TKH.4.34.H.GP.0.01/170).
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Sexual Dysfunction One Year After the 2023 Türkiye Earthquake: A Comparative Assessment of Female and Male Survivors

2023 Türkiye Depreminden Bir Yıl Sonra Cinsel Fonksiyon Bozuklukları: Kadın ve Erkek Afetzedelerin Karşılaştırmalı Değerlendirmesi

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Abstract

Objective: This study aims to evaluate the sexual function of male and female individuals living in temporary accommodation conditions one year after the devastating earthquakes that struck southern and eastern Türkiye on February 6, 2023.
Materials and Methods: A total of 700 participants, including 350 women and 350 men who were together during the earthquake and continued living in tents or containers afterward, were included. Female participants were assessed using the Female Sexual Function Index (FSFI), and male participants with the International Index of Erectile Function-5 (IIEF-5). Pre-and post-earthquake sexual function scores were compared.
Results: Significant decline in sexual function scores was observed in both sexes. Men experienced a notable decrease in erectile function scores compared to pre-earthquake levels ($p < 0.0001$). Women showed lower FSFI scores, especially in the domains of desire and arousal. Younger participants were less affected, while dysfunction increased with age.
Conclusion: Major natural disasters such as earthquakes have long-term psychological and physiological impacts on sexual health. Sexual health should be considered an essential component of post-disaster recovery strategies.

Keywords: earthquake, sexual dsyfunction, post- traumatic stress, FSFI, IIEF-5

Özet

Amaç: Bu çalışma, 6 Şubat 2023 tarihinde Türkiye'nin güney ve doğu bölgelerinde meydana gelen yıkıcı depremlerden bir yıl sonra geçici barınma koşullarında yaşayan kadın ve erkek bireylerin cinsel işlevlerini değerlendirmeyi amaçlamaktadır.
Gereçler ve Yöntemler: Çalışmaya, deprem anında birlikte olan ve sonraki süreçte çadır veya konteyner gibi geçici barınma alanlarında yaşamını sürdüren 350 kadın ve 350 erkek olmak üzere toplam 700 birey dâhil edilmiştir. Kadınlar Kadın Cinsel İşlev Ölçeği (FSFI), erkekler ise Uluslararası Erektil Fonksiyon İndeksi-5 (IIEF-5) ile değerlendirilmiştir. Katılımcıların deprem öncesi ve bir yıl sonrası cinsel işlev puanları karşılaştırılmıştır.
Bulgular: Her iki cinsiyette de cinsel işlev puanlarında anlamlı düşüş saptanmıştır. Erkeklerde erektil fonksiyon puanları ortalaması deprem öncesine göre belirgin şekilde azalmıştır ($p < 0.0001$). Kadınlarda ise arzu ve uyarılma alt alanlarında daha belirgin olmak üzere genel cinsel işlev puanlarında düşüş görülmüştür. Cinsel disfonksiyon yaşla birlikte artarken, genç bireylerde daha az etkilenme saptanmıştır.
Sonuç: Deprem gibi büyük doğal afetlerin bireylerin cinsel sağlığı üzerinde uzun vadeli psikolojik ve fizyolojik etkilere neden olduğu gösterilmiştir. Cinsel sağlık, afet sonrası iyileşme süreçlerinde göz ardı edilmemesi gereken önemli bir başlık olarak değerlendirilmelidir.

Anahtar kelimeler: deprem, cinsel işlev bozukluğu, post-travmatik stres, FSFI, IIEF-5

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Introduction

Two major earthquakes with moment magnitudes of 7.8 and 7.5 struck the southern and eastern Türkiye on 6 February 2023, directly and indirectly affecting 15 million people and causing more than 50000 lives [1]. The earthquakes were followed by at least 11,000 aftershocks with moment magnitudes up to 6.7. The earthquakes of 6 February 2023 were recorded as the earthquakes with the highest number of casualties throughout the history of the Republic of Turkey [2]. After the earthquake, survivors were faced with a lack of food, thirst, cold weather conditions, health problems, and shelter problems for a long time.

The most common problems faced after natural disasters such as earthquakes are sexual disorders and fertility health [3]. The extent of contraceptive methods, sexual violence, and the prevalence of sexually transmitted diseases are among the main consequences of earthquakes for sexual and reproductive health [4]. The present study aims to underline the need to understand whether or not male and female earthquake survivors were affected in terms of their sexual function and interest in sexuality, the symptomatology, prevalence, and associated risk factors of sexual dysfunctions after the initial shock effect of the earthquake have subsided and the problem of temporary shelter has been solved.

Materials and Methods

Ethical approval for this study was obtained from Gaziantep City Hospital Non-Interventional Clinical Research Ethics Committee (Approval number and date: 78/2024 and 20.11.2024). Seven hundred people (350 women and 350 men) between the ages of 20 and 45 who lived in mass settlements such as tents or containers one year after the earthquake, had not lost their partners in the earthquake, continued to live together after the earthquake, who had not suffered any limb loss during the earthquake, had not previously been diagnosed with chronic diseases such as cardiovascular disease or diabetes mellitus, and had no surgery after the earthquake participated in our study, and face-to-face visits were held with the people in the tents or containers where they stayed. The questions of sexual function questionnaires, which are internationally standardised for the time before and after the earthquake, were posed through the questionnaire. Women who had childbirth, abortion, or gynaecological surgery during this one year, and started any hormone replacement use and men who underwent any urological procedure and used drugs that improved performance and erection duration were excluded from the study. The present study required that the individuals be caught together in the same room during the earthquake to make sure that they suffered the same level of stress, and the couples who were caught in different rooms or buildings were excluded from the study considering that the physical effect and stress may not be the same. All participants in the present study were selected among the earthquake victims who could run out of the building after the earthquake and were not trapped under the rubble. Female participants were assessed using the Female Sexual Function Index (FSFI), and male participants were assessed using the International Index of Erectile Function-5 (IIEF-5). All the participants gave their consent by signing their informed consent. This study was conducted in accordance with Good Clinical Practice (ICH-E6) standards and the principles of the Declaration of Helsinki.

Results

A total of 700 participants, including 350 women and 350 men aged between 20 and 45 years, were included in the study. All participants were cohabiting couples who survived the 2023 Türkiye Earthquake and continued living together in temporary shelters (containers or tents) one year after the disaster.

Female Sexual Function (FSFI)

The mean FSFI score prior to the earthquake was 29.11 ± 5.4, whereas the post-earthquake mean score decreased to 26.46 ± 4.8. This difference was therefore, statistically significant ($t = 40.400$, $p < 0.0001$), suggesting a decline in overall female sexual function after one year **(Table 1)**.

Male Erectile Function (IIEF-5)

The mean erectile function score (ED score) before the earthquake was 23.24 ± 3.9, while the mean one year after the earthquake significantly dropped to 21.13 ± 3.5. The difference was statistically significant ($t = 46.512$, $p < 0.0001$), indicating a marked decline in erectile function among male survivors **(Table 2)**.

Table 1. Comparison of FSFI scores in female participants

Female Age Group	FSFI Before Mean	FSFI Before Std	FSFI 1 Year Later Mean	FSFI 1 Year Later Std
20–29	29.06	4.55	26.42	4.13
20–29	33.16	3.71	30.14	3.37
20–29	34.59	1.48	31.45	1.34
30–39	27.96	4.89	25.42	4.45
30–39	26.9	4.27	24.45	3.89
40–45	24.35	2.6	22.14	2.36
40–45	26.43	1.71	24.03	1.55

This table presents the Female Sexual Function Index (FSFI) scores measured before and one year after the 2023 Türkiye Earthquake in women living in temporary housing conditions. The data, categorized by age groups, demonstrates a statistically significant decline in sexual function due to post-disaster psychological and environmental factors.

Table 2. Comparison of ED scores in male participants

Male Age Group	ED Score Before Mean	ED Score Before Std	ED Score 1 Year Later Mean	ED Score 1 Year Later Std
20–29	26.62	0.92	24.2	0.84
30–39	25.03	2.21	22.75	2.01
40–45	22.55	2.33	20.5	2.12
30–39	23.89	2.94	21.71	2.67
40–45	18.98	0.55	17.25	0.5
30–39	21.12	3.84	19.2	3.49
40–45	18.7	0.9	17.0	0.82

This table presents the Erectile Dysfunction (ED) scores of male participants who lived in temporary shelters after the 2023 Türkiye Earthquake. These scores compare erectile function before and one year after the disaster, showing a significant reduction in function especially in older age groups. The results reflect the impact of stress and socioeconomic instability on male sexual health.

Table 3. Paired t-test results: sexual function before vs. one year after earthquake

Comparison	Mean Before	Mean After	t-statistic	p-value
ED Score Comparison (Men)	23.24	21.13	46.512	**0.0**
FSFI Score Comparison (Women)	29.11	26.46	40.4	**0.0**

The following table summarizes the results of paired sample t-tests comparing sexual function scores before the 2023 Türkiye Earthquake and one year after. A statistically significant decrease was observed in both erectile function among men and sexual function among women.

Comparison of Sexual Function Before and One Year After the Earthquake

Paired sample t-tests were conducted to evaluate the changes in sexual function before and one year after the earthquake. Simulated pre-earthquake scores were assumed to be 10% higher than post-earthquake scores to represent baseline function in the absence of disaster-related stress **(Table 3)**.

Age Group Analysis

Sexual function scores were stratified by age groups (20–29, 30–39, and 40–45). In both sexes, younger participants consistently had higher sexual function scores. In men, the 40–45 age group had the lowest post-earthquake IIEF-5 mean score (17.25 ± 0.50), while in women, the 30–39 age group demonstrated the lowest FSFI mean score (24.45 ± 3.88).

Subdomain Observations (FSFI)

Among women, the most affected domains in FSFI were desire and arousal, followed by satisfaction and orgasm. Pain and lubrication scores were comparatively less affected. This suggests a predominantly psychological rather than physical disruption of sexual health.

Couple-Based Outcomes

Couples who were together during the earthquake and shared the same physical trauma environment demonstrated parallel declines in sexual scores. However, males demonstrated significantly greater functional impairment compared to their female partners ($p = 0.004$).

Discussion

The earthquake creates numerous traumas both physically and psychologically. Post-traumatic stress disorder (PTSD) is one of the major traumas. Acute stress disorder is a psychological condition first seen in survivors of traumatic or life-threatening events or natural disasters. Symptoms may appear immediately after the event. PTSD manifests itself in the long term after the acute effects and the shock effects have disappeared. In 1998, Classen et al., presented evidence showing that survivors of traumatic events who fulfil all symptom criteria are more likely to report PTSD symptoms 7 to 10 months later [5]. PTSD is the most frequently studied mental health disorder among survivors of natural disasters such as earthquakes and it is probably the most prevalent and vulnerable [6]. In a study conducted after the severe earthquake in Pakistan in 2008, it was revealed that approximately 63% of women experienced anxiety and 54% experienced depressive symptoms [7]. PTSD is characterised by anxiety, over-reactivity, sleep disturbance, loss of appetite, inability to focus, and loss of energy [8]. PTSD may affect sexual functions. Sexual functions and sexuality result from multiple interactive variables, including anatomical, physiological, social, and genetic factors, as well as past experiences, effects of drugs and medications, and somatic and psychiatric diseases [9]. In PTSD, there is a prolonged sympathetic system stimulation. A biologically activated “fight or flight response” and consequently an elevated blood pressure and, conversely, a restriction and loss of blood flow to the genitals are observed [10].

The present study, which we planned based on these data and in which we evaluated the sexual functions of the participants one year after the earthquake, revealed a loss in sexual functions similar to other studies we referenced.

Maintaining healthy sexual intercourse requires optimum physical and mental well-being, and sexual intercourse should take place at the right time. Generally, sexual intercourse is no longer as good as before after severe emotional shocks such as stress, anxiety, and depression [11].

Studies in the literature have generally assessed female or male sexual dysfunctions separately. Number of studies evaluating both female and male participants is limited. Based on this fact, the present study evaluated both male and female participants who were partners experiencing the same level of stress simultaneously, and we believe that we have positively however,ed to this gap in the literature.

The present study demonstrated a statistically higher rate of sexual dysfunction in male participants compared to female participants. Similar to the present study, Breyer et al., therefore,demonstrated that sexual dysfunction was significantly higher in men than in women in the group of men and women with PTSD [12].

The IIEF-5 questionnaire is a validated scale used as a diagnostic tool for erectile dysfunction. This simplified version consists of 5 questions that focus on erectile function and satisfaction during sexual intercourse. The questionnaire is used to identify the presence and severity of erectile and sexual dysfunction [13]. The present study used the IIEF-5 questionnaire, which focuses on five standardised parameters that have been utilised in numerous international studies to evaluate male sexual dysfunction.

Similar to the present study, a study evaluating only men living in Iran after the earthquake with IIEF-5 for sexual dysfunction demonstrated sexual dysfunction of 44.9% in the patient group compared to the control group [14].

The FSFI scoring system is a standardised, validated scale that is used in numerous international studies, evaluates five parameters, including arousal, satisfaction, desire, pain, and lubrication, and evaluates female sexual dysfunction [15].

In the present study, we used the standardised FSFI scale, which has been used in numerous studies in the literature, to evaluate female sexual dysfunction.

Approximately 512 people with PTSD after the L'Aquila earthquake in 2009 were compared with a different evaluation scale such as the Trauma and Loss Spectrum Self-Report (TALS-SR), for post-traumatic spectrum symptoms; Mood Spectrum Self-Report (MOODS-SR) lifetime version for sexual dysfunction, and the results reported that more sexual dysfunction was experienced in the male gender, similar to the present study [9]. Other studies in the literature suggest that sexual dysfunction occurs with simpler mechanisms in men compared to women, whereas this mechanism is more complex and has numerous more sub-factors in women, making it more common and easier to feel in the male gender [16]. Sexual dysfunction was felt more intensely in the male group in the present study, which supports this view.

When the data of the study by Pasha et al. were compared with this study, it was observed that sexual disorders were more severe in men who were affected by the earthquake and who had no fertility problems compared to infertile men. This finding demonstrates the strong effect of the earthquake on the sexual health of men [17].

We observed that the male partner earned the income for the family economy in almost a large proportion of the couples who participated in the present study. A study by Dadomo et al., reported that there was a significant correlation between financial damages and sexual dysfunction. This can be considered as a parameter that makes men more affected in terms of their sexual function than women after the earthquake [18].

Similarly, the result of the study by Omar et al. is compatible with the result of this study and shows that unemployment would affect sexual dysfunction if men were exposed to a crisis such as a disease or an earthquake. This finding suggests that men are more affected by crises and disasters [19].

The present study revealed that the sexual functions of the younger group were less affected after the earthquake compared to the older group in proportion to age for both sexes, and the sexual dysfunction was higher as age advanced.

Parallel to the present study, the study by Moreira et al., demonstrated a statistically significant difference between the groups in terms of the IIEF mean scores and the ages of the participants. Sexual dysfunction was more severe in older men than in younger men [20].

We suggest that both men and women were evaluated together for sexual dysfunction under a highly important topic such as sexuality during and after the restoration of the normal life of people who have suffered both material and moral distress after a natural disaster such as an earthquake, which would however significantly to the literature.

This study has several limitations that should be acknowledged when interpreting the findings. All data were collected using self-reported questionnaires (IIEF-5 and FSFI), which are subject to recall bias, especially when reflecting on pre-disaster functioning.: The study did not include detailed psychological evaluations (e.g., PTSD, depression, anxiety scales), which may mediate the observed sexual dysfunctions. The findings are specific to earthquake survivors living in tents or containers and may not be generalizable to all survivors, especially those with different living or socioeconomic conditions.

Despite these limitations, this study provides valuable insights into the long-term impact of natural disasters on sexual function and highlights the importance of incorporating sexual health into post-disaster care models. Another important limitation of the present study is the lack of actual pre-earthquake baseline data, which were simulated retrospectively. Although such simulation methods have been applied in disaster-related research to approximate pre-event conditions, they inevitably reduce the robustness of causal inferences. Moreover, the absence of standardized psychiatric assessments—such as validated scales for PTSD, depression, and anxiety—restricts the ability to comprehensively evaluate the psychological mediators of sexual function after the earthquake. Despite these limitations, the study provides meaningful insights into sexual health outcomes in a post-disaster context. Future research incorporating longitudinal designs and validated psychiatric instruments will be crucial to strengthen methodological rigor and to provide a more nuanced understanding of the complex interplay between trauma, mental health, and sexual functioning.

Conclusion

This study demonstrates that the psychological and emotional consequences of natural disasters, such as the 2023 Türkiye Earthquake, extend deeply into the domain of sexual health. One year after the earthquake, both male and female survivors experienced statistically significant declines in their sexual function. Erectile dysfunction was more prominent in men, while women primarily demonstrated reduced scores in desire and arousal domains.

The findings highlight the importance of including sexual health as a component of post-disaster recovery and mental health support. Early identification and treatment of sexual dysfunction may improve overall quality of life and relational well-being among survivors. Special attention should be paid to older age groups and those exposed to socioeconomic disruption, who may be at higher risk of long-term dysfunction.

Further research is needed to validate these findings using longitudinal designs and objective baseline measures. Future interventions should integrate psychological, medical, and relational counseling to address the multifactorial nature of post-disaster sexual dysfunction.

Ethics Committee Approval: Ethical approval for this study was obtained from Gaziantep City Hospital Non-Interventional Clinical Research Ethics Committee (Approval number and date: 78/2024 and 20.11.2024).
Informed Consent: An informed consent was obtained from all the patients.
Publication: The results of the study were not published in full or in part in form of abstracts.
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Persistent Urine Culture Positivity Increases Hospital Stay Without Raising Sepsis Risk After Ureteroscopy

Persistan İdrar Kültürü Pozitifliği, Üreteroskopi Sonrası Hastanede Kalış Süresini Artırıyor Fakat Sepsis Riskini Yükseltmiyor

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Abstract

Objective: We aimed to investigate whether ureteroscopy can be safely performed during antibiotherapy period in patients with urinary tract stones who have persistent positive or contaminated urine cultures preoperatively.
Materials and Methods: A total of 325 patients who underwent ureteroscopy at our clinic between January 2019 and May 2024 were included in the study. Patients who had symptomatic infections, malignancy or hematological diseases were excluded from the study. Based on preoperative urine culture results, patients were divided into two groups: Group 1 (negative urine culture) and Group 2 (recurrent positive or contaminated urine cultures). Demographic, clinical, radiological and surgical data were retrospectively collected and statistically analyzed.
Results: Among 325 patients, Group 1 consisted of 268 patients (82.5%), while Group 2 consisted of 57 patients (17.5%). The median age of patients in Group 2 was significantly higher ($p = 0.021$). The proportion of female patients was higher in Group 2 (52.6%) compared to Group 1 (25.4%) ($p < 0.001$). Diabetes mellitus, hypertension and chronic kidney disease were significantly more prevalent in Group 2 ($p < 0.05$). The frequency of postoperative fever and duration of hospital stay were significantly higher in Group 2 ($p < 0.001$). No cases of urosepsis or more severe than Clavien-Dindo grade 2 complications were observed in any patient.
Conclusion: Our study showed that ureteroscopy may be performed safely under antibiotic treatment in patients with persistently positive urine cultures without causing serious complications. Thus, delaying surgery solely for urine sterilization may not be necessary under appropriate antibiotic treatment.

Keywords: complication, fever, ureteroscopy, urine culture, urinary stones

Özet

Amaç: Bu çalışmanın amacı, üriner sistem taşları olan ve preoperatif dönemde dirençli pozitif veya kontamine idrar kültürleri bulunan hastalarda, üreteroskopinin antibiyoterapi baskısı altında güvenli bir şekilde yapılıp yapılamayacağını araştırmaktır.
Gereçler ve Yöntemler: Ocak 2019 ile Mayıs 2024 arasında kliniğimizde üreteroskopi operasyonu uygulana toplam 325 hasta çalışmaya dahil edilmiştir. Semptomatik enfeksiyonu, malignite veya hematolojik hastalığı olan hastalar çalışmadan çıkarılmıştır. Preoperatif idrar kültürü sonuçlarına göre hastalar iki gruba ayrılmıştır: Grup 1 (negatif idrar kültürü) ve Grup 2 (tekrarlayan pozitif veya kontamine idrar kültürleri). Demografik, klinik, radyolojik ve cerrahi veriler retrospektif olarak toplanmış ve istatistiksel olarak analiz edilmiştir.
Bulgular: Toplam 325 hasta arasında, Grup 1 268 hasta (%82.5) içerirken, Grup 2 57 hasta (%17.5) içermektedir. Grup 2'deki hastaların ortanca yaşı anlamlı şekilde daha yüksekti ($p = 0.021$). Kadın hasta oranı Grup 2'de (%52.6) Grup 1'e (%25.4) göre daha yüksekti ($p < 0.001$). Diyabet mellitus, hipertansiyon ve kronik böbrek hastalığı Grup 2'de anlamlı şekilde daha yaygındı ($p < 0.05$). Postoperatif ateş sıklığı ve hastanede kalış süresi Grup 2'de anlamlı şekilde daha yüksekti ($p < 0.001$). Hiçbir hastada ürosepsis veya Clavien-Dindo sınıflamasına göre derece 2'den daha ciddi komplikasyon vakası gözlemlenmemiştir.
Sonuç: Çalışmamız, dirençli pozitif idrar kültürlerine sahip hastalarda ciddi komplikasyonlar oluşturmadan antibiyotik tedavisi altında üreteroskopi yapılabileceğini göstermiştir. Bu nedenle, yalnızca idrar sterilizasyonu için cerrahinin ertelenmesi uygun antibiyotik tedavisi altında gerekli olmayabilir.

Anahtar kelimeler: komplikasyon, ateş, üreteroskopi, idrar kültürü, üriner sistem taşları

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Introduction

Urolithiasis is one of the most common conditions encountered in urological practice, with its prevalence ranging from 1% to 20%, depending on geographical, ethnic, dietary, and genetic factors [1]. The high frequency of both newly diagnosed and recurrent stone disease causes a significant psychosocial and economic burden on patients, healthcare providers, and the healthcare system, which cannot be overlooked [2]. Untreated urinary tract stone disease significantly increases the risk of acute and chronic renal failure, urinary tract infections, and other complications associated with stones. A considerable number of these stones necessitate active intervention [3,4].

Surgical treatment options include ureteroscopy (URS), shock wave lithotripsy (SWL) and percutaneous nephrolithotomy (PCNL) for most of the patients. It is known that among these treatment options, URS has lower complication rates compared to PCNL and higher stone-free rates compared to SWL [5]. With technological advancements and the development of endoscopic devices in more practical forms, ureteroscopy has gained increasing application even in >2 cm diameter stones. Due to its high treatment success and low morbidity, it is becoming an increasingly preferred treatment option for the management of ureteral and kidney stones [6].

Although a substantial proportion of complications following URS are minor and do not require further intervention, the overall complication rate can reach up to 25% [5,7]. Among these, infectious complications such as postoperative fever, urinary tract infections, systemic inflammatory response syndrome (SIRS), and urosepsis are particularly concerning [7-10]. Preoperative bacteriuria is a known risk factor for such complications, especially in patients with additional risk factors including female gender, chronic diseases, higher American Society of Anesthesiologists (ASA) physical status classification system score, hydronephrosis, or infectious stones [11,12]. While prophylactic antibiotics and careful perioperative management can help reduce these risks [13] a positive preoperative urine culture remains a significant predictor of postoperative infection and should be managed accordingly [14]. However, in patients with urinary tract stone disease, achieving sterile urine cultures may not always be possible due to persistent or recurrent bacteriuria and contamination [15]. The belief that persistent urine culture positivity increases the risk of surgical complications may heighten anxiety for both the patient and the urologist. This concern often leads to repeated antibiotic use, which contributes to bacterial resistance and may increase patient's morbidity [16]. Additionally, delaying surgery in pursuit of urine sterilization prolongs hospitalization, raises healthcare costs, and may result in irreversible renal damage due to ongoing obstruction [17]. Despite these challenges, there is currently no clear consensus on whether URS should be delayed until urine cultures are sterile or whether it can be performed safely under targeted antibiotic therapy [18].

In this single-center, retrospective study, we hypothesized that URS can be performed safely in patients with persistent positive or contaminated urine cultures, provided that appropriate antibiotic treatment is administered. Therefore, we aimed to compare the surgical outcomes of patients with sterile preoperative urine cultures and those with persistent non-sterile cultures.

Materials and Methods

Patients and Study Design

After obtaining approval from the local ethics committee (Date and decision number: 29.11.2024/128), patients who underwent ureteroscopy due to ureteral or renal stones were reviewed between January 2019 and May 2024 at our clinic. After excluding patients with a history of symptomatic infection, hematological diseases and malignancies, a total of 325 patients were included in the study. Patients were categorized into two groups based on their preoperative urine culture results. Patients with sterile preoperative urine cultures were classified as Group 1, while those with recurrent positive or contaminated urine cultures who underwent surgery under appropriate antibiotic treatment were designated as Group 2 (**Figure 1**).

A positive urine culture was defined as the isolation of a single uropathogenic organism at a concentration of ≥10□ colony-forming units per milliliter (CFU/mL). Contaminated cultures were characterized by mixed bacterial growth or the presence of non-uropathogenic organisms. Due to their similar clinical impact in terms of delaying treatment, both groups were pooled together and analyzed as a single cohort (Group 2).

Demographic, laboratory, imaging, and surgical data were retrieved from the hospital database and reviewed retrospectively. For the assessment of complications, the Modified Clavien classification system (MCCS), previously introduced by Mandal et al. for URS, was used [9]. Stone-free status was evaluated 6-8 weeks after surgery using ultrasound, X-ray, and/or computerized tomography (CT). In the late follow-up period, if the patient had no additional complaints, monitoring was conducted using ultrasound only. The groups were compared statistically in terms of postoperative complications, hospital stay, and stone-free rates.

Surgical Technique

Ureteroscopy was performed using semirigid ureteroscopes (8 Fr and 9.5 Fr, Karl Storz®, Tuttlingen, Germany) and single-use flexible ureteroscopes (9 Fr, Redpine®, Guangzhou). Flexible ureteroscopy procedure was performed using an aspirated access sheath (Clear-Petra®). Lithotripsy was performed using

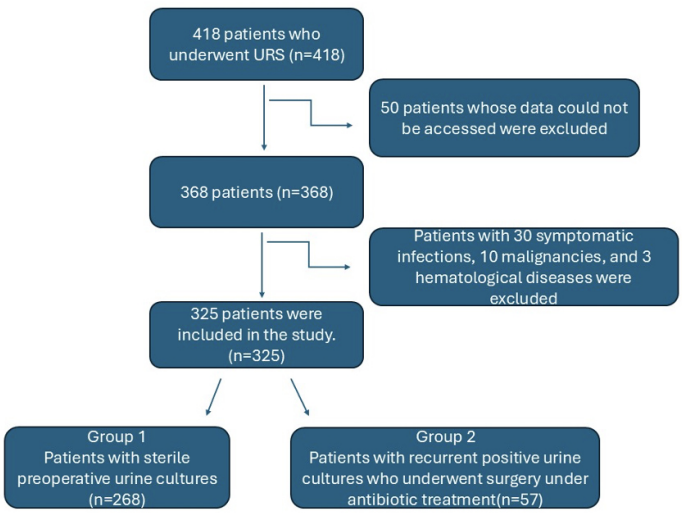

Figure 1. Flow chart of the patient's selection

a holmium: YAG laser system (272 µm). None of the patients exhibited purulent urine in the collecting system during the procedure. At the end of the procedure, some patients did not require ureteral catheterization, while in those who did, either a 5 Fr ureteral catheter or a 4.8 Fr double J ureteral stent was placed.

Statistical Analysis

The continuous variables were presented as medians, along with counts and percentages when applicable. Data analyzed using statistical software (IBM Corp. Released 2019. IBM SPSS Statistics for Windows, Version 26.0. Armonk, NY: IBM Corp). Mann Whitney U test was used in cross-group comparisons of variables that did not show normal distribution. Pearson Chi-Square test and Fisher's Exact test were used to compare qualitative data. Statistical significance was set at $p<0.05$ level in outcome analysis.

Results

Demographic, radiological and surgical data of the patients were shown in **Table 1**. The median follow-up duration was 42 (4–56) months. Preoperative persistent urine culture growth was present in 57 (17.5%) patients. Postoperative fever was observed in 14 (4.3%) patients and postoperative pain was observed in 60 (18.5%) patients. The median duration of surgery for all patients was 60 (45–80) minutes. No recurrence of urinary system stones was observed in 310 (95.4%) patients during follow-up. No cases of urosepsis or any complications more severe than Clavien-Dindo grade 2 were observed in any patient.

Among 325 patients, Group 1 consisted of 268 patients (82.5%), while Group 2 consisted of 57 patients (17.5%). There was no statistically significant difference between the two groups regarding surgical procedure and duration, stone location and size, preoperative hydronephrosis status, systemic inflammatory response indices (SIRI-SII), type of catheterization, and postoperative pain ($p > 0.05$). The median age of patients in group 2 was significantly higher ($p = 0.021$). The proportion of female patients was 52.6% in group 2, whereas it was 25.4% in group 1, indicating that nearly half of the patients with positive urine cultures were female. In contrast, the proportion of female patients was significantly lower in the culture-negative group ($p < 0.001$). Additionally, the frequency of postoperative fever and length of hospital stay were significantly higher in group 2 ($p < 0.001$). Comparison of the groups is shown in **Table 2**.

Diabetes mellitus, hypertension, and chronic kidney disease were significantly more prevalent in group 2 ($p < 0.05$). In contrast, no statistically significant difference was observed between the groups regarding coronary artery disease, smoking, and alcohol consumption ($p > 0.05$). Relevant data are shown in **Table 3**.

Discussion

Recurrent urine culture positivity in patients with urinary system stone disease often leads to delays in surgical intervention due to the surgeon's concern about postoperative septic complications [19]. However, delaying these procedures may increase the risk of chronic kidney disease due to stone-induced obstruction [20]. In our study, we hypothesized that

Table 1. Demographic and clinical characteristics of the patients

Variables		Median (IQR)	n, %
Age (years)		48 (39 – 60)	
Gender	- Male		227 (69.8%)
	- Female		98 (30.2%)
BMI (kg/m²)		27.10 (24.61 – 30.47)	
Stone location	- Ureter		271 (83.4%)
	- Kidney		54 (16.6%)
MET use	- No		176 (54.2%)
	- Yes		149 (45.8%)
Preoperative ESWL	- No		202 (62.2%)
	- Yes		123 (37.8%)
SII		578.93 (396.59 – 901.46)	
SIRI		1.21 (0.76 – 1.83)	
Preoperative urine culture	- No Growth		268 (82.5%)
	- Growth		57 (17.5%)
Operation type	- Rigid URS		254 (78.2%)
	- Flexible URS		71 (21.8%)
Postoperative ureteral catheter	- None		20 (6.2%)
	- DJ Stent		268 (82.5%)
	- Ureteral Catheter		37 (11.4%)
Postoperative fever	- No		311 (95.7%)
	- Yes		14 (4.3%)
Postoperative pain	- No		265 (81.5%)
	- Yes		60 (18.5%)

IQR: interquartile range; BMI: body mass index; MET: medical expulsive therapy; ESWL: extracorporeal shock wave lithotripsy, SII: systemic immune-inflammation index; SIRI: systemic ınflammation response index; URS: ureterorenoscopy

Table 2. Comparison of groups in terms of clinical and surgical characteristics

Variables		Group-1	Group-2	P-value
		n=268, 82.5%	**n=57, 17.5%**	
Age (years)		47 (38 – 59)	54 (40 – 66)	**0.021**
Gender	- Male	200 (74.6%)	27 (47.4%)	**<0.001***
	- Female	68 (25.4%)	30 (52.6%)	
BMI (kg/m²)		26.87 (24.61 – 30.09)	28.20 (24.69 – 31.20)	0.281
Stone location	- Ureter	226 (84.3%)	45 (78.9%)	0.322
	- Kidney	42 (15.7%)	12 (21.1%)	
Stone size (mm)		10 (3 – 48)	10 (5 – 30)	0.378
Preoperative hydronephrosis	- None	74 (27.6%)	21 (36.8%)	0.317
	- Grade-1	85 (31.7%)	19 (33.3%)	
	- Grade-2	93 (34.7%)	13 (22.8%)	
	- Grade-3	16 (6.0%)	4 (7.0%)	
MET use	- No	141 (52.6%)	35 (61.4%)	0.226
	- Yes	127 (47.4%)	22 (38.6%)	
MET Duration (days)		0 (0 – 15)	0 (0 – 15)	0.281
Preoperative ESWL	- No	163 (60.8%)	39 (68.4%)	0.283
	- Yes	105 (39.2%)	18 (31.6%)	
	ESWL Sessions	0 (0 – 2)	0 (0 – 1)	0.180
SII		566.55 (396.80 – 898.40)	624.55 (385.22 – 924.38)	0.724
SIRI		1.18 (0.76 – 1.84)	1.36 (0.67 – 1.81)	0.690
Operation type	- Rigid URS	212 (79.1%)	42 (73.7%)	0.368
	- Flexible URS	56 (20.9%)	15 (26.3%)	
Operation Duration (min)		60 (45 – 80)	60 (49 – 80)	0.532
Postoperative ureteral catheter	- None	17 (6.3%)	3 (5.3%)	0.477
	- DJ Stent	218 (81.3%)	50 (87.7%)	
	- Ureteral Catheter	33 (12.3%)	4 (7.0%)	
Postoperative fever	- No	264 (98.5%)	47 (82.5%)	**<0.001***
	- Yes	4 (1.5%)	10 (17.5%)	
Postoperative pain	- No	223 (83.2%)	42 (73.7%)	0.092
	- Yes	45 (16.8%)	15 (26.3%)	
Hospital stay (days)		1 (1 – 1)	1 (1 – 2)	**<0.001***
Follow-up (months)		42 (7 – 56)	44 (8 – 58)	0.543
Stone recurrence	- No	258 (96.3%)	52 (91.2%)	0.100
	- Yes	10 (3.7%)	5 (8.8%)	

*p<0.05; ^a^ Mann-Whitney U test; ^b^ Pearson Chi-Square test; ^c^ Fisher's Exact test; BMI: body mass index; MET: medical expulsive therapy; ESWL: extracorporeal shock wave lithotripsy; SII: systemic immune-inflammation index; SIRI: systemic ınflammation response index; URS: ureterorenoscopy

urinary calculi patients with recurrent growths in preoperative urine culture can be safely operated without delay by giving appropriate antibiotics under antibiogram guidance. Our study showed that no major postoperative complications were observed in these patients when operated under antibiotic treatment, and postoperative fever and hospital stay were prolonged.

Despite significant technological advances in endoscopic stone surgery, complications associated with these procedures can still occur in clinical practice. Complication rates in the literature vary considerably, ranging from conditions that do not require additional intervention, such as ureteral stent discomfort or ureteral mucosal injury, to conditions with high mortality rates, such as urosepsis and even ureteral avulsion [21]. Early postoperative complications following URS or Retrograde intrarenal surgery such as fever, urinary tract infection, and progression to urosepsis, are frequently reported as major complications in the literature [21,22]. Fever and urinary tract infection after URS occur in 0.2% to 15% of cases [7-9]. Rarely, these conditions may progress to pyelonephritis and urosepsis due to inadequate treatment or underlying comorbidities. In a

multicenter prospective study published in 2015 by Daels et al., which included more than 10,000 patients and investigated the risk factors for URS complications, it was found that the prevalence of diabetes mellitus and hypertension increased with age and that the probability of postoperative complications was higher in patients with diabetes, cardiovascular disease, obesity or receiving anticoagulant therapy [23]. In our study, hypertension, diabetes mellitus and chronic kidney disease were statistically significantly more common in group 2, and therefore the hospital stay in this patient group was longer.

In a retrospective study by Uchida et al. involving 469 patients who underwent URS , risk factors for the development of postoperative systemic SIRS were evaluated [24]. A positive urine culture was detected in 12.4% of the patients before the procedure and the procedure was performed during antibiotic treatment. However, SIRS was significantly more common after URS in patients with a positive urine culture before surgery. The article emphasizes that SIRS increases the length of hospital stay and the economic and social burden for both the patient and the healthcare system, while it is also stated that no fatal SIRS cases developed. In our study, a positive urine culture was detected in 17.5% of the patients before surgery. Although the length of hospital stays and postoperative fever rates were higher in these patients compared to patients with sterile cultures, SIRS or urosepsis was not observed in any patient. In the aforementioned study, 21.3% of the patients had a history of obstructive pyelonephritis and approximately 5% of the patients underwent bilateral stone surgery. We believe that this situation has an impact on the SIRS result. In addition, none of the patients in our study had a history of obstructive pyelonephritis and we would like to emphasize that the period from diagnosis to treatment should not be prolonged under appropriate conditions. In addition, although the female gender was found to be statistically significant in terms of SIRS development in the study in question, no difference was observed between the two genders in terms of postoperative fever and hospital stay in our study. In our study, the median age and female gender ratio were found to be statistically significantly higher in Group 2 and therefore the hospital stay was found to be significantly longer in this group.

Rao et al. [25] identified preoperative bacteriuria as a significant risk factor for urosepsis, while Matlaga et al. [26] suggested that urinary tract infection could be considered a contraindication for URS due to the potential risk of urosepsis. However, a positive urine culture alone may not be indicative in patients with stones who lack clinical symptoms. Consequently, one study proposed that it is more informative to correlate urine microscopy with culture and symptoms [27]. In our study, urine microscopy data were not assessed; however, none of the patients with positive urine culture results or contamination exhibited symptomatic urinary tract infections.

In a retrospective study of 170 patients by Sahin et al., patients who underwent URS after receiving appropriate antibiotics and had preoperative positive urine cultures were compared with patients with negative urine cultures [28]. This study particularly emphasized that there was no statistically significant difference in infectious complication rates (such as fever and septic findings), length of hospital stays or readmission rates between patients who had positive urine cultures and who underwent URS without a control urine culture after a maximum of 10 days of antibiotic therapy and patients with negative urine cultures. Similarly, in our study, patients with positive urine cultures received appropriate treatments and were operated on under antibiotic treatment. However, in this study, it is understood that the positive cultures were not repeated but the first culture results. In our study, the number of patients was approximately twice the number of patients in the aforementioned study, and patients with contaminated or repeated positive urine cultures were evaluated; the length of hospital stay and postoperative fever were found to be significantly higher in this group. The higher median age of patients in group 2 and the presence of additional diseases may have also been effective in this situation. There is no statistically significant difference in terms of age and comorbidities between the two groups compared in the relevant study.

Table 3. Comparison of groups in terms of comorbidities

Comorbidities		Group-1	Group-2	P-value
		n=268, 82.5%	**n=57, 17.5%**	
Diabetes mellitus	- Yes	218 (81.3%)	38 (66.7%)	**0.014***
	- No	50 (18.7%)	19 (33.3%)	
Hypertension	- Yes	204 (76.1%)	34 (59.6%)	**0.011***
	- No	64 (23.9%)	23 (40.4%)	
Chronic kidney disease	- Yes	258 (96.3%)	51 (89.5%)	**0.043***
	- No	10 (3.7%)	6 (10.5%)	
Coronary artery disease	- Yes	233 (86.9%)	46 (80.7%)	0.220
	- No	35 (13.1%)	11 (19.3%)	
Smoking	- Yes	115 (42.9%)	26 (45.6%)	0.708
	- No	153 (57.1%)	31 (54.4%)	
Alcohol consumption	- Yes	241 (89.9%)	55 (96.5%)	0.114
	- No	27 (10.1%)	2 (3.5%)	

*p<0.05; ^a^ Pearson Chi-Square test; ^b^ Fisher's Exact test

Delay in the treatment of urinary stone disease, especially in patients with positive urine culture, can lead to serious consequences on renal function. Studies have shown that persistent obstruction due to stones increases intrarenal pressure, leading to ischemic damage, nephron loss, and ultimately chronic kidney disease [29]. When infection is present, the risk of pyonephrosis and sepsis further worsens renal damage, requiring urgent intervention [30]. Long-term untreated obstruction can lead to irreversible renal function deterioration, emphasizing the importance of early diagnosis and appropriate treatment. Therefore, timely drainage and definitive stone treatment in infected cases are critical to preserve renal function and prevent long-term complications [29].

The present study demonstrated that the patients who received appropriate and sufficient antimicrobial treatment, i.e., those who underwent surgery with antibiotic coverage, preoperative positive urine culture was associated with lower-grade complications such as fever and extended hospital stay, but did not lead to severe complications like urosepsis. We can conclude that repeated positive urine cultures, both from the patient and the physician's perspective, pose a high risk in terms of surgery and may increase anxiety for both parties. Thus, patients with no urinary infection findings but resistant urine culture growth can be operated on without delay after being

informed in detail. Keeping the time from diagnosis to surgical treatment short will also minimize the risk of renal function loss, which can reduce both patient morbidity and surgeon anxiety.

The inclusion of patients with recurrent positive or contaminated urine cultures adds both novelty and real-world relevance to our study, highlighting that surgical intervention can be safely performed under appropriate antibiotic coverage in this challenging patient population. Although the retrospective design of the study represents a limitation, the use of a prospectively maintained institutional database enhances data quality and integrity. Furthermore, the relatively large sample size supports the external validity and generalizability of our findings. Despite its strengths, this study has several limitations that should be acknowledged. First, urine microscopy data were not available, limiting the ability to correlate culture results with microscopic evidence of infection. Second, the distinction between contaminated and truly positive cultures was based on standard microbiology reporting without a universally accepted or validated definition, which may introduce classification bias. Third, the study was conducted at a single center with small sample size, which may limit the generalizability of the findings to other settings with different patient populations or surgical practices. Lastly, variations in surgeon experience and intraoperative decision-making were not controlled for, which could have influenced complication rates and clinical outcomes.

Conclusion

Our study has shown that when URS is performed without delay in patients with recurrent urine culture growth under appropriate antibiotic treatment, postoperative fever and hospital stay are prolonged, but the risk of sepsis is not increased. These findings may be a driving force for the implementation of the operation in this type of patient group without prolonging the period from diagnosis to treatment and, in this context, for the implementation of the operation without increasing the risk of sepsis, especially in order to reduce the risk of chronic kidney disease. However, caution should still be exercised when performing URS in patients with infected urine cultures, as the risk of sepsis, although not observed in our cohort, remains a recognized complication in the general literature.

Ethics Committee Approval: Ethical approval for this study was obtained from Istanbul Training and Research Hospital Local Ethics Committee (Approval number: 2024/128)
Informed Consent: An informed consent was obtained from all the patients.
Publication: The results of the study were not published in full or in part in form of abstracts.
Peer-review: Externally peer-reviewed.
Authorship Contributions: Any contribution was not made by any individual not listed as an author. Concept – M.H.E.A., Y.Ş.; Design – M.H.E.A., Y.Ş.; Supervision– H.A.A., M.H.E.A., Y.Ş., U.Y.; Resources – H.A.A., Y.Ş.; Materials – H.A.A., M.H.E.A., Y.Ş.; Data Collection and/or Processing – H.A.A., M.H.E.A., Y.Ş.; Analysis and/or Interpretation – H.A.A., M.H.E.A., Y.Ş., U.Y.; Literature Search – M.H.E.A., Y.Ş.; Writing Manuscript – H.A.A., M.H.E.A., Y.Ş.; Critical Review – H.A.A., M.H.E.A., Y.Ş., U.Y.
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Reviving Bladder: Conquering Malakoplakia through Partial Cystectomy

Mesaneyi Yeniden Canlandırmak: Parsiyel Sistektomi ile Malakoplakinin Üstesinden Gelmek

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Abstract

Malakoplakia is a rare chronic inflammatory disease, often affecting the genitourinary system and mimicking malignancy due to tumor-like lesions. This case involves a 40-year-old woman with painful urination after a prior urinary tract infection. Imaging and cystoscopy revealed a necrotic bladder mass, with surrounding omental inflammation and adherence to the ileum. Histopathology identified hyperplastic stratified squamous epithelium with ulceration and reactive atypia, but no evidence of granulomas or malignancy. Laparoscopic partial cystectomy revealed dense inflammatory adhesions, and the bladder mass was successfully resected.

Keywords: cystectomy, inflammation, malacoplakia, urinary bladder, urinary tract infection

Özet

Malakoplaki, sıklıkla genitoüriner sistemi etkileyen ve tümör benzeri lezyonlar nedeniyle maligniteyi taklit eden nadir bir kronik inflamatuar hastalıktır. Bu vaka, daha önce geçirilmiş bir idrar yolu enfeksiyonundan sonra ağrılı idrara çıkma şikayeti olan 40 yaşında bir kadını içermektedir. Görüntüleme ve sistoskopi, çevresinde omental inflamasyon ve ileuma yapışıklık bulunan nekrotik bir mesane kitlesi ortaya koymuştur. Histopatoloji, ülserasyon ve reaktif atipi ile hiperplastik tabakalı skuamöz epitel tespit etmiştir, ancak granülom veya maligniteye dair bir kanıt yoktur. Laparoskopik parsiyel sistektomi yoğun inflamatuar yapışıklıklar ortaya koymuş ve mesane kitlesi başarıyla çıkarılmıştır.

Anahtar kelimeler: sistektomi, inflamasyon, malakoplaki, mesane, idrar yolu enfeksiyonu

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Introduction

Malakoplakia, derived from the Greek term for "soft plaque", [1] is a rare chronic inflammatory disease first identified by Professor von Hansemann in 1901 and reported by Michaelis and Guttman in 1902. Although benign, it frequently resembles malignant carcinomas due to its tumor-like mass formations, complicating its diagnosis. Depending on the location, the disease typically manifests as raised, grey lesions of varying sizes or soft, yellow mucosal plaques during physical examination [2].

Though malakoplakia can affect multiple organs, it primarily targets the urinary system, especially the bladder, with less frequent involvement of the kidneys and ureters [1]. Malakoplakia in the urinary system can lead to acute kidney injury, frequent urinary tract infections (UTIs), and renal failure, but is rarely fatal [3].

The symptoms vary depending on the affected organ: in cases involving the urinary tract and/or bladder, patients may experience frequent urination, urinary urgency accompanied by vague discomfort, hematuria, and bladder irritability; in instances of renal and ureteral involvement, symptoms can include lower back pain and fever [1,4].

The exact cause of bladder malakoplakia is poorly understood, but its pathogenesis is based on three primary hypotheses. The first hypothesis suggests bacterial infections, particularly those caused by E. coli, often occuring after a prolonged and recurrent history of chronic UTIs. The bladder's local environment fosters bacterial proliferation and triggers an inflammatory reaction in the bladder lining [5]. The second hypothesis points to immunocompromised states or long-term chronic conditions such as HIV, tuberculosis, sarcoma, diabetes, lymphoma, and ulcerative colitis [6]. Third, it is believed to stem from an acquired defect in the bactericidal function of macrophages. Normal microtubular function and phagolysosomal activity require beta-glucuronidase and cyclic guanosine monophosphate (cGMP). Reduced levels of these enzymes result in impaired clearance of pathogenic organisms due to the persistence of phagolysosomes. The characteristic Michaelis-Gutman bodies, which are calcified intracytoplasmic inclusions, represent the phagolysosomes that have failed to undergo exocytosis [3,6,7].

Malakoplakia in the genitourinary system typically shows a higher prevalence in females, with a female-to-male ratio of 4:1. The age of diagnosis can range from six weeks to 85 years, with the average age at which individuals start showing symptoms being 50 years [2,3].

Case

Informed consent was obtained from the patient. A 40-year-old female presented to the urology outpatient department with painful and burning micturition persisting for three months. Informed consent was obtained from the patient for documenting her medical data and including images in this report. She had previously been hospitalized for a UTI lasting one week and was diagnosed with a bladder mass for which cystoscopy, followed by biopsy was performed. During the cystoscopic examination, an intramural mass was seen in the fundus of the urinary bladder. Histopathology of the biopsy specimen revealed hyperplastic stratified squamous epithelium with ulceration and reactive atypia. There was neutrophilic exocytosis with underlying stroma showing mixed inflammatory infiltrate. No atypia, granulomas, or malignancy were observed.

An MRI of the pelvis **(Figure 1)** revealed an irregular necrotic mass, approximately 3.6 cm x 2.8 cm x 4.7 cm, arising from the bladder fundus. The mass was surrounded by omental inflammation, and a short loop of ileum was adhered to its right side. Two lymph nodes were noted along the lateral pelvic wall.

During laparoscopic partial cystectomy, dense inflammatory adhesions were found between the anterior abdominal wall, bladder, and ileal loops **(Figure 2)**. The bladder mass was noted intramurally and dissected using harmonic scalpel and monopolar electrode and the two-layers were closed with continuous interlocking suturing using Triclosan coated Polyglactin 910 Trusynth plus neo suture (Healthium Medtech, Bangalore, India). The standard technique is to use absorbable sutures to close the defect and allow free catheter drainage of the bladder for at least one week. Haemostasis was achieved and post extubation, the patient was given symptomatic care. The patient was followed up on postoperative day ten and underwent Xray cystogram using urograffin dye which confirmed no evidence of leakage **(Figure 3)**.

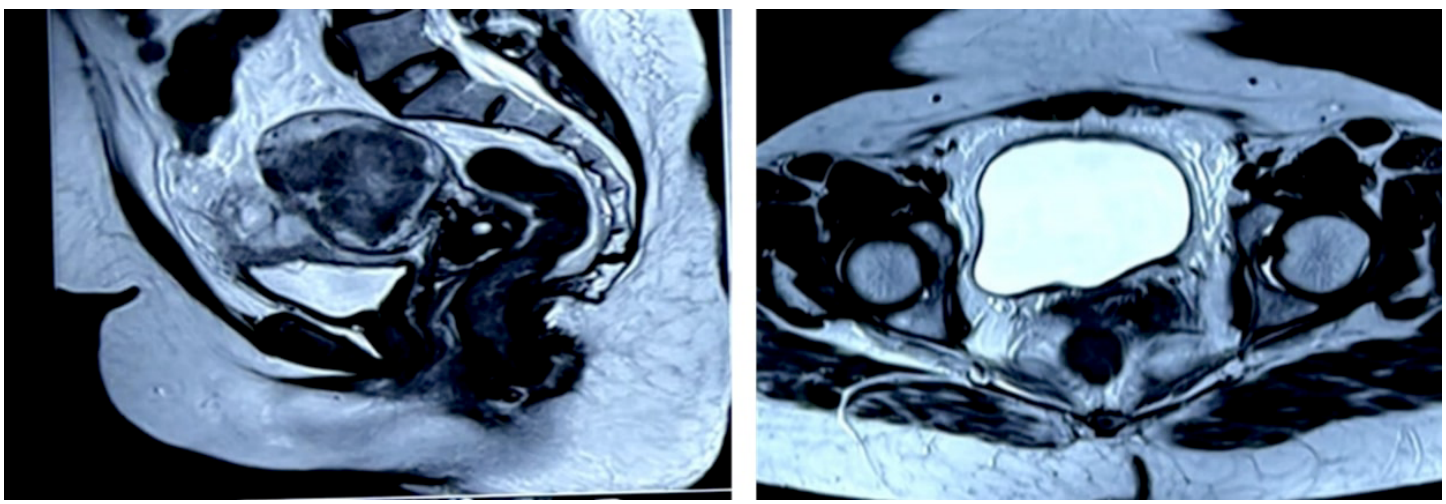

Figure 1. MRI pelvis showing irregular necrotic mass lesion arising from fundus of urinary bladder

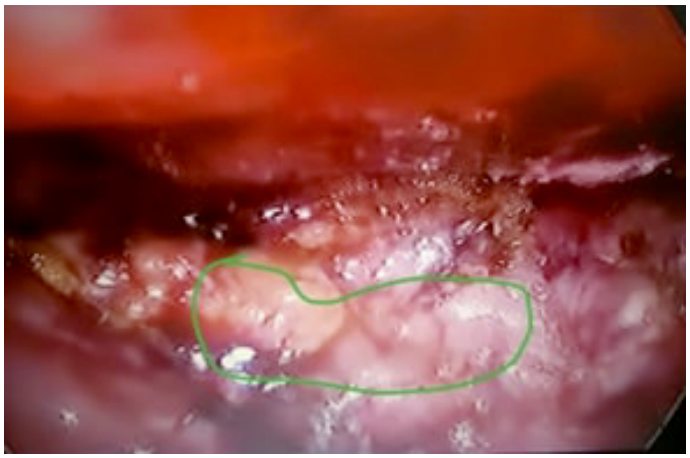

Figure 2. Adhesions between anterior abdominal wall and intramural mass (marked green)

Discussion

Only 49 reports of 72 instances of bladder malacoplakia have been documented globally from 1986 to 2021. [6] A literature review by Polisini et al. included 36 case reports, of which 66.67% of patients were treated surgically. Among those, 75% underwent transurethral resection of the bladder, and 25% underwent partial or radical cystectomy. The reported recurrence rate after surgical treatment was 9.09% [8].

Malakoplakia usually has a favorable outcome but tends to recur [4]. When it occurs in the urogenital tract, it can lead to renal failure due to ureter obstruction, although the duration of symptoms and clinical presentation can vary significantly [2].

Diagnosis relies on histopathology, revealing macroscopic pseudo-tumoral formations and presence of "Michaelis-Gutman" (MG) bodies within macrophages [1]. Nevertheless, not all instances exhibit the usual pathological alterations and standard MG bodies. This is because bladder malakoplakia has three phases of pathological changes: the initial inflammatory phase involving infiltration of inflammatory cells in the bladder mucosa; the intermediate phase featuring typical granulomatous changes, marked by the presence of MG bodies and macrophages, with sporadic giant cells and lymphocytes; and the final healing phase showing fibroblasts and collagen cells surrounding macrophages, with occasional presence of MG bodies [2,9].

The imaging and cystoscopic features of bladder chondromalacia closely resemble those of a bladder tumor, and at the time of initial diagnosis, it is often misidentified as such. It is essential to differentiate superficial bladder mucosal lesions from conditions like bladder carcinoma, adenocystitis, and other disorders [4].

CT urograms are useful for evaluating cases with multiple lesions and for assessing the effect of parenchymal and ureteral lesions on the kidneys. Renal lesions typically appear as segmental or diffuse hypodense areas, while ureteral lesions present as lacunae, both of which complicate the differential diagnosis with renal parenchymal and urothelial tumors [1]. The definitive diagnosis of this condition is established through pathological examination.

At present, there is no uniform treatment protocol available [4]. It differs based on the location of the disease, its severity, and the clinical presentation. Treatment options include antibiotic therapy with careful monitoring of lesions, nephrectomy if the renal parenchyma is compromised, or resection of obstructive ureteral lesions. In cases of ureteral blockage, renal drainage through ureteric stents or percutaneous nephrostomy becomes essential [1].

Figure 3. Xray cystogram using urograffin dye which confirmed no evidence of leakage

Surgical removal of malakoplakia lesions should be contemplated based on the location affected, presence of complications, or if medical intervention does not yield results. A combination of surgical intervention and quinolone antibiotic therapy may represent the most effective treatment approach [3]. Laparoscopic partial cystectomy remains an uncommon procedure often performed unplanned by the gynaecologists during other operations or for rare bladder pathologies which can be carried out effectively when indicated [10].

Conclusion

Bladder Malakoplakia, although rare, should be suspected in patients with recurrent UTIs and mass-like lesions in the genitourinary tract. As it can resemble malignancy, histopathological confirmation is essential for diagnosis. Early detection allows for effective management, often with antibiotics, though surgery may be needed for severe cases. Surgical intervention, such as partial cystectomy, remains an effective treatment for cases where medical management fails, or when complications like obstruction or recurrent infections arise. Regular monitoring of renal function and bladder health is crucial to prevent recurrence and safeguard quality of life.

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Informed Consent: An informed consent was obtained from the patient.
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Case Report – Endourology
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A Cerebral Palsy Patient with a Fractured Double J Stent: Case Report

Kopmuş Double J Stenti Olan Serebral Palsili Hasta: Olgu Sunumu

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Abstract

Double-J (DJ) ureteral stents are frequently used in urology to ensure urinary drainage. However, prolonged indwelling time may lead to serious complications such as infection, encrustation, and stent fracture. In this case report, we present the successful endourological management of a severely encrusted and fractured DJ stent in a patient with cerebral palsy.

Keywords: cerebral palsy, ureteral stent, complication

Özet

Double-J (DJ) üreteral stentler, üriner drenaj sağlamak amacıyla ürolojide sıklıkla kullanılmaktadır. Ancak uzun süre vücutta kalmaları durumunda enfeksiyon, enkrüstasyon ve kopma gibi ciddi komplikasyonlara neden olabilir. Bu olgu sunumunda, serebral palsili bir hastada uzun süreli unutulmuş, ciddi şekilde enkruste olmuş ve distal ucu kopmuş DJ stentin endoürolojik yöntemle başarılı şekilde çıkarılması sunulmuştur.

Anahtar kelimeler: serebral palsi, üreteral stent, komplikasyon

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Introduction

Double-J (DJ) stents are essential tools in various urological procedures [1]. With the increasing frequency of DJ stent use, stent-related morbidities have become more prevalent. In the short term, complications such as pain, irritation, infection, and hematuria may occur. In the long term, serious complications including encrustation, urolithiasis, stent migration, fracture, renal damage, and even death have been reported [2]. DJ stents may require removal through extracorporeal shock wave lithotripsy (ESWL), cystolithotripsy, laser lithotripsy, percutaneous nephrolithotomy (PNL), open surgery, or combinations of these approaches [3].

Cerebral palsy (CP) is a neurological disorder affecting motor function and is frequently associated with urological complications, particularly lower urinary tract dysfunction [4]. The management of urolithiasis in patients with CP is often challenging due to physical disabilities, anatomical variations, and accompanying comorbidities [5].

Fractured DJ stents are rare clinical occurrences. In this case report, we present the endourological management and single-session removal of a severely encrusted DJ stent that remained in situ for approximately 2.5 years.

Case

A 46-year-old male patient with a known diagnosis of cerebral palsy presented with complaints of nausea, vomiting, and right flank pain. His medical history revealed a urological intervention performed approximately 2.5 years earlier for a 1.5 cm right renal pelvic stone, during which a DJ ureteral stent was placed. The patient was under follow-up with diapers due to neurogenic overactive bladder.

On physical examination, right costovertebral angle tenderness was noted; the remaining systemic findings were unremarkable. Laboratory investigations including complete blood count, serum electrolytes, and renal function tests were within normal limits. Urine culture yielded growth of Pseudomonas aeruginosa.

Plain abdominal radiography and computed tomography revealed a DJ stent with severe encrustation at the proximal end and a fractured, encrusted distal segment (**Figure 1**). Intravenous antibiotic therapy was initiated. After one week of treatment, follow-up urine culture showed no bacterial growth.

Intervention

The procedure was initiated under general anesthesia with the patient positioned in the Galdakao-modified supine Valdivia position (**Figure 2**). A 17 Fr rigid cystoscope was advanced into the bladder, where the distal tip of the DJ stent was observed to be entirely encrusted with stone material. Laser lithotripsy was performed around the distal stent fragment using a thulium fiber laser (Soltive Premium, Olympus, Hamburg, Germany), allowing for successful extraction of the distal stent segment.

Subsequently, a 7 Fr semirigid ureteroscope was introduced into the right ureter. Encrustation was noted along the ureteral portion of the stent (**Figure 3**). Lithotripsy was again applied using the thulium fiber laser; however, the proximal tip of the stent was found to be heavily calcified and could not be mobilized.

Given the extensive encrustation of the proximal segment, a decision was made to proceed with endoscopic combined ıntrarenal surgery (ECIRS). A conventional PNL was performed

Figure 1. Fractured DJ stent on KUB

Figure 2. Galdakao-modified supine Valdivia position

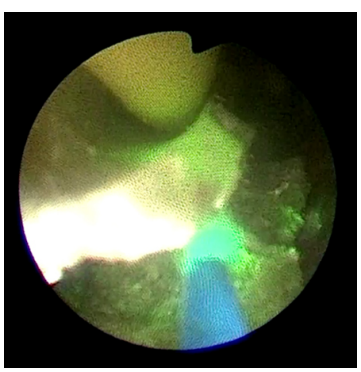

Figure 3. Encrusted DJ stent at ureteroscopy

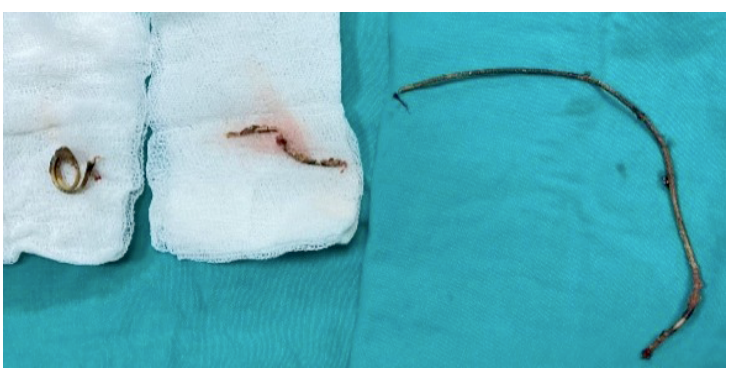

Figure 4. Postoperative fractured DJ stent

on the right side, with tract dilation up to 30 Fr using a balloon dilator. The stent was successfully extracted in three separate fragments (**Figure 4**). ECIRS provided a comprehensive approach by enabling simultaneous access to both the upper and lower urinary tracts, and was considered the optimal strategy in this complex case.

A new DJ stent was inserted at the conclusion of the procedure. The postoperative course was uneventful, and the patient was discharged on postoperative day 3 following completion of intravenous antibiotic therapy. Complete stone clearance was confirmed, and the newly placed DJ stent was removed two weeks later via cystoscopic intervention.

Discussion

CP refers to a heterogeneous group of non-progressive disorders that affect movement and posture development, lead to activity limitations, and result from injuries to the developing fetal or infant brain [6].

It is estimated that more than one-third of individuals with CP develop neurogenic lower urinary tract dysfunction (NLUTD), which may manifest clinically as urinary incontinence, urinary retention, recurrent urinary tract infections, and particularly urolithiasis [7].

Although a direct causal relationship between detrusor overactivity and stone formation has not been fully established, incomplete bladder emptying and recurrent infections may contribute to crystal aggregation and an increased risk of stone formation [8].

NLUTD is recognized as a significant risk factor for bladder stone formation [9]. Due to the underlying neurological impairment, these patients face greater diagnostic and therapeutic challenges in the management of urinary stone disease compared to the general population. Furthermore, bladder stones in patients with NLUTD tend to recur more frequently and are associated with increased morbidity [10].

Encrusted and calcified DJ ureteral stents represent a significant urological challenge for both patients and treating physicians. When not intentionally left in situ for extended durations by the clinician, DJ stents retained for more than 3 to 6 months are classified as "forgotten stents" [11]. Although there is no universally accepted guideline regarding the optimal timing for stent exchange or removal, El-Faqih et al. demonstrated a notable increase in encrustation rates in parallel with the duration of indwelling: 9.2% for less than 6 weeks, 47.5% for 6–12 weeks, and 76.3% beyond 12 weeks [12].

Prolonged stent retention is associated with major complications, including urinary tract infections, migration, stone encrustation, and multiple stent fractures. Ülker et al. showed that forgotten DJ stents can be safely and effectively managed through endourological techniques in a single session. Technological advancements and the miniaturization of endoscopic instruments have further facilitated the treatment of severely calcified and complex stents via minimally invasive approaches [13]. In the present case, the forgotten and heavily encrusted DJ stent was successfully removed endoscopically in a single session using the ECIRS technique. Despite the availability of various endourological treatment modalities, prevention of stent encrustation remains the most effective strategy.

In this context, biodegradable ureteral stents have been proposed as an ideal option for providing temporary urinary drainage without the need for subsequent removal or follow-up [14]. Ongoing research continues to explore the potential of biodegradable materials in preventing forgotten stents and associated complications without necessitating additional surgical interventions [15].

Conclusion

Forgotten and encrusted DJ stents can lead to serious complications, especially in patients with neurogenic lower urinary tract dysfunction. This case demonstrates that ECIRS allows for safe and effective single-session removal of such stents. However, prevention remains the most effective strategy. Biodegradable stents offer a promising solution to eliminate this clinical problem.

Ethics Committee Approval: N/A
Informed Consent: The patient's legal guardian was informed of the study's purpose, and written informed consent was obtained for the publication of this case report and its associated medical images. The patient's identity has been protected, and no personal identifiers are disclosed.
Publication: The results of the study were not published in full or in part in form of abstracts.
Peer-review: Externally peer-reviewed.
Authorship Contributions: Any contribution was not made by any individual not listed as an author. Concept – E.C.B., M.U.; Design – E.C.B., M.U.; Supervision – E.C.B.; Resources – E.C.B.; Materials – E.C.B., M.U., M.K.; Data Collection and/or Processing – M.U., M.K.; Analysis and/or Interpretation – E.C.B., M.U.; Literature Search – M.U.; Writing Manuscript – E.C.B., M.U.; Critical Review – E.C.B.
Conflict of Interest: The authors declare that they have no conflicts of interest.
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