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Original Article PEDIATRIC SURGERY

Idiopathic urethritis in pediatric males: A 13-year experience with and without steroid injection

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ABSTRACT

OBJECTIVE: Idiopathic urethritis (IU) is among the causes of macroscopic hematuria in children and primarily affects males aged between 5 and 15 years. Common symptoms include dysuria and hematuria. The etiology remains incompletely understood. Untreated IU may progress to urethral stricture in the long term. Conventional treatments like prolonged antibiotic therapy and nonsteroidal anti-inflammatory drugs have limited success. Recent studies suggest favorable outcomes with associated dysfunctional elimination syndrome treatment or steroid instillation. This study aims to present a 13-year retrospective analysis of patients diagnosed with IU via cystourethroscopy, assess long-term outcomes with or without steroid injection and explore the relationship between IU and voiding dysfunction.

METHODS: Patients who underwent cystoscopy due to unexplained hematuria and/or dysuria between 2010 and 2023 were retrospectively screened. Patients diagnosed with IU were included and those who underwent steroid instillation (Group S) or received no steroid treatment (Group NS) evaluated separately. Available uroflowmetry (UFM) results were assessed.

RESULTS: Thirty male patients were diagnosed with IU, with a mean age of 11.1 (2–17) years and mean symptom duration of 9.3 (0.1–36.5) months. Steroid instillation was performed in 21 patients (Group S), yielding a 57% recovery rate. In Group NS, symptoms resolved without treatment in 66% of patients. UFM results showed obstructive patterns in patients with urethral strictures.

CONCLUSION: Cystourethroscopy allows for accurate diagnosis of IU and targeted intervention. In our series, the promising steroid instillation therapy did not significantly alter long-term symptom-free survival compared to observation alone. Further research is warranted to elucidate IU's pathogenesis and establish standardized treatment approaches.

Keywords: Children; dysfunctional elimination syndrome; idiopathic urethritis; steroid.

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Idiopathic urethritis (IU) was first described by Williams in 1971 [1]. It is a cause of macroscopic hematuria in 8% of pediatric patients and is more commonly observed in male children aged between 5 and 15 years [2, 3]. The most common symptoms are macroscopic hematuria and dysuria, typically in the form of postmicturition dripping [4].

Although the etiology is not fully understood, IU is known to be associated with infection, hormonal changes, and immunological or dysfunctional voiding [3–9]. Although it has been reported as a self-resolving condition, untreated IU can lead to urethral stricture in the long term [10, 11]. Long-term antibiotic therapy and nonsteroidal anti-inflammatory drugs have not been quite suc-

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cessful results as treatment modalities [1]. In more recent publications, successful outcomes have been reported with treatment of associated dysfunctional elimination syndrome or with steroid instillation [9, 12, 13].

We aimed to present our 13-year experience in patients who were diagnosed with IU through diagnostic cystourethroscopy and evaluate the outcomes with long-term outcomes with or without steroid injection. Our primary aim was to evaluate the long-term outcomes of IU treatment with or without steroid injection. Additionally, we sought to examine the relationship between IU and voiding dysfunction.

MATERIALS AND METHODS

Following institutional ethics committee approval (Istanbul Medipol University Non-interventional Clinical Research Ethics Committee, date: 24.10.2024, number: 991), the study was conducted in accordance with the Declaration of Helsinki. In this retrospective cohort study, all patients who underwent cystoscopy due to unexplained etiology of hematuria and/or dysuria between 2010 and 2023 were retrospectively screened. We excluded patients with clean intermittent catheterization (CIC), anatomical genitourinary anomalies, any previous surgeries on the genitourinary system, or hematuria caused by infections or urinary stones. All patients who were diagnosed with IU by 9.5 Fr pediatric cystourethroscope evaluation were included in the study. They were divided into two groups: those who underwent steroid instillation (Group S) and those who did not (Group NS), and the uroflowmetry (UFM) results of patients who had UFM during their follow-up were evaluated.

Statistical Analysis

The data were analyzed using IBM SPSS Statistics Standard Concurrent User Version 29 (IBM Corp., Armonk, New York, USA). For categorical variables, descriptive statistics were presented as frequencies (n) and percentages (%). For numerical variables, the summary statistics included the median, minimum, and maximum values. Comparisons between two proportions and CI were performed using a two-proportion z test.

RESULTS

Between May 2010 and September 2023, a cystourethroscopic evaluation was performed on 39 patients due to unexplained hematuria and/or dysuria, and 30 (77%) male patients were diagnosed with IU. None of them had meatal stenosis, and 29 were circumcised. All had normal urinary system ultrasonography (USG) and sterile urine cultures.

The presenting complaint was postmicturition dripping hematuria in 23 (77%) patients, dysuria in 5 (17%) patients, and both of these symptoms in two patients (6%). Urinalysis showed microscopic hematuria in 10 patients and macroscopic hematuria in four. Urinalysis was normal in 16 (53%) patients.

The mean age at the time of diagnosis was 11.1 years (range, 2–17 years), and the mean duration of symptoms was 9.3 months (range, 0.1–36.5 months). Twenty-one patients were included in Group S, and 9 patients were

Highlight key points

- Idiopathic urethritis (IU) primarily affects boys aged 5–15 and is a common cause of dysuria and macroscopic hematuria in children.
- Steroid instillation in IU demonstrated a 57% symptom recovery rate, though long-term symptom-free survival was similar between treated and untreated groups.
- Cystourethroscopy enables accurate diagnosis and intervention for IU, potentially aiding in the prevention of urethral strictures.
- Traditional treatments, such as long-term antibiotics and NSAIDs, show limited efficacy, prompting consideration of steroid instillation as an alternative.
- There is a lack of consensus on IU treatment and emphasizes the necessity for prospective research to establish evidence-based treatment guidelines.

TABLE 1. Demographic data

	Group S (steroid +)	Group NS (steroid -)	p
Number of patients	21	9	
Age (years)	11.6 (6–17)	9.2 (2–16)	
Duration of symptoms (months)	9.8 (0.1– 32.8)	7.1 (0.1–18)	
Urethral stricture	2	0	
Follow-up duration (months)	22 (5–56)	82 (20–160)	
Fully recovered patients n (%)	12 (57)	6 (66)	=**0.644**

S: Steroid; NS: Nonsteroid.

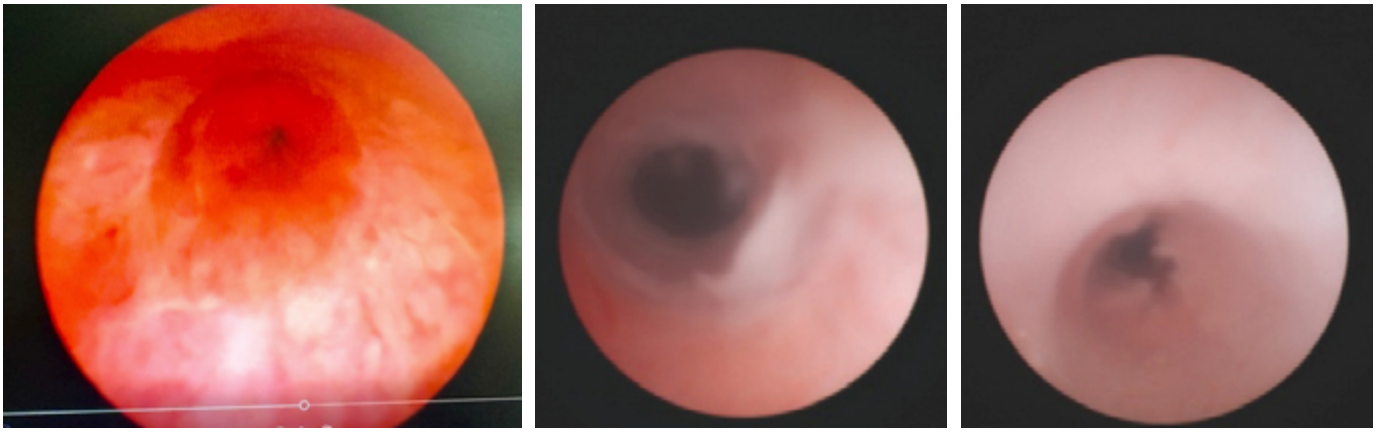

Figure 1. Cystourethroscopy images showing erythema and pseudomembranes in the urethra.

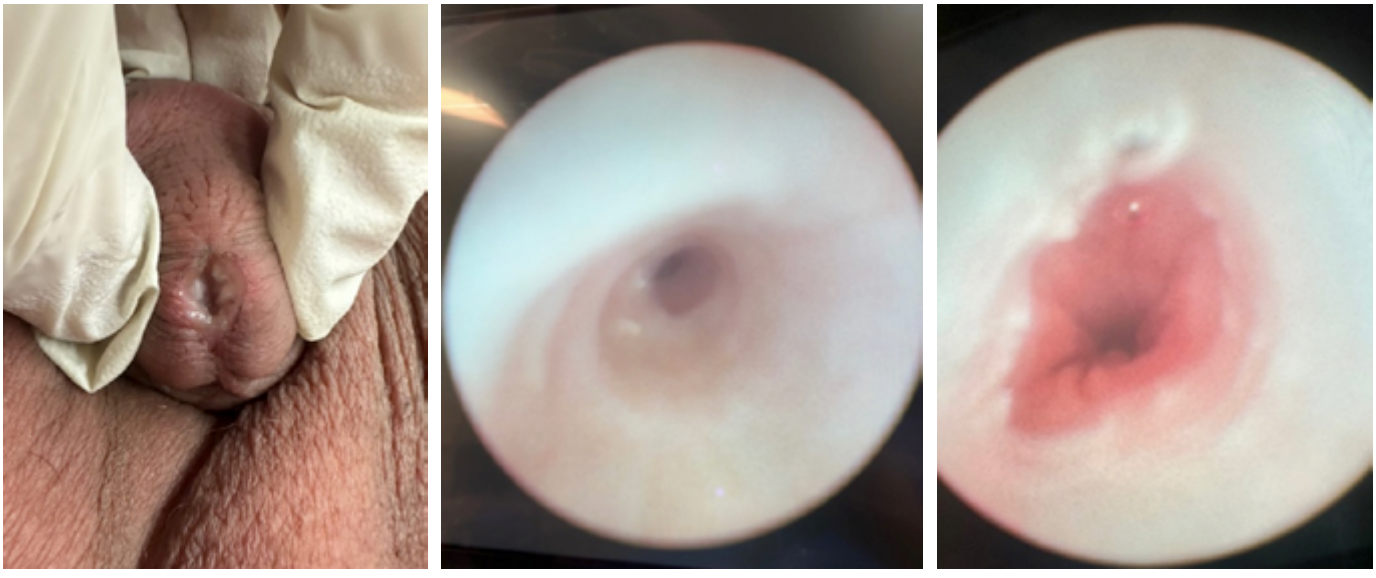

Figure 2. Macroscopic and cystourethroscopy images of a patient with urethral stricture due to lichenoid urethritis.

included in Group NS. The demographic data of the patients are provided in Table 1. Biopsies were taken from one patient in each group.

All patients were diagnosed by using a rigid 9.5 Fr pediatric cystourethroscope. They all had erythema in the urethra and various degrees of fibrinous white membranes during cystourethroscopic examination (Fig. 1). In two patients, there was a urethral stricture preventing the passage of the cystourethroscope during the initial evaluation. One patient with a stricture presented with a white coloration of the anterior urethra instead of the normal pink, and pathology results indicated focal parakeratosis, epidermal acanthosis, and abnormal epithelial growth (Fig. 2). The pathology result of the other patient was consistent with nonspecific inflammation.

Steroid instillation was performed using a 4 Fr urether catheter passed through the cystourethroscopy. To delay urination before steroid application, the bladder was emptied. After the instillation, gentle compression was applied to the glans penis for approximately five minutes to ensure that the steroid remained in the urethra as much as possible. For symptomatic patients with persistent complaints after the initial cystourethroscopy evaluation and steroid application, second and third applications were performed as per the preference of the attending physician, either in the outpatient clinic with a feeding tube or again by using cystourethroscopy. The steroid used was injectable 40 mg for under age 14 and 80 mg for above 14 triamcinolone acetonide and a max-

TABLE 2. Uroflowmetry results of patients after cystourethroscopy evaluation

Uroflowmetry result	Group S		Group NS	
	Rec	Unr	Rec	Unr
Normal	7	3	2	(-)
Obstructive	1	4	(-)	(-)
Dysfunctional	1	(-)	(-)	(-)

S: Steroid; NS: Nonsteroid; Rec: Recovered; Unr: Unrecovered.

imum of three applications per patient was undertaken [13]. Steroid treatment for IU mainly started after 2021. Except for two patients who underwent urethrotomy due to stricture, urinary catheters were not placed.

Group S consisted of 21 (70%) patients. Among them, five patients received steroid instillation three times, two patients received it two, and 12 patients received it once, for a total of 31 instillations. A complete recovery was achieved in 12 (57%) patients, while the symptoms persisted in nine. The mean follow-up duration according to the last outpatient visit records was 22 (2–56) months. Symptoms disappeared after a single steroid application in eight patients. Three patients continued to experience symptoms despite three rounds of steroid treatment, two of whom had strictures at the initial evaluation.

The mean follow-up duration according to the last outpatient visit records of patients in Group NS was 82 (20–160) months. In this group, symptoms resolved without treatment in 6 (66%) patients. One patient had symptoms for approximately 4 years before presentation and was still symptomatic at his last outpatient visit. The remaining two patients did not continue their follow-ups after cystoscopic evaluation.

A UFM assessment was available in 21 (70%) patients. Among these, 3 were obtained before cystoscopy and all were consistent with obstruction including two patients with urethral strictures. Eighteen of the UFM procedures were performed after IU was diagnosed with cystoscopy. The post-cystoscopy UFM results obtained during the follow-up period are shown in Table 2. Dysfunctional voiding was present in only one patient. He was in the steroid-treated group and the symptoms resolved after three times instillations. He did not want to receive treatment because his symptoms had resolved. Although two patients had no known stenosis, their UFM was compatible with obstruction.

DISCUSSION

IU is a disease with an unclear etiology and does not have a widely accepted standard treatment. It is not uncommon in children without a consensus regarding the nomenclature. Idiopathic urethritis, idiopathic urethrorrhagia, and idiopathic anterior urethritis were all used in different publications [10, 13, 14]. Although hematuria and dysuria are the most common presenting symptoms, in delayed diagnosis, difficulty in micturition can also be a diagnostic feature [9, 11]. IU is considered a disease of the male gender. It was suggested to be seen in females in one study in which only a few patients received cystourethroscopic diagnosis [9]. The evidence presented was not sufficient to say females had IU [9]. In the studies that used diagnostic cystourethroscopy as well as in ours, IU was diagnosed only in males.

There is limited literature on the diagnosis and management of this disease without a clear algorithm. Research on the diagnosis and management of IU is scarce, and there is no clear standard procedure. Walker et al. [10] suggested that routine radiological evaluation and cystourethroscopy were not beneficial for diagnosis and should be performed in cases of prolonged urethrorrhagia. Although urinary system ultrasonography (USG) has no diagnostic value, we routinely perform it to exclude urinary stones and other urinary system disorders that may cause hematuria, and we believe it is important. Hematuria is concerning from the perspective of both children and parents, and frequent hospital admissions often disrupt school. Therefore, we believe that the symptoms of IU need to be addressed more extensively.

During cystourethroscopic assessment, hyperemia in the urethra, white fibrous membranes, and even strictures may be observed [13]. In an older study, endoscopy was proposed as a risk factor for stricture development [5]. In another study, strictures developed in 11% of patients after cystourethroscopy, and these patients were reported to have advanced urethritis [11]. Actually, these patients had meatal stenosis and not urethral strictures, and meatal stenosis can create similar symptoms by causing increased urethral pressure [11, 14]. In a relatively recent study, the stricture rate was only 1.9% during the initial cystourethroscopy and 13% after cystoscopy [15]. In our series, all patients were diagnosed with IU through cystourethroscopic evaluation, and two (6%) had

strictures during the initial cystourethroscopy imaging. There were no patients who developed strictures after cystourethroscopy within a follow-up duration of 160 months. It seems that these strictures are not related to cystourethroscopy but more likely to develop during the course of the disease, as approximately 4% of urethral strictures were reported to be due to IU in one study [16]. These patients with IU cannot receive a diagnosis via laboratory and imaging methods. Cystourethroscopy, allows not only correct diagnosis but also intervention in the case of strictures, providing the opportunity to apply steroid instillation to the area with the most intense inflammation if necessary.

Biopsies are generally nonspecific and have no diagnostic value [15, 17]. Squamous changes may be observed in patients with severe urethritis and may lead to stricture formation [14]. In this study, only two patients had biopsies. One patient had nonspecific inflammation, and the other patient had changes consistent with squamous changes. We did not routinely perform biopsies due to concerns about creating strictures in the urethra. It is not logical to make an interpretation with only two patients, and yet the results were similar to the literature.

In a series of 10 cases associated with dysfunctional voiding (DV), uroflowmetry was consistent with DV in only three patients, and spontaneous recovery was significantly less common in those with abnormal uroflowmetry [18]. In a study comparing children with urethritis symptoms who received comprehensive treatment, including anticholinergics, biofeedback, and alpha-blockers as needed, and constipation treatment with only those receiving anticholinergics, a higher success rate of 83% was reported compared to 35% [9]. The recurrence rate was common in both groups, and approximately one-third of the cases were patients with meatal stenosis. However, since the patients in this study received a symptom-based diagnosis and only four patients underwent cystourethroscopy imaging, it is not clear whether these patients actually had IU. Since our study was retrospective, we could not identify patients with voiding dysfunction at the initial presentation. None of the patients with persistent symptoms had a uroflowmetric result consistent with dysfunctional voiding, whereas only one asymptomatic patient did.

When considering that DV is observed in up to 29% of school-age male children, stronger evidence is needed to establish a relationship between DV and IU [19].

There is no consensus on the optimal treatment for IU. In previous series, infection was considered an etiological factor. Although treated with antibiotics, there was nearly half of patients with a high recurrence rate without response [1, 3, 15]. In some series in which patients were followed up without any treatment, up to 92% of patients became asymptomatic [10, 18]. On the other hand, there are studies reporting that symptoms persisted in nearly half of the patients [15]. In our study, approximately half of the patients in the untreated group had persistent symptoms.

The use of steroids in the treatment of IU was first described by Eradi and Ninan [12] as the application of steroids to the bladder. In a study where the IU was graded according to cystourethroscopy imaging, single or repetitive use of steroids were reported to be effective in 95% of patients, independent of the grade [20]. In another study where the same team presented long-term results, the recovery rates were similar [13]. In one retrospective series, similar success rates were reported with steroid treatment or observation alone [15]. In a more recent prospective series, after a one-year follow-up, injections were reported to be more advantageous than steroid instillation in terms of the drug remaining in place longer, with six out of seven patients reporting recovery [21]. Despite the limited literature reporting promising results for steroids, these case series did not include patients who were followed up without treatment, and it is known that some patients can also recover without treatment [13, 21, 22]. Only one study reporting both watchful waiting and steroid treatment rates of symptomatic recovery was similar to our study [15].

The reported IU series in children are generally single-center, with a limited number of patients, and include a heterogeneous group, such as metal stenosis and hypospadias, making it difficult to draw meaningful conclusions about the pathogenesis or efficacy of treatment.

Among the limitations of this study are that cystourethroscopy were performed by multiple surgeons, potential selection bias and therefore, there is subjectivity in the diagnosis. Since recovery was evaluated as the disappearance of symptoms, there was no correlation with cystoscopy. Another limitation of the study is that, due to its retrospective nature, documenting whether the NS group, especially the older group, received any other medical treatment is

challenging. Another limitation of the study is that the average follow-up periods were different between the two groups. There was a long follow-up period of up to 82 months for the NS group. The different follow-up periods between the two groups may have led to similar long-term results. In our study, the efficacy of steroid instillation for the treatment of idiopathic urethritis (IU) was found to be consistent with previous findings in the literature. Steroid therapy resulted in symptom resolution in a significant proportion of patients, with 57% achieving complete recovery after the initial or repeated applications. This outcome aligns with earlier studies, where the success rates of steroid treatment, whether administered as a single dose or repeated sessions, ranged from 80% to 95% [12, 13, 20]. However, our results are lower than the success rates reported in the literature. Similar to our study, other series also observed a substantial proportion of patients who continued to experience symptoms despite steroid treatment, emphasizing the variability in response. Moreover, no statistically significant difference was found between the response rates of patients who were followed up without steroids and those who received treatment. Our findings, along with other data in the literature, indicate the need for further research to establish the optimal treatment protocol for IU.

Conclusion

We believe that our study is noteworthy because all patients were diagnosed by cystourethroscopic evaluation, including those in the untreated group. The rates of long-term symptom-free survival were similar between patients who underwent steroid treatment and those who did not. Cystourethroscopy imaging is advantageous because it allows steroid instillation to be applied to the area with the most intense inflammation by direct visualization. Moreover, we believe that providing the correct diagnosis will reduce the anxiety of patients and their families. However, the etiology of IU is still unclear, and there is no accepted treatment protocol. It is clear that more evidence and prospective randomized studies about the natural course and treatment of this disease are needed.

Ethics Committee Approval: The Istanbul Medipol University Non-interventional Clinical Research Ethics Committee granted approval for this study (date: 24.10.2024, number: 991).

Authorship Contributions: Concept – AC; Design – AC, CUD; Supervision – CUD; Fundings – AC; Materials – AC, GA; Data collection and/or processing – AC, GA; Analysis and/or interpretation – AC, CUD; Literature review – AC; Writing – AC, CUD; Critical review – AC, CUD.

Conflict of Interest: No conflict of interest was declared by the authors.

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REFERENCES

1. Williams DI, Mikhael BR. Urethritis in male children. Proc R Soc Med 1971;64:133-4.
2. Youn T, Trachtman H, Gauthier B. Clinical spectrum of gross hematuria in pediatric patients. Clin Pediatr 2006;45:135-41. [CrossRef]
3. Harrison SC, Whitaker RH. Idiopathic urethritis in male children. Br J Urol 1987;59:258-60. [CrossRef]
4. Dewan PA, Wilson TM. Idiopatic urethritis in the adolescent male. Eur Urol 1996;30:494-7. [CrossRef]
5. Kaplan GW, Brock WA. Idiopathic urethrorrhagia in boys. J Urol 1982;128:1001-3. [CrossRef]
6. Palagiri AV, Steinhardt GF, Decter RM. A retrospective analysis on the diagnosis and management of idiopathic urethrorrhagia. J Urol 2003;169:106.
7. Cuttica RJ, Scheines EJ, Garay SM, Romanelli MC, Maldonado Cocco JA. Juvenile onset Reiter's syndrome. A retrospective study of 26 patients. Clin Exp Rheumatol 1992;10:285-8.
8. Siboulet A, Galiston P. Arguments in favour of virus aetiology of non-gonococcal urethritis illustrated by three cases of Reiter's disease. Br J Vener Dis 1962;38:209-11. [CrossRef]
9. Herz D, Weiser A. Dysfunctional elimination syndrome as an etiology of idiopathic urethritis in childhood. J Urol 2005;173:2132-7. [CrossRef]
10. Walker BR, Ellison ED, Snow BW, Cartwright PC. The natural history of idiopathic urethrorrhagia in boys. J Urol 2001;166:231-2. [CrossRef]
11. Poch MA, Handel LN, Kaplon DM, Caesar RE, Decter RM, Caldamone AA. The association of urethrorrhagia and urethral stricture disease. J Pediatr Urol 2007;3:218-22. [CrossRef]
12. Eradi B, Ninan GK. Intravesical steroid instillation-a novel therapeutic intervention for idiopathic urethritis of childhood. Eur J Pediatr Surg 2009;19:105-7. [CrossRef]
13. Jayakumar S, Ninan GK, Pringle K. Steroid instillation for idiopathic urethritis in children: an 8-year experience. Eur J Pediatr Surg 2015;25:212-5. [CrossRef]
14. Docimo SG, Silver RI, Gonzalez R, Müller SC, Jeffs RD. Idiopathic anterior urethritis in prepubertal and pubertal boys: pathology and clues to etiology. Urology 1998;51:99-102. [CrossRef]
15. Henderson L, Farrelly P, Dickson AP, Goyal MA. Management strategies for idiopathic urethritis. J Pediatr Urol 2016;12:35.e1-5. [CrossRef]
16. Lumen N, Hoebeke P, Willemsen P, De Troyer B, Pieters R, Oosterlinck W. Etiology of urethral stricture disease in the 21st century. J Urol 2009;182:983-7. [CrossRef]
17. Alwaal A, Blaschko SD, McAninch JW, Breyer BN. Epidemiology of urethral strictures. Transl Androl Urol 2014;3:209-13.

18. Moralıoğlu S, Cerrah-Celayir A, Bosnalı O. Clinical features and long-term outcomes of idiopathic urethrorrhagia. Turk J Pediatr 2015;57:380-4.
19. Fernandez-Ibieta M, Ayuso-Gonzalez L. Dysfunctional voiding in pediatrics: a review of pathophysiology and current treatment modalities. Curr Pediatr Rev 2016;12:292-300. [CrossRef]
20. Jayakumar S, Pringle K, Ninan GK. Idiopathic urethritis in children: classification and treatment with steroids. J Indian Assoc Pediatr Surg 2014;19:143-6. [CrossRef]
21. Pérez-Bertólez S, Casal-Beloy I, Martín-Solé O, Carbonell M, Capdevila B, Tarrado X, et al. A novel therapy for idiopathic urethritis in children: local steroid injection. J Pediatr Urol 2023;20:134-7. [CrossRef]
22. Ashraf J, Radford AR, Turner A, Subramaniam R. Preliminary experience with instillation of triamcinolone acetonide into the urethra for idiopathic urethritis: a prospective pilot study. J Laparoendosc Adv Surg Tech A 2017;27:1217-21. [CrossRef]