



Research Article

Endoscopic Internal Urethrotomy in the Management of Male Urethral Strictures

Amadou Kassogue^{1,*} , Boubacar Traore¹, Hamed Sylla¹ , Saydou Tolo¹, Idrissa Sissoko¹ , Daouda Sangare¹ , Issa Coulibaly¹, Moussa Salifou Diallo¹, Mamadou Lamine Diakite²

¹Urology Department, Kati University Hospital Pr Bocar Sidy Sall, Kati, Mali

²Urology Department, Point G University Hospital, Bamako, Mali

Abstract

Introduction: Endoscopic internal urethrotomy is the standard surgical treatment for short strictures of the male urethra. The objective was to evaluate the outcomes of endoscopic internal urethrotomy in the management of male urethral strictures. **Materials and methods:** This was a retrospective, cross-sectional descriptive study conducted in the urology department of the Pr Bocar Sidy Sall University Hospital in Kati over a 36-month period from January 1, 2022, to December 31, 2024. **Results:** We identified 40 patients who underwent endoscopic internal urethrotomy, representing a frequency of 6.2%. The mean age of our patients was 45.3 years, with a range from 16 to 90 years. The most frequent symptom was dysuria and pollakiuria, with a frequency of 42.5%. The diagnosis was confirmed in 75% of cases by UCR-M. The length of the strictures was 2 cm or less in 90% of cases. The stricture was located in the bulb of the urethra in 42.5% of cases. The etiology was predominantly iatrogenic in 52.5% of cases, followed by post-traumatic strictures in 22.5%. The average length of hospital stay was 3 days. The outcome was satisfactory in 87.5% of cases. **Conclusion:** Endoscopic internal urethrotomy is the standard treatment for short urethral strictures. It provides good functional and anatomical results.

Keywords

Urethral Stricture, Endoscopic Internal Urethrotomy, Treatment

1. Introduction

Endoscopic internal urethrotomy consists of an endoscopic incision of the stricture under direct visual control, in order to restore the urethral caliber. It has become established as a minimally invasive, relatively simple, reproducible, and accessible technique in facilities equipped with adequate endoscopic equipment. It is indicated for strictures of the short urethra. Numerous techniques have been proposed for treating male

urethral strictures over the years. Among these techniques is endoscopic internal urethrotomy, first described by Maisonneuve and Otis [1], who performed it blindly, and then by Saches [2], who was the first, in 1973, to develop the method under direct visual control. The treatment of urethral strictures includes various techniques, such as dilation, endoscopic internal urethrotomy, and urethroplasty. Currently, endoscopic

*Correspondence: Amadou Kassogue (kassogueamadou@hotmail.fr)

Received: 4 March 2026; **Accepted:** 14 March 2026; **Published:** 27 March 2026



Copyright: © The Author(s), 2026. Published by Science Publishing Group. This is an **Open Access** article, distributed under the terms of the Creative Commons Attribution 4.0 License (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution and reproduction in any medium, provided the original work is properly cited.

internal urethrotomy (EIU) is the first-line treatment for urethral stricture for most authors [3, 4]. Endoscopic internal urethrotomy involves an endoscopic incision of the stricture under direct visual control to restore the urethral caliber. It has become established as a minimally invasive, relatively simple, reproducible, and readily available technique in facilities equipped with appropriate endoscopic equipment. The objective was to evaluate the outcomes of endoscopic internal urethrotomy in the management of male urethral strictures.

2. Materials and Methods

Study Setting:

The study was conducted in the Urology Department of the Professor Bocar Sidy Sall University Hospital Center in Kati.

Study Type:

This was a retrospective, cross-sectional descriptive study.

Study Period:

Our study took place over a 3-year period, from January 1, 2022, to December 31, 2024.

Study Population:

Our study population included all male patients, regardless of origin, marital status, or age, admitted to the Urology Department of the Professor Bocar Sidy Sall University Hospital Center in Kati who underwent an endoscopic internal urethrotomy (EIU) during the study period. Sampling:

Inclusion criteria:

All patients who underwent endoscopic internal urethrotomy (EIU) for male urethral stricture at the urology department of the Pr BSS University Hospital in Kati during the study period and who had a complete medical record were included.

Materials:

We used a Storz CH 21 urethrotome, a 30° optic, a light source, and an endoscopy video tower. The passive trigger used was also Storz.

Data sources:

The data sources for our study were: operative reports, hospitalization records, and medical records (consultations and hospitalizations).

Data collection and analysis:

Data were collected using a questionnaire. The questionnaires were entered and analyzed using Word 2019, Excel 2016, and SPSS version 22.0 after data verification. Ethical and professional considerations: Informed consent was obtained from all patients before their inclusion in the study.

The information provided by each patient was completely confidential and used solely for research purposes. Each patient's personal information was coded with a number that prevented identification of the individual upon publication of the study results.

3. Results

We identified 40 patients who underwent endoscopic internal urethrotomy, representing a frequency of 6.2%. Endoscopic surgery was performed in 646 patients, accounting for 80.0% of our procedures. The mean age of our patients was 45.3 years, with a range from 16 to 90 years (Figure 1). The most frequent symptom was the combination of dysuria and pollakiuria, with a frequency of 42.5% (Table 1). *E. coli* was the most frequently isolated pathogen, at 68.2% (Table 2). The diagnosis was confirmed in 75% of cases by urinary urethrotomy. The length of the strictures was less than or equal to 2 cm in 90% of cases (Figure 2). The stricture was located in the bulb of the urethra in 42.5% of cases (Table 3). The etiology was predominantly iatrogenic strictures in 52.5% of cases, followed by post-traumatic strictures in 22.5% (Table 4). Simple endoscopic internal urethrotomy (EIU) was performed in 47.5% of cases (Table 5). The average length of hospital stay was 3 days (Table 6). Removal of the transurethral bladder catheter was performed in 25 of our patients within 0-7 days, representing a rate of 62.5% (Table 7). The outcome was satisfactory in 87.5% of cases (Table 8).

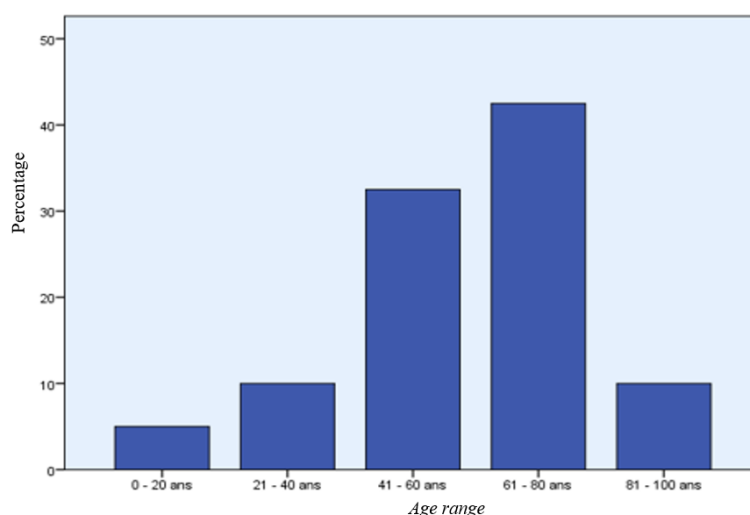
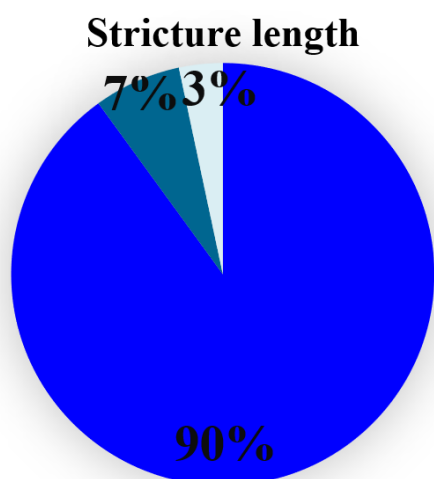


Figure 1. Distribution of patients by age group. The most represented age group was 61–80 years, accounting for 42.5% of cases.



■ < ou egal 2cm ■ >2cm ■ Not measured

Figure 2. Distribution of patients according to the size of the urethral stricture. Urethral stricture was < or equal to 2 cm in 90% of cases.

Table 1. Distribution of patients according to symptomatology.

Symptomatology	Effective	Percentage (%)
Dysuria + Pollakiuria	17	42.5
Dysuria + Pollakiuria + burning during urination	13	32.5
Urethrorrhagia	5	12.5
Hematuria	3	7.5
Simple Dysuria	2	5.0
Total	40	100

Dysuria + pollakiuria was the most common symptom in our study series.

Table 2. Distribution of patients according to the germ found in the urine culture.

Germ	Effective	Percentage (%)
E. Coli	15	68.2
Klebsiella Pneumoniae	4	18.2
Neisseria Gonorrhoeae	2	9.1
Staphylococcus Aureus	1	4.5
Total	22	100

E. coli was the most frequently found germ, at a rate of 68.2%.

Table 3. Distribution of patients according to the location of urethral stricture.

Location	Effective	Percentage (%)
Bulbar	18	45.0
Membranous	10	25.0
Bulbo-membranous	9	22.5
Penile	3	7.5
Total	40	100

The bulbar portion was the most frequently found location, at 45%.

Table 4. Distribution of patients according to the etiology of urethral stricture.

Etiology	Effective	Percentage (%)
Iatrogenic	21	52.5
Post-traumatic	9	22.5
Infectious	7	15.0
Tumoral	3	10.0
Total	40	100

Iatrogenic urethral stricture accounted for 52.5% of cases.

Table 5. Distribution of patients according to the type of intervention.

Type of intervention	Effective	Percentage (%)
Simple EIU	19	47.5
EIU + TRUP	7	17.5
EIU + cervicoprostatic incision	6	15.0
EIU + TURB + hydrocele treatment	2	5.0
EIU + TRUB	1	2.5
EIU + intravesical lithotripsy	1	2.5
EIU + inguinal hernia repair	1	2.5
EIU + cystolithotomy	1	2.5
EIU + TURP + cystolithotomy	1	2.5
EIU + scrototomy	1	2.5

Type of intervention	Effective	Percentage (%)
Total	40	100

Simple EIU was performed in 47.5% of cases.

Table 6. Distribution of patients according to length of hospital stay in days.

Length of hospital stay in days	Effective	Percentage (%)
3 days	18	45.0
2 days	15	37.5
4 days	3	7.5
6 days	3	7.5
5 days	1	2.5
Total	40	100

The length of hospital stay was 3 days for 18 of our patients, or 45%.

Table 7. Distribution of patients according to the time ejection of the probe.

Time frame for removal of the transurethral bladder catheter	Effective	Percentage %
0-7	25	62.5
8-14	7	17.5
15-21	6	15.0
22-28	2	5.0
Total	40	100

Removal of the transurethral bladder catheter was performed in 25 of our patients within a 0-7 day interval, representing a rate of 62.5%.

Table 8. Distribution of patients according to the result of the post-operative urinary status.

Postoperative urinary status	Effective	Percentage (%)
Good	35	87.5
Average	3	7.5
Poor	2	5.0
Total	40	100

Post-operative urinary status was good in 35 cases, or 87.5%.

4. Discussion

We performed 40 cases of endoscopic internal urethrotomy, representing a frequency of 6.2%. The mean age of our patients was 45.3 years, with a range of 16 to 90 years. This mean age is similar to that of the study by MS Ousman Manzo [5], which was 50.82 years, with a range of 17 to 82 years. The main symptom of urethral stricture is dysuria. The most frequent symptom was the combination of dysuria and pollakiuria, with a frequency of 42.5%. Dysuria was the most common reason for consultation.

The main reason for consultation was also dysuria in the studies of several authors, specifically 55.79% in the study by Avion et al. [4] and 54.4% in that of MS Ousman Manzo et al. [5]. This result is similar to that of Diarra. A [6] which represented 40% and was lower than Kassogue. A et al. [7] which represented 80.6%.

E. coli was the most frequently detected organism in our study, at a rate of 68.2%. Urinary tract infection complicates the clinical picture and exacerbates urinary symptoms. Urological history was dominated by urinary tract infection, with 33 cases, or 57.9% (n=31) [5].

The diagnosis was confirmed in 75% of cases by retrograde and voiding urethrocytography (RVUC), which is the gold standard for diagnosing urethral stricture. The length of the strictures was less than or equal to 2 cm in 90% of cases. The most common location of the stricture was the bulb, at 38.6% in our study; this bulbar location was higher in the study by Avion et al., at 42.5% [4]. The etiology was dominated by iatrogenic strictures in 52.5%, followed by post-traumatic strictures in 22.5% (Table 4). In contrast, the etiologies were infectious in 51.50% and traumatic in 32.18%, according to the results of Avion et al. [4]. Simple EIU was performed in 47.5% of cases without any other endoscopic procedures. In the study by MS Ousman Manzo et al. [5], simple EIU was the most common procedure, occurring in 57.9% of cases.

The average length of hospital stay was 3 days (Table 6). This is similar to the study by MS Ousman Manzo [5], where the average length of stay was 4.5 days with a favorable outcome in 94.7% of cases. This average postoperative length of stay was higher in the study by Dje K et al., at 6.8 days, with a range of 0 to 38 days [8].

Removal of the transurethral bladder catheter was performed in 25 of our patients within a range of 0 to 7 days, representing a rate of 62.5%. This catheterization duration was ≥ 5 days in 45.4% of patients in the study by S. Zouari [9]. Benjelloun et al. [3] reported an average duration of postoperative catheterization of 2 days and that maintaining catheterization beyond this time did not provide significant improvement. However, the average duration of postoperative urinary catheterization was 14 days [4]. S. Zouari [9] reports that reducing the duration of postoperative catheterization, using silicone catheters, and increasing the catheter gauge could improve the success rate of endoscopic internal urethrotomy (EIU), but that further prospective randomized studies are

needed to confirm these results. Endoscopic internal urethrotomy is a simple, repeatable technique with straightforward postoperative recovery and a shorter hospital stay [8].

The outcome was satisfactory in 87.5% of cases. A stable success rate of approximately 75.4% at 3.5 years was observed in de Benjelloun et al. [3]. EIU can be offered as a first-line treatment for any short, single urethral stricture of the posterior urethra. This result was even better when the procedure involved a short (less than 2 cm), single stricture of the posterior urethra [3]. Endoscopic internal urethrotomy (EIU) is a technique applicable to short, single, and 1-cm strictures of the posterior urethra that can be traversed with a blade, Ngaroua et al. [10]. It produces satisfactory results for strictures up to two centimeters in length [10].

In our study, the outcome was satisfactory in 87.5% of cases. Postoperative outcomes were favorable, with a 62.50% success rate (25 cases) and a 17.50% recurrence rate (7 cases). Niang et al. [11] reported a 70% success rate. There was no intraoperative or postoperative mortality. Endoscopic internal urethrotomy is currently the gold standard for the surgical management of short strictures of the posterior urethra.

5. Conclusion

Endoscopic internal urethrotomy is the standard surgical treatment for short urethral strictures. The procedure is simple and quick, with no major morbidity and requiring only a short hospital stay. It reduces the duration of bladder catheterization after the procedure. The functional outcome is satisfactory.

Abbreviations

CHU	University Hospital Center
BSS	Bocar Sidy Sall
USTTB	University of Sciences, Techniques and Technologies of Bamako
RVUC	Retrograde and Voiding Urethro-cystography
CBEU	Cytobacteriological Examination of Urine
UIE	Endoscopic Internal Urethrotomy
TRUP	Transurethral Resection of the Prostate
TRUB	Transurethral Resection of the Bladder

Author Contributions

Amadou Kassogue: Conceptualization, Project administration, Supervision, Validation, Visualization, Writing – review & editing

Boubacar Traore: Data curation, Formal Analysis, Methodology, Resources, Software

Hamed Sylla: Data curation, Formal Analysis, Resources Software

Saydou Tolo: Formal Analysis, Resources Software, Data curation, Formal Analysis

Idrissa Sissoko: Formal Analysis, Writing – original draft

Daouda Sangare: Writing – original draft

Issa Coulibaly: Formal Analysis

Moussa Salifou Diallo: Writing – original draft

Mamadou Lamine Diakite: Project administration, Supervision

Conflicts of Interest

The authors declare no conflicts of interest.

References

- [1] Otis FN. Remarks on strictures of urethrae of extreme calibre, with cases and description of new instrument for their treatment. *N. Y. Med. J.* 1972; 15: 152.
- [2] Sachse H. Transurethral sharp sclerotherapy of the urethral stricture with a visual urethrotom. *Verh Dt. Ges. Urol.*, 1973, 25, 143.
- [3] Benjelloun M, Drissi M, Makhoulfi M, Nouri A, Karmouni T, Tazi K et al. Treatment of urethral strictures by endoscopic internal urethrotomy: anatomical and functional results of a series of 244 cases. *African Journal of Urology* 2008; 14 (2): 114-119.
- [4] Avion KP, N'Diamoi A, Ouattara F, Agui B, Zouan F, Alloka V et al. Endoscopic Internal Urethrotomy (EIU) for the Treatment of Ureteral Stenosis: A Review of 233 Cases. *Open Journal of Urology*, 2021, 11, 264-272.
- [5] Ousman Manzo MS, Karimoune Mossi O, Boka Touna Y, Seydou Hamadou A, Adamou Kaka MS, Dambaki Maman S, Soumana A. The role of endoscopic internal urethrotomy in the treatment of urethral stricture. *Jaccr Africa* 2024; 8(3): 268-276.
<https://doi.org/10.70065/24ja83.0061010909>
- [6] Diarra A. Anatomical and functional results of endoscopic internal urethrotomy in the urology department of the CHU-ME Luxembourg. Medical thesis; Bamako, 2023, n°31, 108p.
- [7] Kassogue A, Diarra A, Diallo M, Diarra M, Sissoko I, Sangare D. Etiologies and management of urethral stricture in Kati (Mali). *Health Res Afr* 2025; 3: 24-8.
- [8] Dje K, Coulibaly A, Coulibaly N, Sangare IS. Endoscopic internal urethrotomy in the treatment of acquired urethral stricture in black Africans: a study of 140 cases. *Medecine d'Afrique Noire* 1999; 46 (1): 56-61.
- [9] Zouari S, Saadi A, Setti Boubaker N, Said R, Zaghib S, Hermi A et al. Impact of catheterization duration, catheter type and diameter on urethral stricture recurrence after endoscopic internal urethrotomy. *Prog. Urol.* 2024: 105-106.
- [10] Ngaroua N, Eloundou NJ, Djibrilla Y, Asmaou O, Mbo AJ. Epidemiological, clinical aspects and management of urethral stenosis in adult patients in a District Hospital in Ngaoundéré Cameroon. *Pan Afr Med J* 2017; 26: 1-6.
<https://doi.org/10.11604/pamj.2017.26.193.9669>

- [11] Niang L. Results of endoscopic internal urethrotomy at the urology and andrology department of Aristide Le Dantec Hospital: a study of 61 cases. Medical thesis. Dakar, 2003, n°09, 82p.