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INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)

Article DOI: 10.21474/IJAR01/12259

DOI URL: <http://dx.doi.org/10.21474/IJAR01/12259>



RESEARCH ARTICLE

INTERNAL ENDOSCOPIC URETHROTOMY FOR URETHRAL STRICTURES : EVALUATION OF RESULTS AND INFLUENZATING FACTORS

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Manuscript Info

Manuscript History

Received: 31 October 2020

Final Accepted: 30 November 2020

Published: December 2020

Key words:-

Ieu, Stenosis, Urethra, Narrowing, Urethrotomy

Abstract

Objective: To describe the clinical aspects of urethral strictures managed internal endoscopic urethrotomy (IEU) and to evaluate the outcomes and factors on success rate.

Patients and methods: This is a retrospective, descriptive, analytical and monocentric 2-year study of patient records with an IEU indicated for urethral stricture. The parameters studied were: age, history of endo-urethral maneuvers, clinical symptomatology, etiologies, strictures characteristics and outcomes. The outcomes were appreciated by the quality of the voiding jet and the outcomes of the control rétrograde urethrocytography.

Results: Sixty patients were included. The mean age was 50 ± 19.3 years old. An history endo-urethral was found in 38.3% of patients. The mean of consultation time was 20.7 ± 30.7 months. Dysuria was the most common reason for consultation. The most common etiologies were those of infectious and iatrogenic. The bulbar seat was predominant. The mean of length was 0.9 ± 0.5 cm. After the mean delay of 14.5 ± 6.9 months, the overall success rate was 60%. Per and postoperative complications were dominated by retention of urine. The outcomes showed that there was no significant correlation between age, previous treatment, etiology, seat, length, number of strictures, and outcome.

Conclusion: The IEU gives a good results if the indication is well posed. Seat, length, single or multiple character, etiology and history of endo-urethral maneuvers do not affect the outcomes.

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Introduction:-

Acute urine retention resulting from urethral stricture is the second most common urological emergency in our centre [1]. In developed countries the etiology of urethral stricture is mainly iatrogenic as a consequence of the increased number of endourethral manoeuvres [2]. However, in the series by Niang et al [3] in 2003 at Senegal, the post-infectious etiology predominated, as in other developing countries [4]. The management of urethral strictures is based on 3 indications: Urethral dilatation, Internal Endoscopic Urethrotomy (IEU) and urethroplasty. IEU is easy to perform, quick, and generally simple post-operative procedures. It does not compromise the performance or results of a subsequent urethroplasty. The aim of our work was to describe the outcomes of IEU in the treatment of urethral strictures and the factors influencing in our centre.

Patients and Method:-

This is a retrospective, descriptive, analytical and monocentric study running from January 2016 to December 2017 evaluating IEU in the treatment of urethral stricture and its influencing factors in our centre. The urethrotome was a STORZ brand urethrotome with a sheath 22 CH, an optic 0° and a lunar or straight blade. The urethral structure was incised under visual control at 12 hours into healthy tissue (Figure 1). A Foley catheter CH 16 or 18 was left in place for 24 to 48 hours postoperatively. The parameters studied were: age, history of endourethral manoeuvres, clinical symptomatology, etiologies, characteristics of the urethral strictures (location, length and number) and outcomes. The preoperative parameters of the patients were analysed and the postoperative outcomes were assessed taking into account the quality of the urinary stream and the data from the control retrograde ureterocystography (RUC) made 1 year after the control IEU.

The IEU was considered to be a success: normal urination with a normal urethral calibre or moderately diminished at the RUC.

Failure:

Frank dysuria or complete urine retention and the existence of urethral structure at the control RUC.

The influencing factors were assessed by uni-variate analysis. Data entry and making figures and tables were made with Excel 2013 software. Data analysis was done with IBM SPSS Statistic 20 software, using the Chi 2 test with a significance level of 5% ($p < 0.05$).

Results:-

We registered 60 patients during the study period. The mean age was 50 ± 19.3 years (16 and 85 years). A history of endo-urethral manoeuvring was found in 38.3% of patients. The mean of consultation time was 20.7 ± 30.7 months. The reasons for consultation were dysuria and urinary retention, objectified in 65% (39) and 35% (21) of patients respectively. Infectious and iatrogenic etiologies were objectified in 30% and 28.3% of patients respectively. The mean length of the urethral stricture was 0.9 ± 0.5 cm. The bulbar seat was objectified in 73.3% of patients. The urethral stricture was only in 90% of patients. Table I illustrated the characteristics of the preoperative patients data.

After the mean delay follow-up of 14.5 ± 6.9 months, the success rate was 60% and the failure rate was 30% of the patients. Ten percent of the patients were lost to follow-up. Pre- and post-operative complications were urinary retention, haematuria, urinary tract infections and wrong roads in 11.1% (6), 3.7% (2), 1.8% (1) and 3.7% (2) of the patients respectively. The outcomes reported according to age objectified success rates respectively of 7, 17 and 12 against the respective failure rates of 3, 6 and 9 for ages < 30 years, 30-60 and > 60 years ($p = 0.65$). The best outcomes were observed in patients without a history of endo-urethral manoeuvring. However, there was no statically significant difference between the therapeutic outcomes and the existence or no of this history ($p = 0.35$) (Table II).

The outcomes reported according to the reasons for consultation were 15 and 11 success rates for dysuria and urinary retention ($p = 0.445$), compared to 9 failure rates for dysuria and urinary retention ($p = 0.445$).

The outcomes reported according to the different etiologies (infectious, iatrogenic, traumatic and unspecified) showed success rates of 12, 10, 6 and 8 respectively, compared to failure rates of 5, 5, 4 and 4 respectively ($p = 0.813$). The outcomes reported according to the seat of urethral stricture showed success rates of 2, 28, 0, 4, 2 and 0, compared to failure rates of 14, 0, 1, 1, 1, 2 and 0 respectively for penile, bulbar, bulbar associated penile, bulbo-membranous, membranous strictures ($p = 0.07$). The outcomes reported according to length showed success rates of 1, 32 and 3 respectively, compared to failure rates of 1, 11 and 6 respectively for lengths < 0.5 cm, 0.5-1 cm and > 1 cm ($p = 0.06$). The outcomes reported by the number of the urethral strictures showed success rates of 33, 3 and 0 respectively, compared to failure rates of 16, 2 and 0 respectively for single, double and triple urethral strictures ($p = 0.078$).

Discussion:-

Urethral stricture can be observed at all age. The mean age in our series was similar to those found by Djé et al [4] (65 years) in Côte d'Ivoire and Niang et al [3] (51 years) in Senegal. The occurrence of this disease in adulthood is related to its slow evolution. Indeed, in infectious causes the urethral stricture is 8 to 10 years after the initial lesion

[5]. A consultation delay was noted in our series. This is explained by the precarious situation of patients who, for lack of financial means, avoid hospitals and sometimes prefer the care of traditional practitioners. The post-infectious etiology of urethral stricture, which was more frequent in our series, was in line with the data in the African literature [3,4,6]. This predominance of the post-infection etiology is related to the high frequency of sexually transmitted infections that are untreated or poorly treated [4]. Iatrogenic urethral strictures are clearly on the rise, and are less important in the African series, unlike in developed countries where they are the main cause of urethral stricture [7,8]. The predominance of iatrogenic urethral stricture in developed countries is linked to the development of endo-urology with its endo-urethral manoeuvres [9].

In our series, the frequency of post-traumatic urethral stricture in the young population below the age of 40 could be explained by their intense physical activity, which is the source of public road accidents and work accident. Lamy et al [10] made the same conclusions, indicating that the population exposed to post-traumatic urethral stricture was between 7 and 57 years of age. X-ray examinations allow the diagnosis of urethral stricture to be made and to specify its characteristics. The RUC with voiding films is the reference examination. The more frequent bulbar seat in our series was in accordance with the data found in the literature [3,4,6,8,11]. Urethral strictures less than or equal to 1cm were more frequent in our series. The IEU gives good outcomes if its indication has been well respected. According to Boccon-Gibod et al [12], the IEU outcomes are similar to those of one or two-step urethroplasty. Comparative studies have shown that there is not much difference between the immediate outcomes of IEU and urethroplasty [13]. The surgical technique performed in our series was similar to the technique described by several authors [7,14]. However, other authors [8,12] prefer an internal urethrotomy combined with endoscopic resection of the urethral strictures. This technique has the advantage of carrying out the complete and wide removal of the fibrous callus, which widens the indications and reduces the risk of recurrence. Guillemin et al [8] in their study, after a 5-year follow-up, noted 72% satisfactory outcomes with this technique. A more prolonged follow-up than ours is necessary in the evaluation of the IEU because a progressive deterioration of the outcomes over time is reported [12]. Some authors report a success rate of 70-80% [14,15], while other authors attribute to the IEU only 40-50% success in 1 year [16]. In our series, there was no significant correlation between etiology and success. This is comparable to the outcomes of Zango et al [17] who also showed that the etiology of urethral stricture had no significant influence on the outcomes. However, Chebil et al [6] found that the best outcomes were obtained with sclero-inflammatory and iatrogenic urethral stricture. Steenkamp et al [18] found that infectious urethral stricture performed better than post-traumatic urethral stricture. In our series, the location, length and single or multiple urethral stricture had no significant influence on the IEU outcome. Zango et al [17] in their series showed that breech had no influence on the outcomes. However, according to several authors in the literature [4,7,11] the bulbo-perineal seat gives the best outcomes compared to penile and membranous urethral strictures. For several authors, the success rate decreases with the length of the urethral strictures [7,11]. According to several authors, single urethral strictures give better outcomes than multiple urethral strictures [6,11]. This discrepancy between our outcomes and those in the literature proves that the indications were well respected in our series. Complications after IEU are rare and often benign [19]. In our series the intraoperative complications were comparable to those of Die K et al [4].

Figure 1: A: endoscopic image B: incision at 12 h from the stenosis from stenosis to cold blade

Figure:

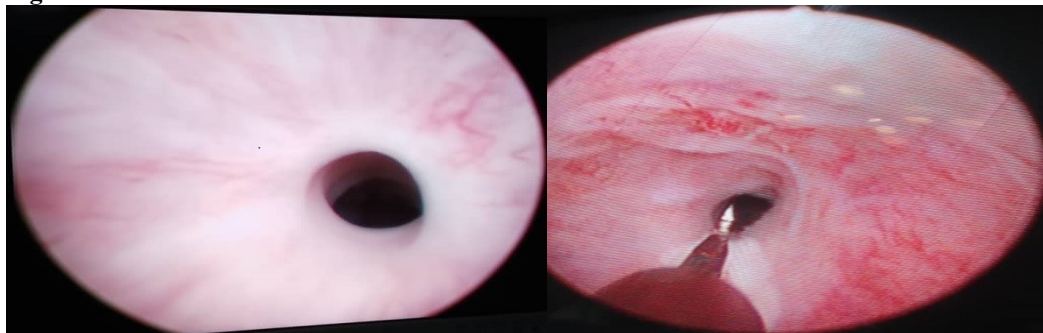


Figure 1:

A: endoscopic image the urethral

B: incision at 12 hours from

Tables:**Table I:-** Distribution of patients according to age group, history endo-urethral maneuver, etiologies and seat of urethral stricture.

Slice of age		[0-19]	[20-39]	[40-59]	[60-79]	[80-90]
	number		2	21	14	22
Percentage		3.3 %	35 %	23.3 %	36.7 %	1.7 %
Seat		bulbar	Bulbo-membraneus	Membraneus	Penile	Urethro-bladder anastomosis
	number	44	5	4	6	1
	Percentage (%)	73 %	8 %	7 %	10 %	2 %
Etiologies		Infectious	Iatrogenic	Traumatic	No specified	
	number	18	17	10	15	
	Percentage (%)	30 %	28.3%	16.6%	0.25	
Number		unique	double	triple		
	Percentage (%)	90 %	8.3 %	1.7 %		
History endo-urethral maneuver		dilatation with the Bougie urethral dilators	Uretroplasty	IEU		
	number	12	7	4		
	Percentage (%)	20 %	11.7	6.7		

Table II:- Results according to the history of endo-urethral maneuver.

Geste urétral antérieur	Success	Failure	Lost to follow-up	Total
Uretroplasty	4	2	1	7
Dilatation with a Bougie urethral dilators	6	6		12
IEU	2	2		4
No gesture	24	8	5	37
Total	36	18	6	60

Conclusion:-

The internal endoscopic urethrotomy can be offered as a firstline treatment for urethral strictures if the indication is well codified with available endoscopic material. The seat, length, single or multiple character, etiology and history of endo-urethral maneuvers do not affect the outcomes.

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