

Research Journal of Pharmaceutical, Biological and Chemical Sciences

The Benefit Of Using Rigid Pediatric Cystoscopy In Placing A Safety Guide-Wire In Optical Urethrotomy In Male Urethral Strictures.

Ahmed Nazar Dhannoon*.

Department of Surgery, College of Medicine, Al- Iraqia University, Baghdad, Iraq

ABSTRACT

Urethral stricture disease is relatively common, and in many instances debilitating. The etiology of urethral stricture disease varies geographically. In general, the incidence of infection-related urethral stricture has decreased, especially in the developed world. Further research is required to better delineate etiology of urethral strictures. Nearly a third of urethral stricture cases are idiopathic. One of the optional and initial management of urethral strictures is optical urethrotomy with overall long-term success rates are estimated to be just 20–30% and can be as final treatment of strictures sometimes (Male urethral strictures and their management Lindsay A. Hampson) . Difficulty in placing of safety guide-wire beyond the strictures may terminate the procedures of optical internal urethrotomy. Our search is to evaluate the benefit of using rigid pediatric cystoscopy in evaluation of urethral strictures and easily introducing of safety guide-wire beyond diseased urethra up to the bladder. Ninety seven males patients with variable locations and degree of urethral strictures were subjected to the study. At time of the procedure of optical urethrotomy ,all patients had a failure in passing a guide wire post-stricture by using rigid adult cystoscopy with outer sheath diameter ranging from(17-21) French(Fr.). Those patients were shifted to pediatric rigid cystoscopy 9.5 Fr. for better evaluation of the strictures length and introducing a guide-wire. The guide-wire used in the procedures was a flexible, metallic with one malleable end that passed up to strictures sit. Our study shows, that thirty nine patient has easily guide-wire introduction, three patients with difficult introduction undergone negotiations with their strictures by cystoscopy with successful passage. Three patients had a failure in passage of guide-wire and shifted to suprapubic catheter. It was concluded that using a pediatric cystoscopy with 9.5 Fr. diameter is effective in placing a safety guide-wire in patients with urethral strictures with success rate better than adult rigid cystoscopy.

Keywords: Strictures, Guide- wire, Optical Urethrotomy, Pediatric Cystoscop.

**Corresponding author*

INTRODUCTION

A urethral stricture is a narrowing of the urethra caused by injury, instrumentation, infection and certain non-infectious forms of urethritis, strictures result from injury to the epithelium of the urethra or underlying corpus spongiosum, which ultimately causes fibrosis during the healing process (Epidemiology of urethral strictures Amjad Alwaal). Symptomatic presentations includes poor urine flow ,driplings ,sense of incomplete emptying, recurrent urethritis, prostatitis and sometimes urine retention. Treatment including periodic urethral dilatation , optical urethrotomy, urethral stents surgical urethroplasty repair (Lumen N, et al, 2009). Internal urethrotomy success rates vary widely, ranging from 8–80% (Amjad Alwaal), depending on patient selection, length of stricture and follow-up assessment, these factors determining success and recurrence rates, with oververall long-term success rates are estimated to be 20–30% (Steenkamp JW, 1997, Greenwell TJ, et al, 2004). With the use of a pediatric cystoscope (an endoscope for inspecting the urethra and bladder) the degree of urethral lumen (cavity) elasticity and inflammation can be assessed. This is useful for confirming or clarifying urethrography (X-ray) findings and can visually assess urethral mucosa and associated scarring (Figuroa JC1) Internal Urethrotomy:- Internal urethrotomy is a surgical incision into the urethra for relief of stricture. The goal of cutting a stricture is to have epithelial regrowth before scar recurs in the same area. At best, the result of urethrotomy is to create a larger caliber stricture that does not obstruct urination (Figuroa JC1). Urethrotomy is potentially curative for short strictures (less than 1 cm) that have minimal spongiofibrosis (Dewan PA1). A rigid cystoscope is inserted into the urethra for visualisation of the junction between healthy pink mucosa and the abnormal white appearance of spongiofibrosis. This aids in localization of the stricture. A guide wire passed through the stricture facilitates later dissection and identification of the urethral lumen. The guide wire is secured to the foreskin with a silk tie to prevent displacement (Dewan PA1, Santucci RA, 2007). Guide wire-assisted optical urethrotomy helps avoiding risks associated with blind incision techniques and appears to be a safe and simple alternative for management of urethral strictures.

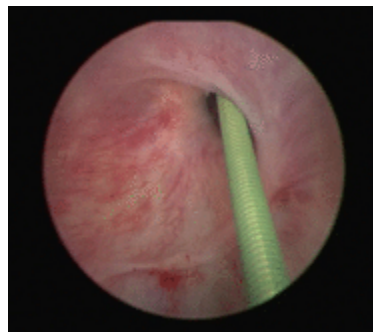


Figure1: show a safety guide-wire used in in the study passé the stricture site.

Approaching diagnosis of urethral strictures by the following

- 1- History symptoms of the patient:** this is including take a full history of the patient for previous urethral trauma of bleeding from urethra of history of sexual transmitted disease.
- 2- Ultrasound study:** Trans-abdominal to evaluate post voiding urine volume and upper system dilatation assessment.
- 3- Flow rate measurement (uroflowmetry) UFM:** It's a graphical recording of urine flow from bladder to the urethra measuring the flow in ml per second .The graphical curve has the shape of nearly inverted bill . A normal UFM varies according to age, gender, and volume of voided urine. Peak and average flow rates are highly dependent on voided volume which should be at least 150 ml.

It has a multiple terms: **Q max** means maximum flow rate during voiding or peak flow rate PFR. **Q Wave** means average flow rate. The PFR is the most reliable variable value in detecting abnormal voiding .

4-Pressure flow studies: It is only done for patient suspected to have neurological underlying disease in addition to BPH.

5-Retrograde and antegrad urethrography: A urethrogram is an examination of the urethra by X-ray imaging, almost always carried out on males. It helps to evaluate the site, length, and severity of the strictures.

6-cystoscopy: It is used to diagnose, assess the severity, length, and treatment in patients with urethral strictures.

PATIENTS AND METHODS

The study is of cross-sectional case series study type in which 97 patients were studied in Baghdad from 2015 to 2017. All the patients had variable degrees of urethral strictures were evaluated by their symptoms and their medical history and drug history and diagnosed by urethrogram and flexible cystoscopy as a urethral stricture disease.

Tools:

1. Uroflowmetry.
2. Flexible cystoscopy under local anesthesia.
3. Transabdominal ultrasound to assess post-voided urine volume in older patients.
4. Urethrogram.
5. 9.5 Fr. pediatric cystoscopy with metallic safety guide wire with malleable end.

Internal urethrotomy :

Those 97 patients were shifted to optical internal urethrotomy procedure under general anesthesia after making a definitive diagnosis for their strictures. Direct vision internal urethrotomy (DVIU) is performed by making a cold-knife transurethral incision to release scar tissue, allowing the tissue to heal by secondary intention at a larger caliber and thereby increasing the size of the urethral lumen.

RESULTS

From 97 patients, 45 patients had failure to introduce a guide wire post-stricture site by adult cystoscopy (17-21Fr). The result is in the following table 1 and 2 :-

Table 1: success rate in placing a safety guide wire in adult versus pediatric cystoscopy.

Total 97 patients Adult rigid cystoscope(17-21Fr) optical urethrotomy	
Guide wire passed easily the stricture site	guide wire failed to pass the stricture site.
52 patients(53.6%)	45 patients(46.4%)

Table 2: results of using pediatric cystoscopy in placing a safety guide-wire.

Total 45 patients who subjected to pediatric rigid cystoscope 9.5Fr	39 patients guide wire passed easily(86.6%)
	3 patients with difficult negotiation by cystoscopy(6.66%)
	3 patient failed and shifted to suprapubic cystostomy(6.66%)

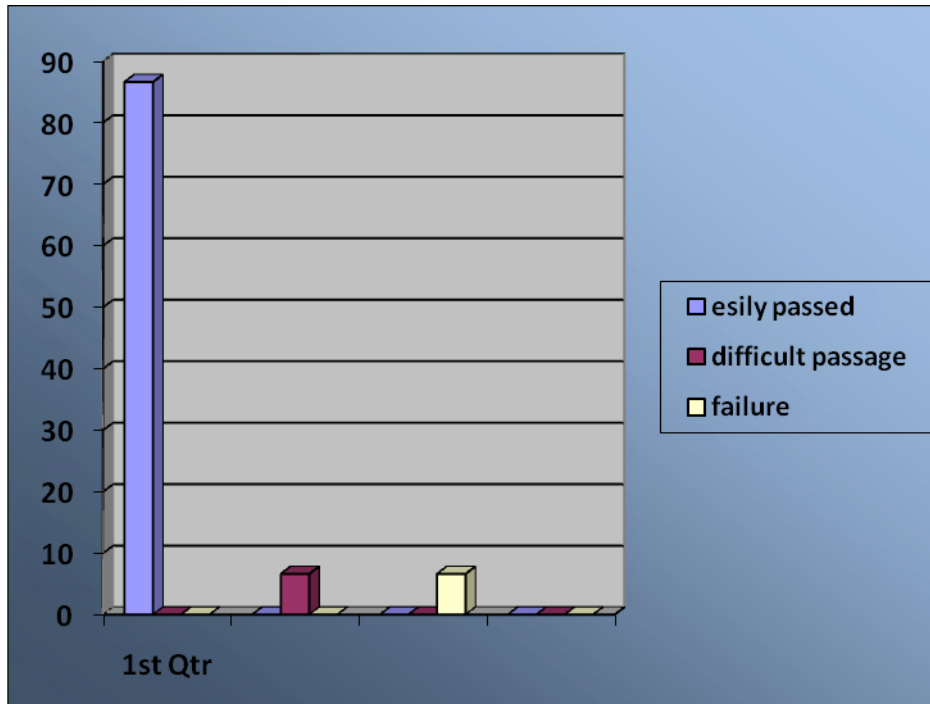


Figure 2: result of using pediatric cystoscopy in placing a safety guide-wire.

Discussion

Urethral stricture is a complicated disease representing a therapeutic challenge. The choice of reconstructive technique depends on the stricture length, degree of spongio- fibrosis, and surgeon’s preference and experience. Introducing a guide wire is essential to avoid blind dissections of urethra, however a guide wire with forced introduction .However, guide wires themselves can be a source of complication, such as with perforation and bleeding. Kinking of the guide wire is another complication that is less described. Blind urethrotomy for stricture of male urethra has been used for over a century, but it was only after the introduction of visual technique that it gained an acceptable clinical status . Keitzer et al. first introduced the blade fitted to a resectoscope for direct vision incision of bladder neck contractures. Sacshe in 1974, developed the first urethrotome with a fine movable scalpel to incise urethral stricture under direct vision. Since then, internal urethrotomy has gained much popularity among urological surgeons as a treatment of first choice for urethral strictures. In our study with above result show that the success rate for easily passage of the safety guide-wire in optical urethrotomy using adult rigid cystoscopy is 53%. Trail to push it under resistance in the may result in a urethral injury which may worsen patient condition. Shifting the procedure into pediatric rigid cystoscopy raise success rate of guide wire passage up to 93.4%. From those 45 patients who were shifted to pediatric rigid cystoscopy 42 patients the safety guide-wire passed and procedure in completed, only 3 patient safety guide-wires failed to pass the stricture site and the procedure was terminated. No previous study try to check the benefit of using a rigid pediatric cystoscopy in assessment of adult urethral strictures neither trying to assess its benefits in placing a safety guide wire and bypassing the strictures with it. On the other hand multiple studies prefer a flexible pediatric cystoscopy or rigid ureteroscopy for assessment of adult strictures but still no study try to evaluate its usefulness in placing a safety guide-wire. Multiple studies included a flexible pediatric cystoscopy in navigation and assessment of male urethral strictures in addition to ante grade and retrograde urethrogram. In 2004 Figueroa JC1, Hoenig DM. concluded that the 7.5F, 26-cm pediatric flexible cystoscope represents a useful tool in the diagnosis and management of urethral stricture disease. In 2014 Kadi N1, Salem H, Peracha A concluded that a rigid ureteroscopy is effective in assessment of urethral stricture disease.

CONCLUSION

The above study concludes that the use of rigid 9.5 Fr. pediatric cystoscopy is effective in assessment the stricture site and easily placing a safety guide-wire pre optical internal urethrotomy, this procedure is safe and easily done with a good hand experience and very effective in decreasing the failure rate of optical urethrotomy significantly with decreasing traumas rate due to blind dissection. And we advise to use it routinely in sever long complicated male urethral strictures.

REFERENCES

- [1] Epidemiology of urethral strictures Amjad Alwaal,corresponding author^{1,2} Sarah D. Blaschko,¹ Jack W. McAninch,¹ and Benjamin N. Breyer¹.
- [2] Male urethral strictures and their management Lindsay A. Hampson, Jack W. McAninch, and Benjamin N. Breyer.
- [3] Lumen N, et al. Etiology of urethral stricture disease in the 21st century. *J. Urol.* 2009;182:983–987.[PubMed].
- [4] Amjad Alwaal,corresponding author^{1,2} Sarah D. Blaschko,¹ Jack W. McAninch,¹ and Benjamin N. Breyer¹. Steenkamp JW, Heyns CF, De Kock M. Internal urethrotomy versus dilation as treatment for male urethral strictures: a prospective, randomized comparison. *J. Urol.* 1997;157:98–101. [PubMed].
- [5] Greenwell TJ, et al. Repeat urethrotomy and dilation for the treatment of urethral stricture are neither clinically effective nor cost-effective. *J. Urol.* 2004;172:275–277. [PubMed].
- [6] Figueroa JC1, Hoenig DM Use of 7.5F flexible pediatric cystoscope in the staging and management of urethral stricture disease.
- [7] Dewan PA1, Gotov E, Chiang D Guide wire-assisted urethral dilatation for urethral strictures in pediatric urology.
- [8] Santucci RA, Joyce GF, Wise M. Male urethral stricture disease. *J. Urol.* 2007;177:1667–1674.[PubMed].
- [9] Singh M, Blandy JP. The pathology of urethral stricture. *J. Urol.* 1976;115:673–676.
- [10] Steenkamp JW, Heyns CF, De Kock M. Internal urethrotomy versus dilation as treatment for male urethral strictures: a prospective, randomized comparison. *J. Urol.* 1997;157:98–101. [PubMed].
- [11] Carlton FE, Scardino PL, Quattlebaum RB. Treatment of urethral strictures with internal urethrotomy and 6 weeks of silastic catheter drainage. *J. Urol.* 1974;111:191–193. [PubMed].