

The Endoscopic Management of Stricture Urethra

M S JAVAID I A BAJWA J H KHAN M AKHLAQ S HUSAIN
Department of Urology, King Edward Medical College Mayo Hospital, Lahore
Correspondence to Dr. Mohammad Saeed Javaid

The endoscopic management of stricture urethra was performed in 50 cases with average age of 37 years and mean symptoms duration of 4.3 months. Thirty eight (76%) patients had stricture of anterior and 12(24%) with posterior urethral stricture. Routine blood and urine routine examination, renal function tests, renal ultrasound and retrograde urethrogram. X-rays were performed in each individual. The average length of strictures in these patients was 1.6cm. Twenty (40%) patients were with retention of urine and suprapubic cystostomy was previously performed. The remaining 30(60%) patients had severe urinary obstruction and mean residual urine was 82ml. Almost all of them had sexual weakness. Urethroscopy and internal urethotomy was performed with cold knife under general anaesthesia in 40(80%) and 10(20%) of them were operated under spinal anaesthesia and catheterised for 8-14 days. All of them were successfully treated at a single session except 5(10%) who developed extravasation or difficulty in passing the catheter, and urethroplasty was performed in these patients. All patients were advised intermittent self dilatation for one month postoperatively and follow up urethroscopy was performed. There was no incontinence and all improved satisfactorily with peak urinary flow rate of 16-20ml/sec. The cost of treatment by endoscopic management was much less than of open surgery and this cost effective therapy should be done as an initial procedure in most of the cases of stricture urethra.

Key words: Stricture, urethrogram, urethrotomy, cold knife, uroflowmetry

A urethral stricture is a scar resulting from tissue injury or destruction, contracture of inelastic scar shortens the circumference of urethra and reduces the lumen. These narrowings restricts the urinary flow and causes dilatation of proximal urethra and prostate ducts. Prostatitis or epididymitis are common complications of stricture¹⁴.

Severe prolonged obstruction can results in decompensation of ureterovesical junction, reflux, hydronephrosis and renal failure. During voiding pressure inserted by the bladder is transmitted to the urethra proximal to the stricture; if normal this segment of the urethra will be dilated during voiding on cystourethrogram. Gonococcal is still the common infection causing urethral strictures. Although with early treatment it is less likely that a stricture will follow an episode of gonorrhoea¹⁴.

Traumatic injuries or long term catheterization and infection remain a major cause, of stricture urethra formation. The essential point of treatment is urethral union like successful catheterisation of bladder drainage. Pontes and Pierce, 1978², reported that satisfactory results may be achieved without primary repair in most patients because majority of injuries involve partial urethral ruptures. However, open surgery is mostly done if catheterisation fails. This technique is most invasive and is associated with increased operative time and hospital stay.

Internal urethrotomy has a place in the treatment of stricture urethra when epithelium is involved or there is superficial spongy fibrosis. When the area of fibrosis is torn bleeding and further fibrosis will occur resulting in increase scar formation with increased length, depth and density of stricture.

We present our experience with endoscopic realignment of stricture urethra in 50 cases treated from March 2000 to September 2001.

Patients and methods

Fifty male patients of 4-70 years old (mean 37 years) (Fig.1) and symptoms duration of 3-195 days (mean 123 days) were treated in Urology Department of Mayo Hospital, Lahore. Eight (16%) of them were managed on out patient basis, others were admitted in hospital for some days. History and physical examination including digital rectal examination (DRE) of prostate was done. Routine blood and urine examination, blood sugar and renal function tests were performed. Renal ultrasound including residual urine, and retrograde urethrography was also determined (Table 1)

Table 1: Aetiology of stricture formation

Types	n=50	%age
Direct trauma	7	14
Infection	20	40
Road side accident	20	40
Iatrogenic	3	6

We assessed the strictures, potency, urinary flow, intraoperative time, and hospitalization. The procedure were performed under general and spinal anaesthesia. The follow up time was one to 1½ years. The patients were placed in lithotomy position, under aseptic conditions 0.9% saline was instilled under direct vision, lubrication and 21 Fx urethroscope was advanced to clearly reveal the proximal end of disturbed urethra. The strictures were incised with cold knife at 12 O' Clock. In long strictures a

5 Fr. Flexible guidewire was introduced across the stricture area to the bladder. After incision urethroscope and guide wire was removed and a half circle supplementary sheath in the urethra left. In adults 16 Fr and 12 Fr catheters for children were introduced and upto 15ml water in balloon was injected. In this endoscopic management and operative time varied from 9-18 minutes (mean 16 minutes) excluding the time for anaesthesia. Inj. Gentacin 80mg I/V was given to each patient preoperatively and a broad spectrum oral antibiotics for 5 days were advised post operatively. The catheters remained indwelling for 8-14 days. After removal of catheters patients were advised self dilatation under local anaesthesia (Lignocain gel) by a 16 Fr Nelton catheter daily for 15-30 day. Uroflowmetry and urethroscopy were performed in each individual during follow up of 1½ years.

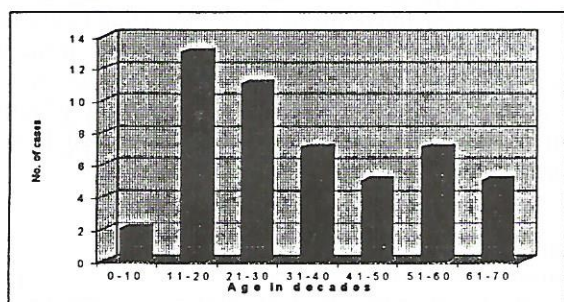


Fig. 1. Age relations with stricture urethra (N=50)

Results

Among these 50 cases 30(60%) patients had poor urinary stream with urinary peak flow rate of 5-9ml/sec (mean 7.5ml/sec). The remaining 20(40%) had retention urine and suprapubic cystostomy was performed under local anaesthesia before. The mean residual urine was 82ml in the patients without suprapubic catheter. The length of strictures in these cases were from 0.3cm to 2.0cm (mean 1.6cm). Rail-road catheterisation was tried in one patient previously which was unsuccessful. Twenty (40%) patients gave history of road traffic accidents and fracture pelvis, and haematuria and urinary obstruction. There was urethritis and difficulty in passing urine in 20(40%) patients. One (2%) patient had gonococcal infection. Seven (14%) patients had direct perineal trauma and urinary obstruction. Three (6%) of them had iatrogenic urethral injury during instrumentation and difficulty in urination.

Table 2: Sites of stricture urethra

Urethral parts	n=50	%age
Bulbar urethra	25	50
Penile urethra	13	26
Membranous urethra	12	24

There were strictures of bulbar urethra in 25(50%) patients, penile urethra 13(26%) and 12(24%) of them

were suffering from membranous urethral stricture. Digital rectal examination (DRE) of prostate revealed high riding prostate gland in 4(8%) patients (Table 2).

There was partial urethral disruption in 46(92%) and complete in 4(8%) patients. There was a single stricture in 44(88%) and more than one in 6(12%) individuals. Three (6%) of them were suffering from renal failure due to outlet urinary obstruction. On urethroscopy urethral realignment and catheterisation was performed at a single session in 45(90%) patients and these were discharged on the next day. Five(10%) of them had extravasation and failure to introduce the catheters and urethroplasty was performed after 3 weeks in such cases and kept admitted for 8 days. There was no incontinence and infection was observed in 2(4%) patients. Urethral continuity was maintained after 8-14 days by removing the catheter. Post operative retrograde urethrogram were normal in these patients. Post operative self dilatation under local anaesthesia was advised for 15-30 days. Renal failure of few patients was medically treated after relieving the urethral obstruction. During more than one year follow up uroflowmetry of these patients showed a satisfactory. Peak voiding pattern of 16-20ml/sec in endoscopically managed 45 patients and most of them were potent during follow up.

The cost of this endoscopic management of urethral strictures was Rs.1300/- per patient excluding hospital and equipment charges and Rs.3200/- for those who underwent open surgery. The hospital stay of such cases is also shorter than open procedures.

Discussion

In this study strictures are more common between 11-20 years of age. Injuries of anterior urethra and strictures are more common, (76%), as compared to posterior urethral strictures (24%). The most common causes are blunt trauma and straddle injuries^{1,3,4}. Infective strictures of penile urethra are the second most common variety (40%) in our study. After the investigations diagnosis is made and the aim of treatment is to maintain the urethral continuity with least operative procedures and minimum trauma. The length of stricture and haematoma formation at the site of urethra make the blind catheterisation difficult. However partial and some complete rupture of urethra can be treated by catheterisation for several weeks. When catheterisation was impossible. Such cases were treated by open surgery which need more hospitalisation and is expensive. During endoscopic procedures catheter is placed by half circle supplementary sheath of urethrotome. The urethrotome sheath has to be introduced carefully to the bladder via that injured urethra, which may lead to disruption of urethra. Traumatic injuries of urethra are serious injuries and there are various opinions for the acute management of these injuries. Three schools of thoughts for early management of urethral injuries¹ are mentioned in Table 3.

Table 3. Approach to early treatment of urethral injuries

Conservative (Mitchell, 1973)
Suprapubic catheter followed by urethrography and urethroscopy at 3 weeks
Semi conservative (Coffield and Weams, 1977)
Retrograde urethrography and cystography followed by suprapubic catheter.
Aggressive (Blendy, 1975)
Trial of catheter if unsuccessful proceed to urethrography and exploration

Steroids are probably the least important component of the treatment but have been given in an attempt to soften the scar. This treatment is based on previous experience of plastic surgeons with injection of keloids^{5,8}. These were not given to our patients.

Straddle injuries are not satisfactorily managed in most cases by retrograde catheterisation with or without small calibre catheter. Injuries of posterior urethra are more difficult to treat in the absence of expertis and suprapubic cystostomy has a definite role in primary management¹. In our cases initial catheterisation was tried if it failed, suprapubic cystostomy was performed. Stricture is inevitable in complete transection of urethra and almost inevitable in partial disruption. Morehouse and Mac Kinnon 1980³ have indicated that placement of a suprapubic tube rather than immediate surgical reconstruction may reduce the incidence of later impotence.

Endoscopy of bladder neck may be necessary and radiographic verification of the proximal urethra is important to confirm the shorter defect. Occasionally the pieces of bone lie in the path of urethral reconstruction so it is important to make sure that there is no obstruction by bone. There was no bony obstruction in our patients.

Our patients with supra pubic cystostomy and long stricture urethra were managed by introducing a bougie from the supra pubic opening upto the prostatic urethra and proximal end of stricture and urethrotome was placed upto the distal end of stricture per urethra and stricture was incised after feeling the buogies with the tip of urethrotome sheath. Stricture incised and catheter tied. Silicon catheter can be kept for longer duration with minimal complications. When extravasation of urine or blood or both are demonstrated incision and drainage as mentioned by Devine et al (1977)⁹ may be necessary. In our study, 5 (10%) patients developed extravasation and were managed. Postoperative dilatations were advised after urethroplasties or endoscopic catheter insertion of such patients. Endoscopic reconstruction appears to be less traumatic. The endoscopic technique is also feasible in very obese patients. Lastly, this technique does not prevent further operative reconstruction if it fails. In assessing the sexual dysfunction we concluded that most of the patients were fully potent within 2 years from the time of injury¹.

Delton (1983) stated that impotence occur in 25-75% of patients with complete rupture of posterior urethra and incontinence in 5-25%. Only 13(26%) patients in our study showed sexual dysfunction which is comparable with Delton's work.

Retrograde urethrography did not clearly differentiate partial from complete urethral rupture. Thus we think that when endoscopic realignment is done for urethral injury. Urethrography should not be necessary, diagnosis can be made on urethroscopy. Post operative continence is achieved if bladder neck is competent as preoperative cystogram⁴.

In summary this new endoscopic technique appears to be well suited for reconstruction of both traumatic membranous or bulbar urethrae or infective stricture transection. Simultaneous suprapubic and transurethral instrumentation most accurately define the length of obliterated urethra and helps in reunion of stricture urethra, and digital rectal examination determines any posterior displacement of prostate. All patients will require follow up to assure urethral patency. This is a cost effective method of treatment, and hospital stay is much less as compared to open surgery.

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