



THE CLINICOPATHOLOGICAL STUDY OF STRICTURE URETHRA IN BUNDELKHAND AREA AND TO ASSESS RESULTS OF VARIOUS TREATMENT MODALITIES

Dr. Vasu Bansal*	Junior Resident, Department of Surgery, Maharani Laxmi Bai Medical College, Jhansi. *Corresponding Author
Dr. Manish Jain	Professor Surgery, Department of Surgery, Maharani Laxmi Bai Medical College, Jhansi.
Dr. Sudhir Kumar	Professor Plastic Surgery, Department of Surgery, Maharani Laxmi Bai Medical College, Jhansi.

ABSTRACT A stricture is an abnormal constriction or loss of distensibility of urethral channel. Any process that damages the urethral epithelium or its adjacent tissue to the point that the healing result in scar formation can cause an urethral stricture. It's an ancient disease, with records found across various civilizations. And it's still one of the most common problems faced by a general surgeon and further by urologist and plastic surgeon for that matter of fact. In resource limited settings victims of urethral strictures often seek healthcare, when the strictures are far advanced. For a surgeon, management is indeed a challenging task, given the severity and extent of disease, lack of expertise, enough skills and equipment in the healthcare facility. As urethral stricture causes progressive narrowing of the urethral lumen, symptoms and signs of urinary obstruction arise. Patients experience weak stream, straining to urinate, incomplete emptying, post-void dribbling, urinary retention, and recurrent urinary tract infections. The symptoms resemble those of other causes of bladder outlet obstruction such as benign prostatic hyperplasia. There is significant variation in the etiology of urethral stricture disease in different parts of the world as demonstrated by several single-institution studies. Trauma was found to be most common cause of urethral stricture followed by inflammatory reactions in our study of patients of Bundelkhand region.

All the patients presenting themselves to O.P.D. and emergency between a period of August 2017 to September 2019 with complains of lower urinary tract symptoms were considered for inclusion in this study. Urethral stricture disease was thoroughly evaluated with radiographic and/or endoscopic techniques. The procedure selection was discussed thoroughly with the patients. After the discharge patients were followed at an interval of one week, one month, three months and six months and complications were recorded.

KEYWORDS : Etiology, Evaluation, Stricture urethra, Treatment.

INTRODUCTION

A stricture is an abnormal constriction or loss of distensibility of urethral channel. Any process that damages the urethral epithelium or its adjacent tissue to the point that the healing result in scar formation can cause an urethral stricture^[1].

It is a very ancient disease. In Indian literature, its history dates back to ancient India (600 BC) when *Susruta, the ancient Indian surgeon*, described it as "*Mutra Marga Sankocha*" and described use of reed catheter lubricated with ghee for urethra dilatation. Later in Rome in the first century, Celsus described the operation of external urethrotomy for treatment of a stone impacted behind a stricture and urethrotomy became part of classical medicine. **Ambroise Pare** (1510-1590) brought back urethrotomy, devised an instrument for scraping "carinosities" from the urethra. In 1894 **Sapezhko** performed urethroplasty with oral mucosa. **Denis Browne** (1936) devise an operation for hypospadias which was so successful that surgeons came to his theatre to learn. It was 1953 when **Johanson** staged repair of urethral strictures without oral mucosal grafts^[2].

AIM AND OBJECTIVES

- To study the etiology of urethral stricture in Bundelkhand region.
- To study the clinical presentation and symptomatology of urethral stricture.
- To assess results of various treatment modalities.

MATERIAL AND METHODS

All the patients presenting themselves to O.P.D. and emergency of Maharani Laxmi Bai Medical College, Jhansi between a period of August 2017 to September 2019 with complains of lower urinary tract symptoms were considered for inclusion in this study. The patient with history suggestive of urethral stricture were further investigated and included in this study.

Demographic data and relevant history was carefully noted. A previous history of catheterization trauma or any other instrumentation was specially sought for. The details were collected in our working Performa.

Preoperative details:

The patients were evaluated and deemed medically stable for the selected procedure. Urethral stricture disease was thoroughly

evaluated with radiographic and/or endoscopic techniques. The procedure selection was discussed thoroughly with the patients. Risks and benefits of the procedure were explained to each patient.

Sample Size:

A total of 35 patients were included in this study.

Lab Studies:

Important laboratory studies include the following.

- Blood for HB, TLC, DLC, ESR, VDRL
- Urine Routine, Microscopy
- Urine culture and sensitivities
- Serum electrolytes with blood urea nitrogen and serum creatinine
- Urodynamic study / volumetric study

- Basic: Uroflowmetry
- Sophisticated

Uroflowmetry was used in preoperative, postoperative and follow up patient.

Imaging Studies:

- X ray KUB.
- Urethroscopy/Cystoscopy
 - Antegrade.
 - Retrograde.
- Urethrogram MCU/RGU.
- USG KUB+P with PVRU.

Retrograde Urethrography:

It is helpful to confirm the diagnosis—

- Localize the lesion
- Understand the extent and nature of stricture
- For comparison between before and after treatment.

Postoperative details:

- Patients were placed on bed rest for 24-48 hours.
- Intravenous antibiotics (ceftriaxone-100 mg/kg in two divided doses, amikacin-15 mg/kg in two divided doses) for 5 days then oral culture-specific antibiotics.
- Anticholinergic (darifenacin-15 mg once daily, solifenacin-5 mg once daily, flavoxate-100 thrice daily, tolterodine-2 mg twice daily, tiroprium-20 mg twice daily) were used to prevent bladder

spasms.

- Drains were removed on postoperative day 1-3.
- Wounds were washed with soap and water daily after drain removal.
- The patient was discharged when afebrile; ambulatory; tolerant of a regular diet; and competent in managing, catheters, and wound care after 1 week.

Follow-up:

- Patients undergoing internal urethrotomy were reviewed in outpatient clinic after 1 week from discharge for wound evaluation and catheter free trial with suprapubic tube in situ.
- Patients undergoing open repair were returned to the outpatient clinic after 1 week from discharge for wound evaluation and catheter free trial with suprapubic tube in situ.
- Prior to removal of per urethral catheter, a retrograde urethrogram (catheter urogram) was conducted with contrast. If no evidence of contrast extravasation occurs and the suture line is intact, then the urethral catheter is removed and the suprapubic tube is capped.
- If the patient continues to void well, the suprapubic catheter was removed after 1 week.
- When all tubes were removed and no evidence of infection on urine examination, antibiotics were discontinued after 1 month.
- Urethral evaluation was conducted with retrograde urethrogram/urofometry at 3 months and 1 year postoperatively.

Complications:

Complication encountered were surgical site infection, urinary fistula, post void dribble, erectile dysfunction, ejaculatory dysfunction, urethral diverticulum, bleeding from internal suture line and urinary incontinence.

All patients were followed after an interval of one week, one month, three months and six months after the discharge and complications were recorded.

Surgical techniques

The patient is placed in simple lithotomy position; his calves are placed in stirrups with sequential inflatable compression sleeves, the lower extremities are then suspended by placing the patient's feet within the stirrup boots. Proper positioning ensures that there is no pressure on any aspect of the calf muscles and no inward boot rotation, so as to avoid peroneal nerve injury. The suprapubic area, scrotum and perineum were shaved and draped appropriately. The distal end of stenosis was identified inserting a 16-French catheter with a round tip up to the point of resistance. The midline perineal incision is made and the bulbospongiosum muscles are separated.

Patients with obliterative urethral stricture containing a particular narrow or dense area of 1-2 cm in length were managed by using an end to end anastomotic urethroplasty. The urethra was transected at the level of the stricture and the urethral segment involved in the disease was completely removed. The proximal urethral end was waged ventrally and distal urethral edges were waged opened along its dorsal surface. Three interrupted 3-zero Vicryl sutures for each side were used to stabilize the widely opened distal and proximal urethral mucosal edges to each other. The distal urethra was pulled down and proximal urethra pulled up by gentle mobilization. The 16 Fr catheter was inserted and distal and proximal and of urethra was stitched to each other with 3-0 vicryl suture over catheter. The bulbospongiosum muscles were sutured and the perineal wound was closed. The catheter was left in place for three weeks.

RESULT AND DISCUSSION

In our study a total 38 patients presented with urethral stricture. We studied the age incidence in our study, the highest incidence is recorded in the age group 31 to 40 years 12 (37.57%) followed by age group 41 to 50 years 7 (23.68%) the age of youngest patients was 10 year and eldest 74 years^[3,4,5].

In our study the most common cause of urethral stricture was found to be trauma 17 patients (44.73%) followed by inflammatory 11 (28.94%) and in traumatic etiology majority of the patients sustained pelvic trauma 13 (34.21%).^[6,7]

As urethral stricture causes progressive narrowing of the urethral lumen, symptoms and signs of urinary obstruction arise. Patients experience weak stream, straining to urinate, incomplete emptying, post-void dribbling, urinary retention, and recurrent urinary tract

infections. The symptoms resemble those of other causes of bladder outlet obstruction such as benign prostatic hyperplasia. In our study majority of the patients presented with decreased force and caliber of urine was 22 (57.89%) followed by patients with retention of urine with suprapubic cystomy 16 (42.10%)^[8,9].

In our study majority of cases presented within a period of 6 month after start of their problem 21 (55.26%) followed by 11 to 15 months of duration of problem 8 (21.05%) and patients with traumatic urethra injury who presenting within 6 month of their problem 16 (39.47%)^[8,10].

In our study the most common site of stricture was bulbar urethra 26 (68.42%) followed by bulbomembranous urethra 7 (18.42%)^[8,11,12].

In our study the length of stricture found in majority cases was <1cm 17 (44.73%) followed by structure length of 1.1 to 2cm 13(34.21%) and 2.1 to 3cm 5 (13.51%)^[8,13].

In our study the most common surgical procedure performed for urethral stricture was optical internal urethrotomy 25 (65.78%) followed by end to end anastomosis urethroplasty 9 (23.68%). The reason for this was that in majority of cases the site of stricture was bulbar urethra 26 (68.42%) and the length of stricture was <2 cm in 30 (78.94%). The procedure was aided by Clean Intermittent Catheterization (CIC) in follow-up period to prevent stricture recurrence.

In our study the success rate of Optical Internal Urethrotomy (OIU) procedure was 76% (19 of 25 cases) with failure of 6 cases (24%)^[3,14-16].

In our study End to end anastomotic urethroplasty was performed in 9 cases (23.68%) and with a success rate of 88.89%^[7,17,18].

In our study Staged urethroplasty was performed in 2 cases (5.26%)

In our study the complications found are minor and includes hematoma formation in 03(7.89%); Bleeding from suture line in 1(2.63%) cases; Urinary leak from Suture line (Minor) in 01(2.63%) cases; Stitch line infection in 03 (7.89%) case: and post voiding dribbling in 02(5.26%)

In our study post operative temporary erectile dysfunction was found in 3 cases (10.81%), out of 3 cases, 2 cases (5.26%) occurred after End to End anastomosis urethroplasty procedure^[19,20].

CONCLUSIONS

- Urethral stricture is for more common problem than it is noticed by general surgeon a majority of these patients are referred to urologists and plastic surgeons.
- **Most commonly cause of urethral stricture is -**
 - Traumatic (44.73%)
 - Inflammatory (28.94%)
 - Iatrogenic (21.05%)
 - Idiopathic (05.26%) mostly congenital.
- Patients of urethral strictures due to trauma, infection, instrumentation or idiopathic are managed by one stage urethroplasty.
- We did Optical internal urethroplasty (OIU) in 25 cases with (Stricture length 1 cm are less) primarily in bulbar urethra with success rate of 76%.
- We did end to end anastomosis in 7 cases with stricture length ranging from 1 cm to 2.5cm with success rate of 88.89%
- In patients with complex stricture urethra, BXO and failed hypospadias repair, multistage urethroplasty is recommended.
- In ventral substitution urethroplasty, the graft often lacked mechanical support of fixed bed, which allowed it to fold on itself, leading to shrinkage and stricture on long term follow up, less commonly urethral sacculation is formed leading to sequestration of urine, semen and in some cases fistula formation.
- Due to common complication being reported in ventral sagittal urethroplasty which was hitherto done led to emergence of dorsal patch urethroplasty as a better alternative. Dorsal patch urethroplasty is suggested for long stricture (>3 cm) through of ventral sagittal urethrotomy as procedure of choice. We did not mobilize urethra from corpora bodies to avoid ischemia.
- End to end anastomosis as a procedure is restricted for stricture 1cm or less because excision of a longer urethral segments risks penile shortening or chordee.

- For short bulbar urethral stricture, urethroplasty is reserve for patients in whom a single endoscopic treatment failed.
- Open urethroplasty is regarded as the gold standard treatment for urethral strictures. Although it is not routinely done, recent literature shows that urethroplasty can also be considered a “minimally” invasive technique and is more effective than internal urethrotomy.

Many techniques are available for the treatment of urethral stricture disease, based on the literature, each technique clearly cannot be applied successfully to every situation and the technique has to be tailored in each case.

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