

## To Study the Incidence, Etiology, Clinical Presentation and Repair Of Stricture Urethra In Bundelkhand Region

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**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. The patient with history suggestive of urethral stricture were investigated and included in this study. 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. 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

**Keywords:** Endoscopic, Minimally, Stricture, Urethroplasty, Urethrotomy

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### I. Introduction

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

A congenital stricture occur after an injury or inadequate fusion of the anterior and posterior urethra which is short in length and is not associated with inflammatory process this is a rare cases

Urethral injury can be classified into two broad category based on anatomical site of trauma.

**1] Injury to the anterior urethra** is located distal to the membranous urethra. Most anterior urethral injuries are caused by blunt trauma to perineum (straddle injuries) and may have delayed manifestation, appearing a year later as a urethral stricture.

**2] Posterior urethral injury** are located in membranous and prostatic urethra, most commonly related to major blunt trauma and most of cases are accompanied by pelvic fracture. Various causative factors include trauma, inflammatory processes (non specific urethritis, lichen sclerosis or rarely post-gonorrhoeal), iatrogenic (Bougie dilatation, indwelling catheter, urethral endoscopy and post-operative (prostatectomy).

As with many traumatic events, the etiology of a urethral injury can be classified as *blunt or penetrating*. In the posterior urethra, blunt injury are almost always related to massive deceleration event such as fall from heavy vehicle collision these patient most often has a pelvic fracture involving the anterior pelvis.

Buccal mucosa grafting was first described by Humby in 1941 for urethral reconstruction. It has become an ideal urethral substitute because of easiness of harvesting, hairlessness, compatibility in a wet environment, easy in growth and graft survival.

We used buccal graft in two places most commonly. We use it for ventral onlay buccal urethroplasty for bulbar stricture buccal mucosa is extremely resistant to infection as well as to skin disease such as balanitis xerotica obliterans (Andrich and Mundy, 2001)<sup>[1]</sup>. We less commonly use buccal mucosa graft to augment an inadequate urethral plate during first stage Johanson urethroplasty usually for penile stricture. Rarely, we performed a double graft urethroplasty by adding a dorsal full thickness skin graft to our standard ventral onlay buccal mucosal bulbar repair. This is done in very long bulbar stricture or when the risk of recurrence is considered to be high but majority of patients are treated with standard buccal graft

## **II. Aims And Objectives**

1. To study the incidence and etiology of urethral stricture in Bundelkhand region.
2. To study the clinical presentation and symptomatology of urethral stricture.
3. To assess results of open urethroplasty procedures.

## **III. Material And Methods**

All the patients presenting themselves to O.P.D. and emergency of Gajra Raja Medical College Gwalior Madhya Pradesh India between a period of August 2014 to January 2017 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 proforma. 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.

### **Study design**

Patients with urethral stricture containing a particular narrow or dense area up <1 cm in length were managed by using a optical internal urethrotomy(OIU):

Patients with obliterative urethral stricture containing a particular narrow or dense area of 1-2 cm in length were managed by using a 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 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 silicon 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.

Patients with >3 cm non-obliterative strictures were managed by using dorsal onlay graft urethroplasty by ventral sagittal urethrotomy

In this case the urethra was not dissected from the corpora cavernosa. The distal extent of the stenosis was identified by inserting a 16-French catheter with a round tip up to the point of resistance. The ventral urethral surface is opened along the midline until the catheter tip and urethral lumen were exposed.

The stricture was then incised ventrally and dorsally along its entire length by extending the urethrotomy. Once the entire stricture has been incised, distal and proximal calibration of the urethra is mandatory in order to identify any residual narrowing.

The edge of dorsally incised bulbar urethra was moved apart on corpora cavernosa, and the free graft was then spread fixed onto the albuginea of corpora cavernosa. The two graft apices were sutured over the proximal and distal apices of the urethrotomy. A 16-French grooved silicone Foley catheter was inserted. Three interrupted 3-zero vicryl sutures for each side are used to stabilize the urethral margins to the corpora over the graft.

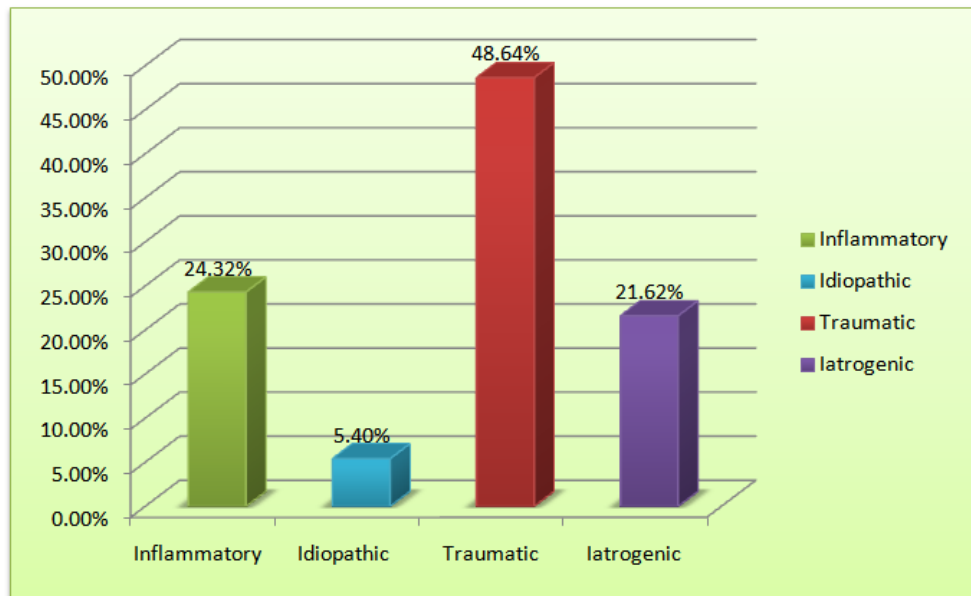
At the end of the procedure, the graft was completely covered by the urethra. The ventrally placed incision are sutured with 3-0 vicryl. The bulbospongiosum muscles were sutured, and the perineal wound was closed. The catheter was left in place for three weeks

## **IV. Observation & Results**

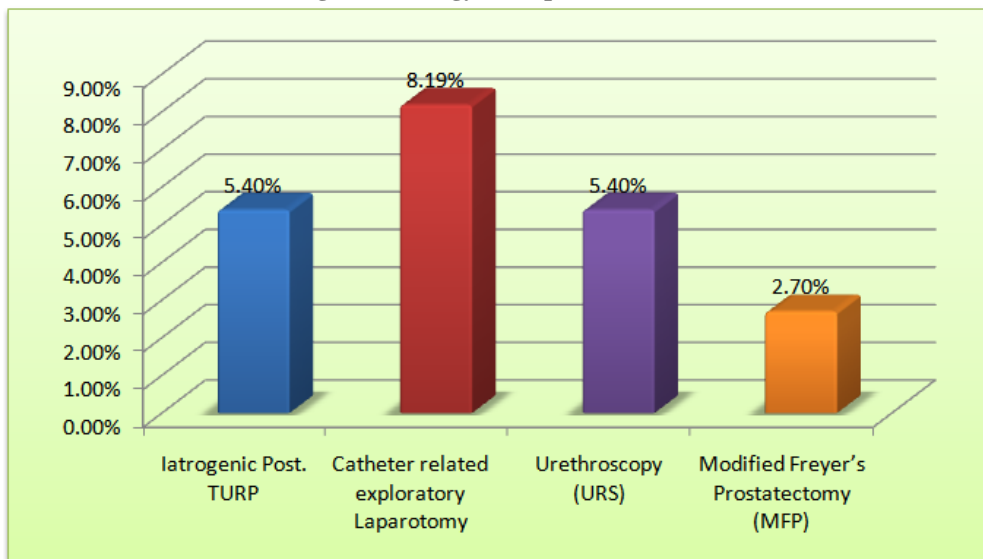
### **1. Distribution Of Cases According To Age**

In our study stricture was more common among less than 50 years.

**2. Distribution Of Etiology**



**3. Distribution Of Patients In Iatrogenic Etiology Group**



**4. Distribution Of Site Of Stricture**

Site of Stricture	Number of Patients	Percentage
Bulbar	15	40.54%
Bulbomembranous	13	35.13%
Pendular	04	10.81%
Penobulbar	02	05.40%
Bladder Neck Contracture	03	08.10%

**5. Length Of Stricture**

Length of stricture (in cm.)	No. of patients	Percentage
0-1	22	59.45%
1.1- 2	05	13.51%
2.1-3	04	10.08%
3.1-4	05	13.51%
4+	01	02.70%

## 6. Surgical Procedure

Procedure	No. of patients	Percentage
Optical Internal Urethrotomy (OIU)	22	59.45%
End To End Anastomosis Urethroplasty	08	21.62%
Prepuccial Urethroplasty	01	02.70%
Buccal Mucosal Grafting urethroplasty	01	02.70%
Trans pubic progressive abdomino perineal urethroplasty	01	02.70%
Staged Urethroplasty	04	10.81%

## 7. Complications

Complication	Number of patients	Percentage
Intraoperative	00	00.00%
Post operative		
Bleeding from suture line	03	08.10%
Urinary leak from Suture line (Minor)	01	02.70%
Erectile dysfunction	04	10.81%
Haematoma	06	16.21%
Incontinence	00	00.00%
Post voiding dribbling	02	5.40%
Stitch line infection	02	5.40%

## 8. Follow Up

Voiding Problem	Thinning of Stream	13
	Retention of urine	01
Stitch removal		14 days
Catheter Removal after Optical Internal Urethrotomy (OIU)		
Minimum		7 days
Maximum		7 days
Average		8 days
Suprapubic catheter clamping with per urethral catheter removal		21 days
Erectile Dysfunction		04
Short Term		04
Long Term		00
Long Term Complication (Persistence of SPC Stoma)		01
Long Term Complication (Urethral restructure)		03
Clean intermittent catheterization (CIC)		36
Regular urethral calibration		03
Redo urethroplasty		01
Failure		06
Urethral dilatation required		04
Redo OIU required		02

## V. Discussion

In our study a total 37 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 8 (21.62%). Our observations are consistent with studies conducted by **Md. Shadab et al**<sup>[2]</sup>(2016) in which peak incidence of age group between 31 to 40 years (24%) and with **Sudarshan Babu KG et al**,<sup>[3]</sup>(2013) the peak incidence was observed in age group 31 to 40 years which constituted 43% of cases.

In our study the most common cause of urethral stricture was found to be trauma 18 patients (48.64%) followed by inflammatory 9 (24.32%) and in traumatic etiology majority of the patients sustained pelvic trauma 15 (40.54%). Our observations are consistent with studies conducted by **Rajkumar Mathur et al**<sup>[4]</sup> (2011) in which the most common etiology being pelvic trauma 54% and **Jun-Gyo Suh et al**<sup>[5]</sup> (2013) in which they found blunt perineal trauma in 54.6% cases..

In our study the most common site of stricture was bulbar urethra 15 (40.54%) followed by bulbomembranous urethra 13 (35.13%). Our observations are consistent with studies conducted by **Sudharshan Babu KG et al**<sup>[3]</sup> (2013) in which they found that the common site of stricture was bulbar urethra 50%.

In our study the length of stricture found in majority cases was <1cm 22 (59.45%) followed by structure length of 1.1 to 2cm 5(13.51%) and 3.1 to 4cm 5 (13.51%). Our observations are consistent with studies conducted by **Nijku Kimu et al**<sup>[6]</sup> (2015) in which they observed the majority of participants 66.1% had strictures length 1cm for less.

In our study the most common surgical procedure performed for urethral stricture was optical internal urethrotomy 22 (59.45%) followed by end to end anastomosis urethroplasty 8 (21.62%). The region for this was

that in majority of cases the site of stricture was bulbar 15 (40.54%) followed by bulbomembranous 13 (35.13%) and the length of stricture <2 cm 27 (72.97%).

In our study End to end anastomotic urethroplasty was performed in 8 cases (21.62%) and with a success rate of 87.5%. Our observations are consistent with studies conducted by **Jun-Gyo Shuh**<sup>[5]</sup> (2013) they found a success rate of (87.9%), **Santucci et al.** (2002) they found a success rate of (95%), **Eltahawy et al**<sup>[7]</sup>. (2007) they found a success rate of (98.8%) and **Barbagli et al.**<sup>[8]</sup> (2002) they found a success rate of (90.8%).

In our study Staged urethroplasty was performed in 4 cases (10.81%) the success rate was found to be 75% (3 out of 4 cases). Our observations are consistent with studies conducted by **Mahmoudreza Moradi et al** (2005) in which they found a success rate of 71.4% at 1 year and **Motiwala HG** et al (1992) in which they found a success rate of 75%.

## VI. Conclusion

Patients of urethral strictures due to trauma, infection, instrumentation or idiopathic are managed by one stage urethroplasty.

We did Optical internal urethroplasty (OIU) in 22 cases with (Stricture length 1 cm or less) primarily in bulbar urethra with success rate of 86.36%.

We did end to end anastomosis in 8 cases with stricture length ranging from 1 cm to 2cm with success rate of 87.5%.

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.

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

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