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Original Research Article

To evaluate the long term results of various surgical techniques employed to repair urethral stricture at different sites of urethra and to compare their outcomes

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Abstract

Background & Methods: The aim of the study is to evaluate the long term results of various surgical techniques employed to repair urethral stricture at different sites of urethra and to compare their outcomes.

Results: Mean age of presentation is 38.5 yrs. In our society most of stricture patients are young and middle aged male [between 20-45yrs]. The chi-square statistic is 168.0455. The *p*-value is < 0.00001. The result is significant at $p < .05$. Various techniques were used for urethral reconstruction, mainly tunica albuginea urethroplasty [TAU] and U shaped prostatobulbar anastomosis [USPBA].

Conclusion: Over the years management of urethral stricture has changed from dilatation irrespective of location and length of stricture to formal investigation and definitive surgery that is urethroplasty. 60.5 % of patients were in the age group of 20-45 yrs. Pelvic injuries was responsible for 55.1% of urethral stricture. Most commonly involved urethral segment was membranous urethra. TAU and USPBA were the most numerously performed procedures.

Keywords: surgical, urethral, stricture & outcomes.

Study Design: Observational Study.

1. Introduction

Earliest recorded attempts to deal with strictured Urethra occur in Hindu medicine. In A.D. 1520 occurred the first recorded serious epidemic of gonorrhoea & gradually from the time subject of stricture began to receive more attention[1]. At this period Urethral obstruction was regarded as due to formation of obstructive growth & not to a constriction & Urethral lumen, though various dilators was passed was kept in situ for the whole day.

In the male the prostatic urethra proximal to the orifice of the prostatic utricle is derived from the vesico-urethral part of the cloaca & the incorporated caudal ends of the mesonephric ducts[2]. The remaining of the prostatic part, the membranous part and probably the part within the bulb are all derived from the urogenital sinus.

The succeeding section, as far as glans, is formed by the fusion of genital folds, while the section within the glans is formed from ectoderm. In the female, the urethra is entirely

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derived from the vesico urethral region of the Cloaca, including the dorsal region derived from the mesonephric ducts. It is homologous with the part of the prostatic urethra proximal to the orifices of the prostatic utricle and ejaculatory ducts[3].
The commonest cause of acquired strictures in the modern times is trauma, which varies from a tear to complete rupture of urethra[4]. Direct injuries to the extra pelvic portion of urethra are mainly in the perineum strikes against some projecting object. In traumatic stricture, there is not much destruction of the mucosa, thus no visible scar tissue could be observed[5].

2. Material and Methods

The study was designed observational study of urethral stricture presenting to Index Medical College Hospital & Research Centre, Indore for 01 Year.
A total of 350 patients of stricture urethra of various etiologies involving various urethral segments were included in this study. Minute details of each patient, right from history, complete physical examination with special stress on routine and special investigations to determine the exact etiology, site and length of stricture were evaluated.
Preoperative assessment included careful history-taking, presenting symptoms their duration and possible etiological factors. Preoperative AUA scores were calculated based on patient history. Detailed physical examination was carried out. Routine examination of blood and urine was carried out along with stricture specific investigations like retrograde urethrogram, urethrosonogram, and uroflometry. All patients were subjected to various operative procedures based on the data collected from above mentioned investigations and expertise of the operating surgeon.

3. Result

Table No. 1: AGE DISTRIBUTION

S. No.	Age	No.	Percentage
1	< 20 Years	58	16.5
2	20-45 Years	212	60.5
3	46-65 Years	69	19.7
4	> 65 Years	11	3.3

Mean age of presentation is 38.5 yrs. In our society most of stricture patients are young and middle aged male [between 20-45yrs].

Table No. 2: VARIOUS ETIOLOGICAL FACTORS

S. No.	Etiology	Number of cases	
		Number	% of cases
1.	Pelvic trauma	193	55.1%
2.	Post instrumentation	21	6%
3.	Post catheterization	71	20.2%
4.	Infection	53	15.28%
5.	Spontaneous	12	3.42 %

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Table No. 3: SITE & ETIOLOGY OF STRICTURE

	Penile	**Bulbar & PBJ**	**Membranous**	**Multiple [penile/Bulbar/ membranous]**
Traumatic	18	45	112	06
Post instrumentation	16	05	03	03
Post catheterization	32	26	14	05
Infection	21	14	10	08
Spontaneous	05	03	02	02
Total	92	93	141	24

The chi-square statistic is 168.0455. The *p*-value is < 0.00001. The result is significant at $p < .05$.

Table No. 4: TYPE OF SURGICAL PROCEDURE

S. No.	**SURGICAL PROCEDURE**	**Number of cases**	
		Number	**% of cases**
1.	TAU	121	34.5
2.	USPBA	135	38.5
3.	SSU	19	5.4
4.	Meatoplasty	15	4.2
5.	Buccal Mucosa	40	11.7
6.	Dartos Flap	20	5.7

Various techniques were used for urethral reconstruction, mainly tunica albuginea urethroplasty [TAU] and U shaped prostatobulbar anastomosis [USPBA].

4. Discussion

Treatment of urethral strictures can be challenging, but, with a thorough preoperative evaluation, appropriate surgical planning, and adherence to basic surgical principles, excellent results can be achieved[6]. Minimally invasive treatment options, including direct vision internal urethrotomy (DVIU),urethral dilation, and urethral stents, can be used in selected patients, but are associated with high failure rates[7]. DVIU and dilation are best

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used as the initial treatment for short (less than 1 cm) bulbar strictures. Open surgical repair should be the first choice with longer strictures or strictures that have failed conservative treatment.

Therefore, urethroplasty is the standard curative treatment for most urethral strictures. Repair may be affected by excision and end to end anastomosis or by urethral substitution. The choice of procedure depends on the type and location of stricture.

End to end anastomosis is an excellent, safe and successful technique for the strictures of the bulbar urethra of 2cm or less [8] .End to end anastomosis of penile strictures or bulbar strictures of more than 3cm may lead to shortening of the urethra and penile curvature at erection [9]. So they are treated by substitution urethroplasty using vacularised genital skin or free grafts. Augmented anastomotic repair should be considered when a 2-3cm bulbar stricture excision is necessary [10].In this technique, the stricture is excised and dorsally spatulated. The dorsal spatulation is patched but the ventral circumference is anastomosed. This ensures a wide and tension free anastomosis.

The success rate of anastomotic urethroplasty is in excess of 90% which is sustained on the long term [11]. The key to successful anastomotic repair are adequate mobilization and tension free spatulated anastomosis. Spatulation is important in overcoming any narrowing that may occur at the repair site The lowest re-stricture rate and the lowest complication rate are achieved with anastomotic urethroplasty and this should be performed whenever possible.

5. Conclusion

Over the years management of urethral stricture has changed from dilatation irrespective of location and length of stricture to formal investigation and definitive surgery that is urethroplasty. 60.5 % of patients were in the age group of 20-45 yrs. Pelvic injuries was responsible for 55.1% of urethral stricture. Most commonly involved urethral segment was membranous urethra. TAU and USPBA were the most numerously performed procedures.

6. References

1. Beckert R. Gilbert P. Krentzig T. Sonourethrography : a valuable adjunct to the diagnosis of urethral stricture. J. Clin. Ultrasound 1996:24:473-9.
2. S. Chaudhry, P. Singh , E Sundar, S. Kumar, A. Sahai; A comparison of sonourethrography in evaluation of anterior urethral stricture. Clin. Radiology 2004 Aug 59(8);736-42.
3. Menenghmi, Cocciola A. et al; Bulbar urethral stricture repair with buccal mucosa graft urethroplasty; Eur. Urol. Mar. 2001; 39 (3):264-267.
4. Andrich DE, Leach CJ, and Mundy AR: The Barbagli procedure gives the best results for patch urethroplasty of the bulbar urethra. BJU Int 88: 385-389, 2001.
5. Guralnick ML, and Webster GD: The augmented anastomotic urethroplasty: indications and outcome in 29 patients. J Urol 165: 1496-1501, 2001.
6. Morey AF, and McAninch JW: When and how to use buccal mucosal grafts in adult bulbar urethroplasty. Urology 48: 194-198, 1996.
7. Walsh PC, Retik AB, Vaughan ED Jr, et al, editors.Campbell's urology. 8th ed. Philadelphia: WB Saunders; 2002.
8. Santucci RA, Mario LA, McAninch JW. Anastomotic Urethroplasty for bulbar urethral strictures. Analysis of 168 patients. J Urol 2002; 169: 1715 -1719.

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9. Schneiter F, Schönberger B, Olianas R. Reconstruction of Bulbar and Membranous urethra. In: Schreiter F, Jordan GH (eds). Reconstructive Urethral Surgery. Springer, Heidelberg, 2006; 108 – 120.
10. Guralnick ML, Webster GD. The augmented anastomotic urethroplasty. Indications and outcome in 29 patients. J Urol 2001; 165: 1496 - 1501.
11. Raj k. Mathur, himanshu aggarwal, sudarshan odiya & P. S. Lubana. U- shapped prostatobulbar anastomosis for uretheral injury after pelvic trauma. ANZ J Surg 2008, 78: 605-609