



MANAGEMENT OF BULBAR URETHRAL ISCHEMIC NECROSIS FOLLOWING PELVIC FRACTURE URETHRAL INJURY REPAIR-A SINGLE CENTER EXPERIENCE

Dr. Laxman Barupathi	Senior Resident
Dr. Suresh Babu Vedala	Associate Professor
Dr. Krishna Sumanth Thota	Assistant Professor
Dr. KSN Chary*	Professor *Corresponding Author

ABSTRACT **Aims & Objectives:** About 10% of pelvic fracture injuries are associated with urethral injury. Most of the urethral injuries are successfully repaired by progressive perineal anastomotic urethroplasty. Bulbar urethral ischemic necrosis is a devastating complication seen in 5-8% of failed PFUI repairs. The objective of this study is to present our experience in management of a bulbar urethral ischemic necrosis developed following PFUI repair. **Materials & methods:** This is a retrospective study done at our institute, which includes data from feb,2003 to feb,2021. This is a descriptive statistical analysis. Total 18 patients were managed using various surgical approaches and followed. **Results & Observations:** Out of 18 patients seven patients underwent staged urethroplasty with success rate of 85.71%, four underwent pedicled preputial skin tube urethroplasty with success rate of 75%, one underwent non transecting augmented urethroplasty with success rate of 100%, three underwent augmented perineal urethrostomy, two underwent continent diversion procedures, one underwent augmented perineal skin tube perineal urethrostomy. **Conclusions:** Bulbar urethral ischemic necrosis following PFUI repair although uncommon, is a devastating complication which can be salvaged by various surgical techniques. Type of procedure chosen depends on individual patient and outcomes vary for each type of procedure

KEYWORDS : PFUI-Pelvic fracture urethral injury, MCUG-Micturating cystourethrogram, RGU-Retrograde urethrogram. Bulbar urethral ischemic necrosis

INTRODUCTION

About 10% of pelvic fracture injuries are associated with urethral injury¹. Most of the urethral injuries are successfully repaired by progressive perineal anastomotic urethroplasty. Bulbar urethral ischemic necrosis is a devastating complication seen in 5-8% of failed pelvic fracture urethral injury (PFUI) repairs².

The objective of this study is to present our experience in management of bulbar urethral ischemic necrosis developed following PFUI repair.

METHODOLGY

This is a retrospective study done at our institute, which includes data from february,2003 to february,2021. Patients were evaluated by RGU² (Fig2), MCUG² (fig 1) and Endoscopy. Data was entered and analyzed in MS-Excel and descriptive statistics were used to present data.

Inclusion criteria:

1. Patients with loss of bulbar urethra on RGU following PFUI repair
2. Narrowing of bulbar urethra on RGU following PFUI repair

Exclusion criteria:

1. Patients with anastomotic narrowing and normal bulbar urethra

Total 18 patients who met inclusion criteria were included in our study, 3 out of 18 patients underwent primary PFUI repair at our institute and rest were referred to us from various center



FIG1:MCUG contrast seen upto prostatic urethra only



FIG2 : RGU shows contrast only in penile urethra suggestive of bulbar urethral ischemic necrosis

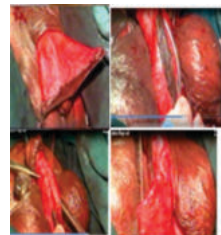


FIG3. Pedicled preputial skin tube

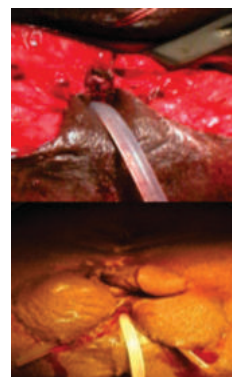


FIG4. Perineal urethrostomy



FIG5. Staged urethroplasty

Types of surgeries performed and number of patients underwent each type of procedure data is shown in Table 1

Table No.1

TYPE OF SURGERY	PATENCY/ SUCCESS RATE
STAGED URETHROPLASTY	85.71%(6/7)
PEDICLED PREPUTIAL SKIN TUBE	75%(3/4)
AUGMENTED PERINEAL URETHROSTOMY	75%(3/4)
NON TRANSECTING AUGMENTED ANASTOMOTIC URETHROPLASTY	100%(1/1)

RESULTS

Total 18 patients who met inclusion criteria were included in study. Mean age - 41.9 years. Average length of the stricture was 4.5 cms(2.5 to 6cms). Patients who are considered as failure or success category are represented in Table No.3 and Table No.4 respectively

COMPLICATIONS:

On follow up represented in Table No.2 various complications are seen in each type of surgery. STAGED URETHROPLASTY: three Patients had post micturition dribbling, one patient developed wound infection, one patient developed recurrent urethral stricture. PEDICLED PREPUTIAL SKIN TUBE URETHROPLASTY :one developed proximal anastomotic narrowing, one patient developed urethrocutaneous fistula. AUGMENTED PERINEAL URETHROSTOMY: One patient developed Perineal Urethrostomy stomal stenosis. CONTINENT DIVERSION: Patient with Mitrofanoff diversion developed appendiceal stomal stenosis after 9 years and stomal revision done. Patient with Indiana pouch developed calculi after 15 years and underwent laser lithotripsy

Table No.2

Type of Surgery	No.of patients
Staged urethroplasty(fig.5)	7
Pedicled preputial skin tube(fig.3)	4
Augmented perineal urethrostomy(fig.4)	4
Continent diversion	2
Non transecting augmented anastomotic urethroplasty	1

Table No.3

YEARS OF FOLLOW UP	NO.OF PATIENTS
>10 YEARS	6
5-10YEARS	3
1-5 YEARS	9
Table No.2 TOTAL	18

FAILURE:

We have considered patient under failure category if he had obstructive LUTS , Significant PVR, UFR<10ml/sec, during post operative follow up. Table.3 represents the failure data.

CONCLUSION:

Bulbar urethral ischemic necrosis following PFUI repair although uncommon, is a devastating complication which can be salvaged by various surgical techniques³. Type of procedure chosen depends on individual patient and outcomes vary for each type of procedure. Majority of bulbar urethral ischemic necrosis post PFUI repair can be managed by either staged urethroplasty or pedicled preputial skin tube urethroplasty⁴. Diversion procedures are reserved for extremely rare circumstances.

Table No.4

parameters	Staged urethroplasty	Preputial skin tube	Augmented perineal urethrostomy
Acute urinary retention	Nil	Nil	Nil
Significant PVR	1	1	1
Uroflow < 10ml/sec	1	1	Nil
Requiring dilatation	1	1	1

REFERENCES:

1. Koraitim MM. Pelvic fracture urethral injuries: the unresolved controversy. J Urol 1999; 161:1433.
2. Joshi, PM.; Bandini M.; Yepes C.; Bafna S.; Bhadranaavar S.; Sharma V.; Cirulli GO.; Kulkarni SB. Flaps for bulbar urethral ischemic necrosis in pelvic fracture urethral injury. Plast.Aesthet. Res. 2022, 9, 22. <http://dx.doi.org/10.20517/2347-9264.2021.98>
3. Barbagli G, Bandini M, Balò S, Sansalone S, Butnaru D, Lazzeri M. Surgical treatment of bulbar urethral strictures: tips and tricks. Int Braz J Urol 2020;46:511-8.
4. Kulkarni S, Joshi P, Surana S, Kulkarni J, Joglekar O, Alkandari M. Pedicled preputial tube urethroplasty for bulbar urethral necrosis after failed anastomotic urethroplasty for pelvic fracture urethral