



## Buccal Mucosal Graft Urethroplasty: Our Centre Experience

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### Abstract

**Introduction:** Urethral stricture affects 300 per one lakh males and its treatment challenges the surgeons. Surgical treatment includes urethral dilatation, Visual internal urethrotomy and anastomotic or flaps/grfts based augmentation urethroplasty.

**Aims and Objectives:** Outcomes of buccal mucosal graft urethroplasty in males with long segment anterior urethral stricture.

**Materials and Methods:** A retrospective study at Dr PSIMS & RF, Vijayawada, Andhra Pradesh between January 2017 and December 2020. During this time period 38 male patients undergone dorsal onlay buccal mucosal graft urethroplasty.

**Results:** The mean (range) age of 38 male patients was 41 (25 - 72) years. The mean (range) urethral stricture length was 8 cm (5 - 12 cm). Etiology in 18 (47.37%) patients were lichen sclerosus (LS) and in 20 (52.63%) patients were non lichen sclerosus(NLS). Previous history of urethral dilatation in 11(28.95%) cases, visual internal urethrotomy (VIU) in 9 (23.68%%) cases, pelvic trauma in 6(15.79%) cases and transurethral resection of prostate(TURP) in 4(10.53%) cases. Preoperative diagnosis made by uroflowmetry(UFR) and retrograde urethrogram(RGU). Stricture sites were penile, bulbar, penobulbar and pananterior in 9(23.68%), 10(26.32%), 5(13.16%) and 14(36.84%) patients respectively. Suprapubic catheterization (SPC) was done one month prior to definitive surgery in all cases. Delayed complications as erectile dysfunction and short segment stricture in 8(21.05%) and 4(10.53%) patients respectively. VIU was done in these short segment stricture 4(%) patients. Follow-up in all patients at one month by urethrocystoscopy, uroflowmetry(UFR) at 3<sup>rd</sup> month, retrograde urethrogram(RGU) at one year and UFR at every six months. Outcomes measured by flow rate  $Q_{max} > 15$  ml/s and urethral caliberation by Nelaton 14 Fr catheter.

**Conclusion:** Dorsal onlay buccal mucosal graft urethroplasty improves quality of life(QOL) in mens with long segment anterior urethral stricture and gives patients satisfaction interms of urinary continance and sexual function.

**Keywords:** Retrograde urethrogram (RGU), Uroflowmetry (UFR), Buccal mucosal graft (BMG).

**Introduction**

Urethral stricture affects 300 per one lakh males and its treatment challenges the surgeons.<sup>1</sup> In 1996 Barbagli (Arezzo, Italy) first described dorsal onlay graft urethroplasty for bulbar and penile urethral stricture.<sup>2</sup>

Now a days modified Barbagli technique for anterior urethral stricture is an established technique and practiced by urologist world wide.<sup>3</sup>

**Aim of the study**

Outcomes of buccal mucosal graft urethroplasty in males with long segment anterior urethral stricture.

**Materials and Methods**

A retrospective study at Dr PSIMS & RF, Vijayawada, Andhra Pradesh between January 2017 and December 2020. During this time period 38 male patients undergone dorsal onlay buccal mucosal graft urethroplasty.

Diagnosis of urethral stricture was made by uroflometry (UFR) and retrograde urethrogram (RGU).



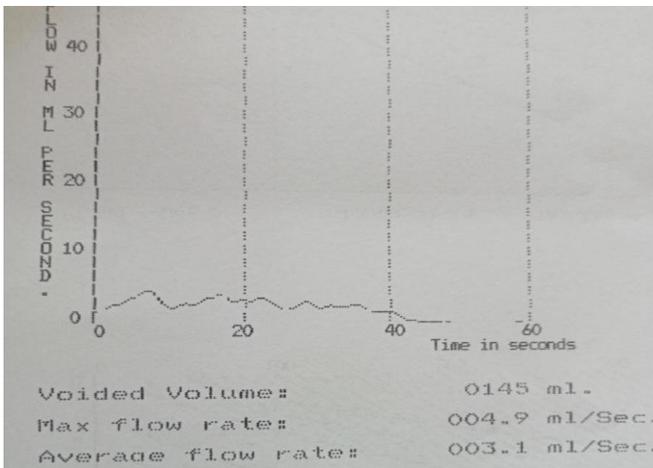
**Figure 1:** Retrgrade urethrogram (RGU) of patient

After uroflometry (UFR) , retrograde urethrogram (RGU) was done in all patients to know the site and length of urethral stricture.

Suprapubic catheterisation (SPC) was done one month prior to definitive procedure (BMG urethroplasty) in all patients for urine diversion and to decrease the pathogenic load in the urethral lumen.

**Buccal mucosal graft (BMG) harvesting technique**

Under general anaesthesia (nasal intubation), jaws opened wide by placing a retractor (figure 2). Pharynx is packed by roller gauze to prevent blood aspiration.



**Graph 1 :** Uroflometry (UFR) of patient (Qmax : 4.9 ml/sec, PVR : 345 ml)

Uroflometry (UFR) graph pattern and maximum urine flow rate ( Qmax) < 5 ml/sec considered as urethral stricture.



**Figure 2 :** BMG harvesting technique



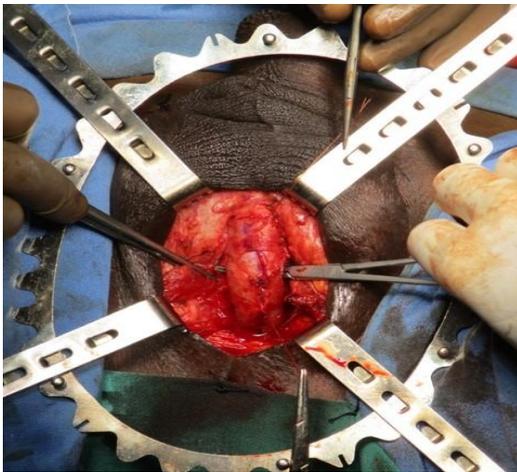
**Figure 3 :** Buccal mucosal graft

Injury to stenson’s duct (opens opposite to 2<sup>nd</sup> upper molar tooth) avoided by incision from angle of mouth towards lower jaw. Xylocaine (2%

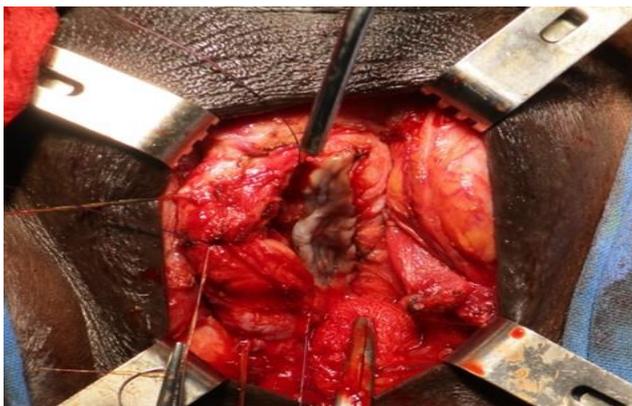
adrenaline) infiltrated beneath the buccal mucosa. Defatting of buccal mucosal graft (figure 3). BMG wide atleast 1.5 cm and length varies from 2 - 15 cm.

**Perineal part procedure**

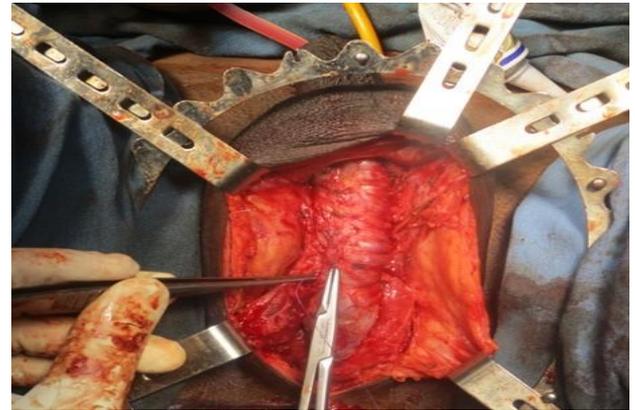
Circumferential mobilization of urethra (figure 4). Dorsal urethrotomy was done. Buccal mucosal graft placed over corpora cavernosa / triangular ligament. Mucosa of BMG facing towards urethral lumen. Spreading and fixing of BMG to the cavernosa (figure 5). Edges of the buccal mucosal graft sutured with the cut edges of the urethra by vicryl 3.0 over a 14 Fr silicon catheter (figure 6).



**Figure 4:** Circumferential mobilization of urethra

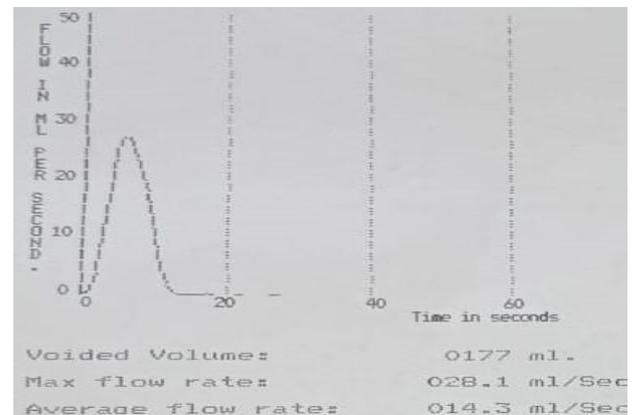


**Figure 5:** Spreading and fixing of BMG to the cavernosa



**Figure 6:** Closure of urethral lumen by vicryl 3.0

Postoperatively after three weeks of definitive surgery clamping of suprapubic catheter (SPC) and removal of perurethral catheter (PUC). All patients were voided urine well and then SPC was removed. Follow-up in all patients at one month by urethroscopy, uroflowmetry (UFR) at 3<sup>rd</sup> month, retrograde urethrogram(RGU) at one year and UFR at every six months. Outcomes measured by flow rate  $Q_{max} > 15 \text{ ml/s}$  (graph 2) and urethral caliberation by Nelaton 14 Fr catheter.

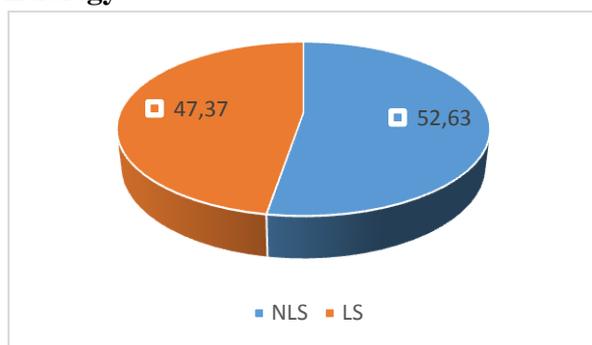


**Graph 2:** UFR of patient showing  $Q_{max}$ : 28.1 ml/sec, PVR: 25 ml after BMG urethroplasty

**Results**

A total of 38 male patients underwent dorsal onlay buccal mucosal graft urethroplasty. The mean (range) age of 38 male patients was 41 (25 - 72 ) years. The mean (range) urethral stricture length was 8 cm ( 5 - 12 cm).

### Etiology



**Graph 3:** Distribution of patients as per etiology (LS / NLS)

Out of 38 patients, 18 (47.37%) patients were lichen sclerosus (LS) and in 20 (52.63%) patients were non lichen sclerosus (NLS).

**Table 1 :** Distribution of patients as per previous history

Previous history of patients	Number of patients (n)
Urethral dilatation	11 (28.95%)
Visual internal urethrotomy (VIU)	9 (23.68%)
Pelvic trauma	6 (15.79%)
Transurethral resection of prostate (TURP)	4 (10.53%)

Previous history of urethral dilatation in 11 (28.95%) cases, visual internal urethrotomy (VIU) in 9 (23.68%) cases, pelvic trauma in 6 (15.79%) cases and transurethral resection of prostate (TURP) in 4 (10.53%) cases.

**Table 2:** Distribution of patients as per site of urethral stricture

Site of stricture	No of patients (n)
Penile	9 (23.68%)
Bulbar	10 (26.32%)
Penobulbar	5 (13.16%)
Panterior	14 (36.84%)

Stricture sites were penile, bulbar, penobulbar and pananterior in 9 (23.68%), 10 (26.32%), 5 (13.16%) and 14 (36.84%) patients respectively.

**Table 3:** Patients with early complications

Early complications	No. Of patients (n)
Bleeding & pain from internal suture lines	1 (%)
Wound infection	2(%)
Pain	32(%)

Postoperatively early complications as bleeding and pain from internal suture lines in 1 (2.63%)

patient, wound infection in 2 (5.26%) patients and pain in 32 (84.21%) patients.

**Table 4 :** Patients with delayed complications

Delayed Complications	No. of patients (n)
Erectile dysfunction	8 (21.05%)
Recurrent Short segment stricture	4(10.53%)

Postoperatively delayed complications as erectile dysfunction and short segment stricture in 8 (21.05%) and 4 (10.53%) patients respectively.

### Discussion

In adult age group stricture of urethra is the frequent source of LUTS. Iatrogenic causes of urethral stricture includes transurethral resection (TUR), Cystoscopy, urethral foleys catheterisation and hypospadias correction surgery etc.

In our study mean (range) age was 41 (25 - 72 ) years. **V.B. Reddy et al<sup>3</sup>** study the mean age was 43 years (range 25-72 years). . The mean (range) urethral stricture length was 8 cm ( 5 - 12 cm). In **V.B. Reddy et al<sup>3</sup>** the mean length of stricture was 6 (2-15) cm.

In our study out of 38 patients, 18 (47.37%) patients were lichen sclerosus(LS) and in 20 (52.63%) patients were non lichen sclerosus(NLS). In **V.B. Reddy et al<sup>3</sup>** study history of lichen sclerosus was present in 36 % of patients and non lichen sclerosus was present in 64 % of patients.

In our study urethral Stricture sites were penile, bulbar, penobulbar and pananterior in 9 (23.68%), 10 (26.32%), 5 (13.16%) and 14 (36.84%) patients respectively. In **V.B. Reddy et al<sup>3</sup>** study the urethral stricture sites were penile, bulbar, penobulbar and pananterior in 19 (10.22%), 61 (32.80%), 33 (17.74%) and 73 (39.25%) respectively. This disparity in datas between these two study mostly because of difference in sample size.

Previous history of urethral dilatation in 11 (28.95%) cases, visual internal urethrotomy(VIU) in 9 (23.68%) cases, pelvic trauma in 6 (15.79%) cases and transurethral resection of prostate(TURP) in 4 (10.53%) cases. In **S. Mahjoub Awad et al** study previous history of urethral dilatation and

catheterisation was present in 46 (76.7%) cases, TURP in 6 (10%) cases and perineal pelvic injury in 14 (23.3%) cases.<sup>4</sup>

Postoperatively early complications as bleeding and pain from internal suture lines of perineum in 1 (2.63%) patient, wound infection of perineum in 2 (5.26%) patients and pain in 32 (84.21%) patients. These two complications managed by analgesics and sensitive antibiotics. In **S. Mahjoub Awad et al** study postoperatively early complications as bleeding and pain from internal suture lines in 2 (3.3%) patient, wound infection in 12 (20%) patients and pain in 50 (83.3%) patients.<sup>4</sup>

Postoperatively delayed complications as erectile dysfunction and short segment stricture in 8 (21.05%) and 4 (10.53%) patients respectively. In **S. Mahjoub Awad et al** study postoperatively delayed complications as erectile dysfunction and short segment stricture in 6 (10%) and recurrence of stricture in 6 (10%) of patients.<sup>4</sup>

Success rate of BMG urethroplasty in our study was 89.47% (34 patients) and in 4 (10.53%) patients short segment of stricture was developed after one year of surgery which was corrected surgically by visual internal urethrotomy (VIU). In **S. Mahjoub Awad et al**<sup>4</sup> study success rate of BMG urethroplasty was 90 %.

### Conclusion

Dorsal onlay buccal mucosal graft urethroplasty improves quality of life (QOL) in mens with long segment anterior urethral stricture and gives patients satisfaction interms of urinary continance and sexual function.

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