

PEDICLED PERINEAL SKIN FLAP URETHROPLASTY FOR BULBAR URETHRAL STRICTUREKumar Rohit¹, Prabhat Kumar², Khalid Mahmood³, Rohit Upadhyay⁴, Kamalkant⁵, Vijoy Kumar⁶¹Senior Resident, Department of Urology, IGIMS, Patna, Bihar, India.²Senior Resident, Department of Urology, IGIMS, Patna, Bihar, India.³Assistant Professor, Department of Urology, IGIMS, Patna, Bihar, India.⁴Associate Professor, Department of Urology, IGIMS, Patna, Bihar, India.⁵Senior Resident, Department of Urology, IGIMS, Patna, Bihar, India.⁶Professor, Department of Urology, IGIMS, Patna, Bihar, India.**ABSTRACT****BACKGROUND**

In patients with submucous fibrosis, free skin graft, penile foreskin and Wolfe graft are useful alternatives. In patients with history of circumcision and with recurrent episodes of balanoposthitis, we used perineal skin as urethral substitute. This study is unique with regard to flap design and simplicity of the technique. It can be done under regional anaesthesia and is a less morbid procedure. We retrospectively reviewed the records of patients treated for bulbar urethral strictures using pedicled perineal flap through a perineal incision. We evaluated the feasibility, reproducibility and results of this technique.

MATERIALS AND METHODS

We report an observational, descriptive, retrospective analysis of 40 consecutive male patients evaluated and treated for bulbar urethral stricture disease using pedicled perineal skin flap. Parameters analysed were age, site and length of stricture, per-operative findings, post-op findings of calibration and complications encountered.

RESULTS

Mean age of patient was 32.5 years. Mean follow-up was 42 months. Mean stricture length was 4.2 cm (2 to 7 cm). Flow rate increased from average of 4 mL/second (2 - 7 mL/sec) to 16 mL/sec (14 - 22 mL/sec). Of the 40 patients, treatment was successful in 31 (77.5%) and it failed in 9 (22.5%).

CONCLUSION

Perineal skin is a useful alternative in patients with bulbar urethral stricture and having history of circumcision and having oral submucous fibrosis due to tobacco chewing. Our technique is unique due to its simplicity and ease. It can be done under regional anaesthesia. It stands as yet another option in patients with unhealthy buccal mucosa.

KEY WORDS

Perineal Skin Flap, Urethroplasty, Buccal Mucosa Graft, Urethral Stricture.

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BACKGROUND

In India, stricture urethra is a common problem in urology. The incidence of urethral stricture in India is unknown, but it is estimated to comprise about 10% of the practice of urologists. Tobacco chewing and use of oral nicotine is common in this part of the world. Alkaloid and tannin content of Areca nut or betel nut is responsible for oral submucosal fibrosis.^[1] Shear et al and Caniff et al have also confirmed a positive association between betel nut and the onset of oral submucosal fibrosis.^[2,3] Buccal mucosa is gaining popularity as urethral substitute for urethroplasty worldwide.^[4,5] In patients with submucous fibrosis, free skin graft, penile foreskin and wolfe graft are useful alternative.^[6,7] In patients with history of circumcision and with recurrent episodes of balanoposthitis, we used perineal skin as urethral substitute.

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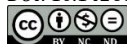
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Previously, scrotal skin flaps with pedicle have been used.^[8] We used midline perineal skin on pedicle as a substitute.

In 1979, Devine popularised the use of genital and extra-genital skin as free grafts for urethral reconstruction.^[9] In 1980, Monsieur first described the concept of dorsally opening urethra and fixing the margins to corpora around a catheter for spontaneous epithelialisation of urethral mucosa around the tube.^[10] In 1996, Barbagli combined both and introduced concept of dorsal on-lay graft placement.^[11,12] Dartos pedicled flap has advantage over scrotal flap due to its robust blood supply.^[13] Scant literature is also available for use of abdominal wall skin as urethral substitute instead of buccal mucosa.^[14]

This study is unique with regard to flap design and simplicity of the technique. It can be done in regional anaesthesia and is a less morbid procedure. Only one incision is required without penile degloving or oral incision for buccal mucosa. We retrospectively reviewed the records of patients treated for bulbar urethral strictures using pedicled perineal flap through a perineal incision. We evaluated the feasibility, reproducibility and results of this technique.

Aims

To observe results of pedicled perineal skin flap urethroplasty in patients of bulbar urethral in patients with submucous fibrosis and history of circumcision.

MATERIALS AND METHODS

We report a retrospective descriptive study of 40 consecutive male patients evaluated and treated for bulbar urethral stricture disease using pedicled perineal skin flap. From January 2004 to March 2015, total of 40 patients were included in the study. The study was conducted in Department of Urology, IGIMS, Patna. Parameters analysed were age, site and length of stricture, per-operative findings, post-op findings of calibration and complications encountered.

Inclusion Criteria

1. Patient with isolated idiopathic bulbar urethral stricture.
2. Patient with history of use of oral nicotine and oral submucous fibrosis and restricted mouth opening, thereby making buccal mucosa not a good choice as urethral substitute.
3. Patient with history of circumcision or recurrent episodes of balanoposthitis making foreskin either free or pedicled, not suitable for urethral substitute.

Exclusion Criteria

1. Age less than 18 years.
2. Patient with dense perineal hair were excluded from the study.
3. Peroperatively, if 5-Fr infant feeding tube or ureteric catheter was not negotiable, then plan was changed to staged urethroplasty.

In later part as experience with use of perineal skin increased, even patient who had intact foreskin were also included in the study. Assessment of perineal skin as dense was subjective. Patients with dense hair distribution in perineum were not considered suitable for urethral substitute and excluded from the study. Patients with sparse hair, in whom perineal skin was seen in between hair by naked eye were preferred.

Patients were followed with uroflowmetry and further investigation was done when uroflow was less than 12mL/second. Routine urethral calibration, RGU and MCU or flexible urethroscopy was not done in all patients to see for recurrence. Follow-up was done 3 monthly for 1st year and then yearly.

Urethroscopy was done in patients having significant LUTS, especially obstructive in spite of normal calibration or recurrent clinically symptomatic UTI or haematuria. We did not look for hair related problems in all patients unless patient was symptomatic. The study was non-analytical and did not include a control group. Thus, only a descriptive statistical analysis was performed.

Operative Steps

Standard lithotomy position. The suprapubic, scrotal and perineal skin is shaved, disinfected with chlorhexidine and draped. Preoperative urethroscope was used to ensure normal penile urethra. Five-Fr. one end closed ureteric catheter was passed across strictured segment. After calibration with ureteric catheter, a 0.032 inch guidewire was

put across. If 5-Fr ureteric catheter was not negotiable, then stricture segment was visualised with 6/7.5-Fr Ureteroscope (Richard Wolf make) to assess urethra and to pass a guidewire.

Incision- Reverse C-shape as shown in Figure-1. Bulbospongiosus muscle cut in midline and urethra was dissected circumferentially. Penile urethra calibrated with 16-Fr Nelaton catheter. Urethra opened dorsally over guidewire till healthy proximal segment is reached. Proximal healthy segment calibrated with 24-Fr Nelaton catheter. Length of stricture was measured with ureteric catheter and noted [Figure-2]. Perineal skin was raised on midline septa as random flap with length 20% more than strictured length [Figure 2, 3]. Skin flap brought dorsally and opposed to urethra on right side and margin of Bulbospongiosus on left side [Figure 4, 5]. Fourteen Fr. per urethral catheter was passed after completing right side of suturing and then left side was completed. We did not do any dorsal quilting. Routine closure was done. The patient ambulated on postoperative day 1 and was discharged home 2 days after surgery. Oral antibiotics were prescribed until the catheter was removed. Catheter was removed after 3 weeks. Follow-up was done 3 monthly for first year and then yearly thereafter. If the patient experienced a decreased force of stream and uroflowmetry showed a rate of less than 12 mL per second. Further investigation was done including urethrography and urethrocystoscopy.

RESULTS

Mean age of patient was 32.5 years. Mean follow-up was 42 months. Mean stricture length was 4.2 cm (2 to 7 cm). Flow rate increased from average of 4 mL/second (2 to 7 mL/sec) to 16 mL/sec (14 – 22 mL/sec). Of the 40 patients treatment was successful in 31 (77.5%) and it failed in 9 (22.5%). Nine patients had failure to calibrated 14-Fr. Nelaton catheter. Seven of them presented within first 9 months of surgery. RGU and MCU revealed stricture at proximal anastomosis, which was taken care of by cold knife DVIU. All were short length anastomotic stricture, which responded to cold knife DVIU.

In 2 patients, recurrence was long length of more than 2 cm. One of them presented at 6 months follow-up and another at 10 months. In both cases, staged urethroplasty was done. Problems of hair in urethral tube were seen in 4 patients. Problems were significant penile voiding pain, haematuria, significant obstructive LUTS in spite of normal calibration. Urethroscopy in all the patients revealed hair ball, which was plucked and removed with forceps. All of them had recurrence of the problem, which was taken care of by urethroscopy as described.



Figure 1. Reverse C Perineal Incision

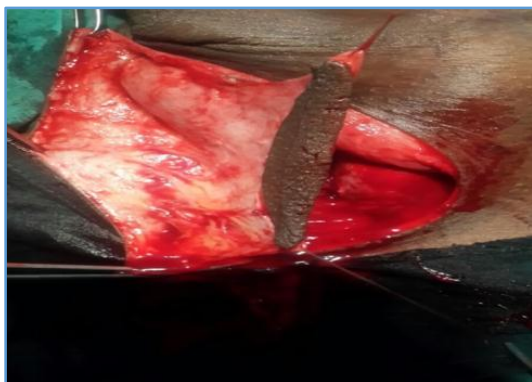


Figure 2. Pedicled Perineal Skin Flap

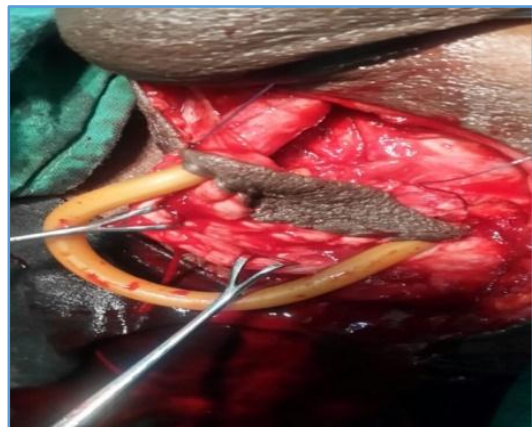


Figure 3. Dorsal Placement of Flap



Figure 4. Mucosa to Flap Sutures



Figure 5. Flap to Spongiosa Sutures

DISCUSSION

In India, tobacco chewing is a common problem. So in patients with submucous fibrosis and restricted mouth opening our described perineal skin flap becomes a good

option, especially in circumcised patients where penile foreskin is not available.

Oral submucous fibrosis is a premalignant condition. Though there is no evidence till date whether use of such grafts as substitute is of any adverse consequence, but it remains a valid concern. In such a scenario, use of perineal skin becomes a useful idea. Buccal mucosa survival depends upon process of take- imbibition and inosculation. Perineal skin flap is a random flap and it has better survival.

As we have used perineal skin dorsally, we have not encountered problems of sacculation and dilated giant urethra as seen in cases with ventral graft.

In a series by Barbagli^[15] 38 patients were evaluated, in which penile skin was used as urethral substitute done dorsally. After an average follow-up of 111 months, success rate was 65.8% and failure rate was 34.2%. Alsikafi et al compared buccal mucosa with penile skin and success rate for penile skin was 84%.^[16] Gozzi et al analysed 194 patients, in which genital or extragenital skin was used as free graft as dorsal onlay with re-stricture rate of 2% at 31 months of follow-up.^[17]

In an interesting paper by Manoj Biswas et al, postauricular skin was used in augmenting stricture urethra in patients having diseased buccal mucosa secondary to tobacco habits. He included patients with Lichen sclerosus also. In his series of 35 patients, success rate was 89% and failure rate was 11%.^[18] Various penile skin flaps like Orandi, Turner Warwick and McAninch has been described. They have 5% failure at 1 year and 20% at 3 - 5 years.^[19]

Follow-up of stricture is not well defined. Various parameters like use of AUA- Symptom Score Index alone or uroflow or combination of both has been used. Other investigations used are flexible cystoscope, calibration or retrograde urethrogram etc. There is evidence to suggest that Q-max of less than 10 mL/second has 95% positive predictive value for stricture. In a study by Heyns and Marais showed that a urethral diameter of 18-Fr or more correlates with a Q-max of > 15 mL/sec and AUA SSI < 10 confirming the opinion that Q-max > 15 mL/sec rule out stricture urethra.^[20,21] Marais et al noted a significant negative correlation between AUA- SSI and urethral diameter^[22] and thus suggesting that only relying on patient related outcome measures may not be a reliable way of following patients with stricture urethra. The best combination to maximise sensitivity and specificity appeared to be AUA SSI > 10 and Q-max less than 15 mL/sec. This provided 93% sensitivity and 68% specificity, avoiding further testing in 34% patients and missed only 4.3% strictures. Follow-up for urethroplasty is practiced differently even among experts. We used symptomatology and uroflowmetry together. Our study limitations may be that even a mean follow-up of almost 42 months may still be insufficient to conclude that many strictures are permanently cured.

CONCLUSION

Perineal skin is a useful alternative in patients with bulbar urethral stricture and having history of circumcision and having oral submucous fibrosis due to tobacco chewing. Though world-wide use of buccal mucosa is gaining acceptance as tissue of choice to augment urethra, but many

individual surgeons still find skin as useful alternative with minimal comorbidity. Our technique is unique due to its simplicity and ease. It can be done under regional anaesthesia. It stands as yet another option in patients with unhealthy buccal mucosa.

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