

COMPARISON OF ONLAY AND CIRCUMFERENTIAL TUBULAR FASCIOCUTANEOUS PENILE SKIN FLAP FOR PENILE URETHRAL STRICTURES

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ABSTRACT

Objective: To compare onlay and circumferential tubular fasciocutaneous penile skin flap for penile urethral strictures.

Material and Methods: This is a comparative study and was conducted in surgical unit, Hayatabad Medical Complex, Peshawar from January 2009 to December 2014. All patients with anterior (penile) urethral strictures, more than 4cm were included in the study. All the patients were followed up for the next two years and were assessed via ascending urethrograms.

Results: In total 46 patients, age range was 15-45 years, in the onlay urethroplasty group, 01 (4.34%) patient developed recurrent stricture, one (4.34%) patient urethrocutaneous fistula and one (4.34%) patient complained of post operative urine dribbling. In the circumferential tubular urethroplasty group, 3 (13.04%) patient developed recurrent strictures, one (4.34%) patient developed urethrocutaneous fistula, 2 (8.68%) patient complained of erectile dysfunction and 2 (8.68%) patient turned up having post operative dribbling of urine. The overall success rate for both techniques was 76.086%.

Conclusion: Onlay penile skin flap is superior to circumferential tubular skin flap in the reconstruction of anterior penile urethral stricture in terms of overall success.

Key Words: Urethral Stricture, skin flap, urine.

INTRODUCTION

Urethral stricture is fibrotic narrowing of the urethra manifesting as a spectrum of symptoms. For a surgeon, the reconstruction of a urethral stricture poses a great challenge. The treatment modalities include optical urethrotomy, urethral stenting, resection and end to end anastomosis and reconstruction procedures involving grafting or utilization of local flaps.^{1,2} End to end anastomosis is utilized in strictures that are short and where the urethra can be mobilized without any difficulty but the procedure should be avoided in penile urethra as it may lead to shortening and deviation of the penis. Therefore, in penile urethra and longer complex strictures, grafting or flap reconstruction is preferred.^{3,4}

The penile skin can be used in urethral stricture reconstruction either as an onlay flap or a circumferential tubular flap. For an onlay technique, the presence of a urethral plate is considered necessary but it is not deemed necessary for tubular flaps. Circumferential fasciocutaneous penile skin flap technique was first described in 1993 which was basically a modification of the technique described by quartey⁵. This technique is

based on the principle of mobilization of a 2.5 cm wide circumferential patch of penile skin while retaining its original blood supply and then converting it in to a tube that would substitute the fibrosed portion of urethra. The technique involving the penile skin as a flap is considered easy to learn with minimal complications of the donor area¹. Bucks fascia provides support to the vascular pedicle, penile nerve and deep dorsal veins remain intact resulting in a preserved neurovascular status of the penis¹. Controversy over the best means of reconstruction of the penile urethra has been renewed and over the period of years free grafts have been revisited with fewer surgeons using genital flaps^{6,7}.

The common complications associated with penile skin flaps are urethrocutaneous fistula, post operative urine dribbling, recurrent strictures and erectile dysfunction⁸. The purpose of this study was to compare onlay and circumferential tubular fasciocutaneous penile skin flap for penile urethral strictures in terms of postoperative complications.

MATERIAL AND METHODS

This comparative study was carried out in the department of general surgery, Hayatabad Medical Complex, Peshawar from January 2009 to December 2014. Forty-six patients were included in this study. All patients were between 15 -45 years of age and with anterior urethral strictures of more than 4 cm length were included in the study. All patients with an ASA of > 3 or who underwent previous urethroplasty, or with

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completely destroyed urethra or with multiple strictures were excluded from the study. All the patients were investigated as indicated and an informed consent regarding the procedure was taken before embarking upon the procedure.

Patients were segregated into two equal groups by flip coin method. The surgery was performed in supine position. All the patients were already circumcised. Penile urethra was approached after degloving the penile shaft. A wide skin flap of 2-2.5 cm was harvested from distal penis and mobilized onto the ventral surface. This flap was either applied as an onlay flap or fashioned into a tube over a silicon catheter as indicated.

The patients were mobilized and orally allowed on the first post operative day and discharged on the third or fourth operative days. Patients were followed up in the OPD for two years. At the first post operative visit, one month after the surgery, the urethral catheter was removed and ascending urethrogram was performed. Patients experiencing urinary extravasation were recatheterized and re-evaluated after a period of two weeks. The second visit was at the end of third post operative month and another ascending urethrogram was performed and if came out to be normal, the suprapubic catheter was removed. The subsequent visits were at the end of 6th, 12th, 18th and 24th post operative months. At each visit, patients were assessed by taking history, performing complete physical examination and doing an ascending urethrogram. The data was collected in a record register and then analyzed via SPSS version 10.

RESULTS

In this study of 46 patients, the age range was 15-45 years with a mean age of 23.3 ± 2.4 years. The etiology of stricture was infection, accidental trauma and iatrogenic trauma. In 13.9% patients, the exact cause could not be assessed. The average length of the stricture was 6 cm (range 4-12cm). The operative time was 1-3 hours (mean 2 hours).

In the onlay urethroplasty group, none of the patient demonstrated erectile dysfunction, 1 (4.34%) patient developed recurrent stricture, one (4.34%) patient developed urethrocutaneous fistula and one (4.34%) patient complained of post operative urine dribbling. On the other hand, in the circumferential tubular urethroplasty group, 3 (13.04%) patient developed recurrent strictures that required optical urethrotomy,

one (4.34%) patient developed urethrocutaneous fistula and 2 (8.68%) patient complained of erectile dysfunction and 2 (8.68%) patient turned up having post operative dribbling of urine (Table 1). The overall success rate was 86.95% and 65.21% for onlay and circumferential tubular groups' respectively. The overall success rate for both techniques was 76.086%.

DISCUSSION

Penile skin flap is a reliable urethral substitute for the management of complex urethral strictures. It can be combined with other reconstructive techniques when necessary enabling one stage reconstruction possible in majority of cases. In those cases where previous urethroplasty has failed, the results of penile skin flap are very good¹. The reason for this is that it has a good blood supply and the fascial support is good enough to stabilize the flap at its new habitat.

Reconstruction of long anterior urethral strictures that cannot be excised and re-anastomosed is a matter of great debate. Various studies have showed that the results with local penile flaps are better when compared with free grafts⁹ our study showed an overall success rate of 76.086%.

Our study showed promising results with onlay technique as compared to the circumferential tubular group. The incidence of recurrent strictures, urethrocutaneous fistula, post operative urine dribbling and erectile dysfunction were very low as compared to the circumferential tubular technique group and the over all success rate were 86.95% and 65.21% respectively. A study by Srivastav A et al showed a similar result, with a success rate of 75% and 86.5% for circumferential tubular and onlay technique groups respectively⁷. Like our study, the study by Srivastav A et al showed that circumferential tubular group had a higher incidence of recurrent strictures and it was because of this factor that the success rate of this technique was lesser when compared with onlay technique⁷. But when these patients underwent subsequent optical urethrotomies, the success rate became comparable to the onlay technique that is 90% and 93% respectively⁷. Similarly, the study by Srivastav A et al showed that the incidence of post operative dribbling with onlay technique is lesser when compared to that of circumferential tubular technique.

In our study, no patient experienced penile skin necrosis. The incidence of penile skin necrosis varies with different studies and is reported between 4-27%.

Table 1: Complications of Onlay and Circumferential tubular Urethroplasty

Complications	Onlay Urethroplasty (n=23)		Circumferential tubular Urethroplasty (n=23)	
Recurrent strictures	1	4.34%	3	13.04%
Urethrocutaneous fistula	1	4.34%	1	4.34%
Erectile dysfunction	0	0	2	8.68%
Post operative urine dribbling	1	4.34%	2	8.68%

Kessler TM et al¹⁰ reported a higher incidence of re-interventions for various complications like debridement of necrotic area, hematoma evacuation etc after local penile skin flap procedures but our study did not show any such results. In other various studies^{11,12}, the post operative complications like scarring and skin necrosis were the same as ours.

CONCLUSION

Onlay technique for penile urethral stricture is useful as it has low incidence of recurrence, urine dribbling, erectile dysfunction and urethrocutaneous fistula.

REFERENCES

1. Khan M, Hadi A, Shah FO. Use of circumferential fasciocutaneous penile skin flap in the reconstruction of complex urethral strictures. J of Surg Pak. 2012; 17: 139-42.
2. Barbagli G, Palminteri E, De Stefani S. Penile urethroplasty: techniques and outcomes using buccal mucosa grafts. Contemp Urol. 2006; 18: 25-33.
3. Wessels H, Mc Aninch JW. Use of free grafts in urethral stricture reconstruction. J Urol. 1996; 155: 1912-15.
4. Wessels H, Mc Aninch JW. Current controversies in anterior urethral stricture repair: free-graft versus pedicled skin-flap reconstruction. World J Urol. 1998; 16: 175-80.
5. Quartey JKM. One stage penile/ preputial island flap urethroplasty for urethral strictures. J. Urol. 1985; 134: 474-75.
6. Mc Aninch JW. Reconstruction of extensive urethral strictures: circular fasciocutaneous penile flap. J Urol. 1993; 149: 488-91.
7. Srivastav A, Vashishtha S, Singh UP. Preputial/penile skin flap, as a dorsal onlay or tabularized flap: a versatile substitute for complex anterior urethral stricture. BJU int. 2012; 110: 119-24.
8. Wessels H, Morey AF, Mc Aninch. Single stage reconstruction of complex anterior urethral strictures: combined tissue transfer techniques. J. Urol. 1997; 157: 1271-74.
9. Webster GD, Robertson CN. The vascularized skin island urethroplasty: its role and results in urethral stricture management. J Urol. 1985; 133: 31-33.
10. Kessler TM, Schreiter F, Kraldis G. Long term results in surgery for urethral stricture: a statistical analysis. J Urol. 2003; 170: 840-44.
11. Gil-Vernet J, Arango O, Gil-Vernet A. A new biaxial epilated scrotal flap for reconstructive urethral surgery. J Urol. 1997; 158: 412-20.
12. Hussein MM, Moursy E, Gamal W. The use of penile skin graft versus penile skin flap in the repair of long bulbo-penile urethral stricture: A prospective randomized study. Urology. 2011; 77: 1232-37.

AUTHOR'S CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under:

- Iqbal Z:** Data collection and idea.
Saboor Z: Data collection.
Khan M: Supervision.
Khan S: Computer assistance.
Ahmed: Statistics.
Islam IU: Bibliography.
Azizullah: Manuscript writing.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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