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Original Research Article

Comparison of Tunica Vaginalis flap with Dartos flap in reducing post-operative fistula after TIP

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Abstract: Tabularised incised plate urethroplasty (TIP) or Snodgrass procedure is a well accepted technique for distal penile hypospadias repair. Its main complication is formation of urethrocutaneous fistula in the post operative period. Different investigators have tried different reinforcement over neo-urethra to prevent fistula formation. Snodgrass originally applied Dartos flap over neo-urethra. But some investigators reported better result with Tunica Vaginalis flap (TVF) in terms of post operative fistula formation. We have done a prospective study in our department comparing the effectiveness of these two flaps in reducing the post operative fistula rate. Total 30 patients of distal penile hypospadias undergone TIP repair in two years time. We assigned them in 2:1 ratio to receive a specific reinforcement after neo-urethra formation. Among them 21 patients were reinforced with Dartos flap and 9 patients were reinforced with TVF. Though it apparently seems that TVF has better outcome, difference between the two techniques is statistically non-significant in terms of post operative urethrocutaneous fistula formation. We compared the results in paediatric (<12yrs) as well as in adult (>12yrs) population. Again we found no statistically significant difference in the outcome. So we conclude that both the flaps are equally effective in all age groups in prevention of post operative fistula.
Keywords: Tabularised incised plate urethroplasty, Distal penile hypospadias, Dartos flap, Tunica Vaginalis flap, urethrocutaneous fistula.

INTRODUCTION

Hypospadias is one of the most common congenital defects affecting the external male genitalia [1, 2]. In case of distal penile hypospadias without significant cordee, tabularised incised plate (TIP) urethroplasty popularised by Snodgrass has revolutionised the hypospadias surgery. Its low complication rates, excellent cosmetic results and the simple surgical technique have made it very popular among hypospadias surgeons [3]. Post operative fistula formation is an area where lots of work has been done to reduce its rate. In order to prevent fistulas, particularly healthy tissue from different areas is used to cover the neo-urethra using different techniques. In his article Snodgrass described placement of Dartos flap over neo-urethra to prevent fistula. Retik described the use of asymmetrical flaps from the dorsal penile skin and the prepuce [4]. Other authors use distal extensions of the parting corpus spongiosum to cover the neourethra [5]. Some people found Tunica Vaginalis flap (TVF) better than dartos flap in reducing fistula rate [6]. In our study we compared the result of Dartos flap with TVF in terms of post operative fistula formation.

MATERIAL AND METHODS

The study is a prospective, randomized trial between two techniques of operations. In our study we compared two techniques of reinforcement of neo-urethra in Snodgrass repair. One is by Dartos flap and the other is by TVF. We randomized the patients to undergo repair by a particular technique and analyzed the outcome in terms of fistula formation. Two patients were repaired with Dartos flap and after that every third patient were repaired with TVF. The ratio of Dartos flap repair and TVF repair were 2: 1. The results were analyzed by standard statistical methods. The study was done in the department of urology, NRS Medical College, Kolkata during August 2014 to July 2016.

Total study population was 30 patients with primary distal penile hypospadias. In our urology department we get patients of all age groups. Recurrent cases and cases with significant cordee where TIP is not a good option were excluded. Adult patients (>12yrs) were operated under spinal anaesthesia and patients of paediatric age group (<12yrs) were operated under general anaesthesia. As it is a medical college, different surgeons (of different expertise) have operated on these cases.

Operation started with circumcoronal incision encircling the urethral plate and external meatus. We routinely de-glove the penis up to the root. Look for any cordee. After that, Glans wings are created. Urethral plate was incised in the midline. Urethral plate was tabularised over suitable sized Folay's catheter. In cases of Dartos flap repair, we harvested the flap from dorsal prepuce. The flap was brought to the ventral aspect by either button hole technique or by encircling the penis. In cases of TVF, we harvested the flap either by delivering the testis through the root of the penis or by making separate incision over scrotum. After fixing the flap over neo-urethra, the glans wings were approximated in the midline. We ended the procedure with a circumcised penis.

We usually removed the OT dressing in between 3rd to 5th post operative day depending on the soakage from the wound. We removed urethral stents in between 7th to 10th post operative day. Dressing of the wound was done with normal saline and Mupirocine ointment. After urethral stent removal we routinely did a visual uroflowmetry to look for the flow and any leak. Any leak from the repair site after stent removal constitutes failure. We reassess the cases after one month with local examination and formal uroflowmetry. Those patients who complain of poor flow are advised meatal dilatation for few months.

RESULT & DISCUSSION

At the end of our study, we analyzed our result. Total 30 patients were operated. 21 patients were repaired with Dartos flap. In this Dartos flap group 10 patients (48%) were repaired successfully. But 11 patients (52%) suffered urethrocutaneous fistula.

Table-1: Type of operation

Type of operation	No of patients treated	No of successful repair	No of fistula
Dartos flap repair	21	10 (48%)	11 (52%)
TVF repair	9	7 (78%)	2 (22%)
Total	30	17 (56.7%)	13 (43%.3%)

On the other hand 9 patients were repaired with TVF. Among them, 7 patients (78%) were repaired successfully. But 2 patients (22%) suffered urethrocutaneous fistula. So apparently it seems that TVF gives better outcome.

Table-2: Comparison of Two Operative Groups According To Post Operative Urethrocutaneous Fistula Formation

Total number of urethrocutaneous fistula No. (%) (n = 30)	Dartos flap group No. (%) (n = 21)	Tunica Vaginalis group No. (%)(n = 9)
13 (43.3)	11 (52.3)	2 (22.2)

Yates corrected Chi-square (X^2) = 0.39, P = 0.53, df = 1, Non-significant

Now let us compare the failure cases in the two operative groups. From the above table we can see that total no of failures are 13. Among those 13 cases, 11 were from Dartos group & 2 were from TVF group. On Yates corrected Chi-square test, the difference between the two groups were found to be non-significant.

Table-3: Comparison of Failure in Two Age Groups

	No of failure	Patients < 12 years age	Patients > 12 years age
Dartos repair	11	4 (36.4 %)	7 (63.6%)
TV flap repair	2	1 (50%)	1 (50%)
Total	13	5 (38.5%)	8 (61.5%)

Pearson's chi-square (X^2) = 0.133, P = 0.715, df=1, Non-significant.

As we get patient of all age groups, we compared the failure cases in two different age groups. One is paediatric (< 12yrs) & the other is adult (>12yrs). From the above table we can see that TVF failure cases are equal in those two age groups. But in Dartos flap group 63.6% failure occurred in the adult age group. On Pearson's chi-square test the difference of failures in the two age groups was found to be non-significant.

So, from the results of our study it can be said that though TVF repair apparently seems to be better than Dartos flap repair, there is actually no statistically significant difference exist between the two reinforcement techniques in terms of prevention of urethrocutaneous fistula after Snodgrass repair of Distal penile hypospadius. There is also no significant difference in the outcome in two age groups (<12yrs & > 12yrs). From the review of literature we have seen that different investigators have found different results. Though our failure rate is high, our results seem to be similar what Zargooshi Javaad found in his study (Zargooshi Javaad: Tube-onlay-tube tunica vaginalis flap for proximal primary and reoperative adult hypospadias[7].

We analysed the causes of our high failure rate. In our opinion the causes are:-

- As because it is a medical college, different surgeons have done the cases. Some of them have been done by students under supervision. As because Hypospadius surgery is a very techniqually challenging procedure, different results in different hands may be the cause.
- Post operative dressing is very important. Especially in Tunica Vaginalis flap with long pedicle. Increased pressure in post operative dressing may be the reason of failure in some cases.
- We have not used loop during surgery. It may have played some role in failure in paediatric patients.
- Disparity between native and neourethra diameter may be the cause in some cases.

CONCLUSION

Hypospadias is a very techniqually challenging surgery. The surgeon should be very meticulous during surgery. To get good results, high volume centres are to be constructed and manned by surgeons dedicated to hypospadias surgery.

Snodgrass technique has been accepted world wide as the procedure of choice for distal penile hypospadias, in spite of complication like urethrocutaneous fistula. So people have tried different techniques to reduce the rate of post operative urethrocutaneous fistula.

Our study compared Dartos flap with Tunica Vaginalis flap in the repair of distal penile hypospadias as a reinforcement to Snodgrass technique. Though apparently the Tunica Vaginalis shows better outcome, there is no statistically significant difference in fistula formation in those two techniques. Results are also found to be same in different age groups.

REFERENCES

1. Hinman F, Baskin LS. Hinman's atlas of pediatric urologic surgery. Elsevier Health Sciences; 2009.
2. Campbell MF, Wein AJ, Kavoussi LR. Campbell-Walsh Urology. Philadelphia: Saunders Elsevier; 2007.
3. Snodgrass W, Koyle M, Manzoni G, Hurwitz R, Caldamone A, Ehrlich R. Tubularized incised plate hypospadias repair: results of a multicenter experience. The Journal of urology. 1996 Aug 31; 156(2):839-41.
4. Borer JG, Bauer SB, Peters CA, Diamond DA, Atala A, Cilento BG, Retik AB. Tubularized Incised Plate Urethroplasty:: Expanded Use In Primary And Repeat Surgery For Hypospadias. The Journal of urology. 2001 Feb 28; 165(2):581-5.
5. Yerkes EB, Adams MC, Miller DA, Pope JC, Rink RC, Brock JW. Y-to-I wrap: use of the distal spongiosum for hypospadias repair. The Journal of urology. 2000 May 31; 163(5):1536-9.
6. Dhua AK, Aggarwal SK, Sinha S, Ratan SK. Soft tissue covers in hypospadias surgery: is tunica vaginalis better than dartos flap? Journal of Indian Association of Pediatric Surgeons. 2012 Jan 1; 17(1):16.
7. Zargooshi J. Tube-onlay-tube tunica vaginalis flap for proximal primary and reoperative adult hypospadias. The Journal of urology. 2004 Jan 31; 171(1):224-8.