



OUTCOME OF TUNICA VAGINALIS FLAP FOR REPAIR OF URETHROCUTANEOUS FISTULA AFTER HYPOSPADIAS REPAIR

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ABSTRACT

The commonest complication following hypospadias repair is occurrence of urethro-cutaneous fistula (UCF) with a reported incidence of 4-25%¹. The expected fistula rate is between 10% to 15% for one-stage hypospadias surgery. UCF after hypospadias repair remains a significant challenge for paediatric surgeons despite the advances in surgical techniques. Our aim is to assess the outcome of tunica vaginalis flap repair in cases of urethro-cutaneous fistula. Our study included 23 patients who underwent UCF repair using TVF. Successful repair of these UCF depends on several basic principles, which are the avoidance of procedures on inflamed tissue, correction of distal obstruction, a tension-free urethral closure with absorbable suture material, and covering of the urethral repair with well-vascularized tissue. From our study we feel that many complications mainly recurrent fistula can be avoided using the above principles.

KEYWORDS :

INTRODUCTION :

The commonest complication following hypospadias repair is occurrence of urethro-cutaneous fistula (UCF) with a reported incidence of 4-25%¹. The expected fistula rate is between 10% to 15% for one-stage hypospadias surgery. UCF after hypospadias repair remains a significant challenge for paediatric surgeons despite the advances in surgical techniques. Various techniques have been described for fistula repair but with disappointing results. The basic principle is to add layers between skin and neourethra in order to decrease the incidence of recurrent urethro-cutaneous fistula. Delicate tissue handling, inversion of the urethral mucosa after excising the epithelialized tract of the fistula, a multilayer repair with well-vascularized tissues, avoiding overlapping sutures and non-absorbable or thick suture materials, a tension-free closure, use of optical magnification, and bipolar diathermy for coagulation are currently considered mandatory².

Aim :

To assess the outcome of tunica vaginalis flap repair in cases of urethro-cutaneous fistula.

Material and Method :

All patients who had undergone UCF repair in the period may 2018 till may 2020 were included in this study with follow-up periods till 6 months.

The study was conducted in the Department of Surgery of Smt. Kashibai Navale Medical College, Pune, Maharashtra, India.

All patients from age 3 years to 14 years who underwent single or two-staged hypospadias surgery at least 6 months ago and had developed a fistula were included in this study

Patients with urethral stricture and diverticulum were excluded.

Patients included in the study were classified based on primary surgery done, location of fistula, size of fistula.

All repairs were done using vicryl as the reconstructive suture material.

Surgical Technique:

All patients were given general anaesthesia and caudal

epidural anaesthesia for better postoperative analgesia.

All patients under went surgical site scrubbing after anaesthesia and were followed by routine painting and draping. We then assessed the fistula and incision was marked. Then stay suture was taken over the glans using prolene 4-0 round bodied and injection adrenaline in 1:1,00,000 was given. Then the fistulous opening was calibrated with a silicon foley's and the incision marked and the fistulous tract excised down till the healthy urethral plate. Then the urethral plate was reconstructed in midline with running subcuticular inverting suture of vicryl 6-0 on a round bodied needle over the foley's. Testes was delivered out through a small transverse incision over the scrotum and a tunica vaginalis flap fashioned and tunnelled underneath the penile skin and brought out through the fistula and sutured to the penile mucosa with vicryl 6-0 in interrupted manner. Glans reconstructed in which ever cases there was glans disruption the penile skin closed in midline with vicryl 5-0 and dressing was done.

Analgesics and antibiotics were given (cefotaxime) for 3-5 days.

Postoperatively dressing was changed under anaesthesia on post operative day 5 and dressing and foley's removal done on post-operative day 10.

Patients were assessed after dressing removal, 15 days after surgery, 3 months and 6 months after surgery respectively.

Post-operative complications such as meatal stenosis, skin necrosis and recurrent fistula were noted.

RESULTS :

We operated a total of 23 patients with urethra-cutaneous fistula.

Age distribution of the patients is given in table 1.

Table 1 (age distribution)

Age (years)	Incidence
3	4
4	5
5	6
6	3
7	2

8	1
9	0
10	1
11	0
12	1
13	0
14	0
Mean age	5.39

The location of the UC fistula is shown in Table 2.

Table 2 (fistula location)

Location of fistula	Number of cases	Percentage (%)
Distal penile	2	8.7
Mid penile	9	39.1
Proximal penile	10	43.5
Penoscotal	2	8.7
Total	23	100

Previous surgery done leading to fistula are shown in table 3.

Table 3 (previous surgery done)

Previous Surgery	Number of cases	Percentage (%)
Single staged repair	16	69.6
Two staged repair	7	30.4
Total	23	100

Patients classified on size of fistula are shown in table 4.

Table 4 (nature of fistula)

Nature of fistula	Number of cases	Percentage (%)
Recurrent fistula	3	13.04
Multiple fistula	2	8.70
Total	23	100

Patient complications are shown in table 5

Table 5 (complications)

Complication	Number of cases
Skin necrosis	4
Meatal stenosis	1
Recurrence	0

DISCUSSION :

Different techniques have been described for fistula closure. Simple closure of UC fistula has a high failure rate in comparison with other technique .Some studies have shown that multilayer closure with a second layer coverage in between the neourethra and the skin plays an important role in preventing UC fistula recurrence, regardless of the surgical repair method. Various vascularized flaps such as penile dartos fascia, scrotal dartos fascia, tunica vaginalis, de-epithelialized skin, and buck's fascia, can be used as the second layer^{10,11,12}.

The interposition of vascularized tissue such as tunica vaginalis flap (TVF) has been suggested as an effective means of reducing UCF formation rate in multiple urethroplasty techniques^{3,4,5}.

The advantages of tunica vaginalis flap are myriad, particularly in the re-operative patient. As the tunica lies well away from the operative field of the penile shaft, its blood supply remains uninterrupted even in the setting of numerous reoperations. Operative access to tunica vaginalis is technically simple^{4,5}.

Successful repair of these UCF depends on several basic principles, which are the avoidance of procedures on inflamed tissue, correction of distal obstruction, a tension-free urethral closure with absorbable suture material, and covering of the urethral repair with well-vascularized tissue^{2,6,7}.

Many variables could influence the surgical management and outcome, that is, the use of magnification⁹, the time of occurrence after urethroplasty, the location (glanular, coronal,

mid shaft, etc.), size (pinpoint, large),the number, and the conditions of local tissue⁸.

In our study mean age of patients was 5.39 years with majority cases developing fistula after single stage repair, 16 out of 23. Site of the fistula was varied with 2 at the distal penis, 9 in mid penis, 10 at proximal penis and 2 at penoscrotal junction. Majority, 69.6% had a fistula of size <2mm.

In our study 0 patients developed recurrent fistula.

We feel that many complications can be successfully avoided by careful attention to detail—specifically, ensuring that the TVF is of adequate length and adhering to the mentioned principles.

The limitation of our study is the short duration of follow up.

CONCLUSION :

Development of urethro-cutaneous fistula after corrective surgery for hypospadias remains the most important complication. The choice of repair of a fistula depends on various factors and each has it's own complication rates. We feel that the each case should be treated on an individualized basis and certainly the tunica vaginalis flap repair as from our study is relatively simple to perform in a short operative time and also adds a vascularized layer to the repair hence significantly decreasing the rate of re fistula formation and is a viable option which gives satisfactory results.

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