URETHROCUTANEOUS FISTULA REPAIR: OUR EXPERIENCE AT KING HUSSEIN MEDICAL CENTER

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ABSTRACT

Objective: This retrospective study was designed to evaluate the success rate of urethrocutaneous fistula repair using the simple technique and support with vascularized dartos flap.

Methods: During the period 1999-2005, 62 patients underwent urethrocutaneous fistula repair following hypospadias surgery. Forty patients had distal urethrocutaneous fistula, seven had mid shaft and 15 had proximal urethrocutaneous fistula. All procedures were done by the same surgical team. The repair was performed primarily after six months of the last intervention. Most cases performed over urethral stent and in few complicated cases sialastic foley catheter and suprapubic cystocath for urinary diversion were used.

Results: Through the follow-up period of 3.5 years, the results were successful .The success rate at the first attempt was about 84% and 100% after the second attempt.

Conclusion: Simple urethrocutaneous fistula repair with applying the basic principles and covering with well-vascularized dartos flap can provide a high success rate. It decreases urethrocutaneous fistula formation especially if the careful harvesting technique is utilized.

Key words: Uretrocutaneous fistula, Hypospadias.

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Introduction

Urethrocutaneous fistula (UCF) is still the commonest complication after hypospadias repair with a reported incidence 3.5-25%.[1-3] Although recent advances in the surgical procedures of hypospadias repair have reduced the rate of urethrocutaneous fistula formation, it remains a real complication of hypospadias and frustrating problem for surgeons, especially if the neo-urethras is too long or in case of re-operations.

The successful rate of UCF repair increased with several basic principles; delicate tissue handling, tension-free urethral closure with absorbable suture material, inversion of the urethral mucosa after excising the epithelialized tract of the fistula, the avoidance of procedure on an inflamed tissue, a multiple layer repair with well vascularized local subcutaneous tissue, dartos flap, avoiding of overlapping sutures and correction of any distal urethral obstruction.[4-6] Recurrence of UCF is an exacerbating problem and sometimes requires many procedures in the same patient.[4] For this reason Ehle *et al*[7] recently suggested a two-stage procedure to reduce the recurrence rate. The incidence of recurrent UCF was reported form 10% to 45%.[4,8,9]

The aim of our study is to examine the long-term results of UCF repair after restriction to the previous principles.

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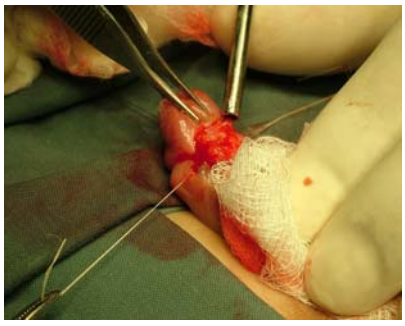
Fig. 1, 2. Types of urethrocutaneous fistula

Fig. 3, 4. The dissection technique of UCF



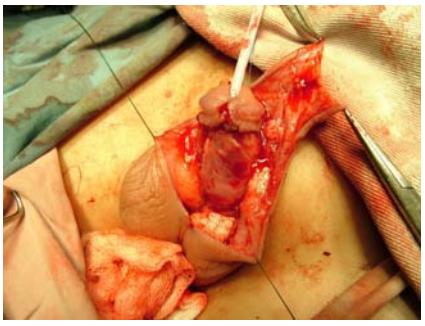


Fig. 5, 6, 7. The repair of UCF and covering with vascularized flap

Methods

Between 1999-2005, 62 patients who developed UCF after hypospadias repair were reviewed. All of them underwent hypospadias repair by the same surgery team using a similar type of repair. Forty patients had distal UCF, and 7 had mid shaft and 15 had proximal UCF. The incidence of UCF in our series prior the use of vascularized dartos flap for covering the neo-urethra during the primary repair of hypospadias was around 25% which is more than the expected compared with other series.

Urethrocutaneous fistula repair was considered when it persists for more than one month after the original surgery. UCF repair scheduled for 6 months to 18 months after the last intervention, mean of 10 months, by that time any local edema or inflammation could resolve completely. Urethroscopy or calibration of the urethra was always done before surgery to exclude distal urethral stricture. After that, probing every suspicious pit in the skin with ophthalmic probe and injection of Methylene blue under pressure by a small tip syringe assessed number and location of UCF. In most cases, a single UCF was the finding where multiple UCF were demonstrated in 8 patients, especially in those patients with proximal hypospadias repair.

Primarily applying the basic principles that outlined above when the repair performed. The fistula tract was excised; the mucosa closed with absorbable 6/0 and 7/0 sutures in an inverted, tension free manner. The repaired UCF was covered with a layer of well-vascularized dartos flap or surrounding subcutaneous tissue. We found that the best way of harvesting the flap is that by starting at the dorsal region of penile skin with the result of a well-vascularized dorsal dartos flap. The meticulous harvesting technique of

the flap and redundancy make it suitable for covering nearly all types of hypospadias repair and UCF. The flap is transposed to the ventral aspect either as a buttonhole or as double breasting Byar's flap fashion in most cases to avoid penile rotation using 7/0 and 6/0 polyglactin sutures, resulting in complete and symmetrical covering of the urethral repair. The skin closed using a locally based transposition flap to avoid a suture line overlapping each other. Most cases performed over urethral stent and in few complicated cases where extensive dissection for repair of proximal sizable or multiple UCF, sialastic foley catheter and suprapubic cystocath for urinary diversion were used for 10 days after surgery. No drains were used. Single dose of intravenous cephalosporin was given during surgery and patients maintained on oral form until removal of stents and catheters in 7-10 days. For demonstration of UCF repair, see (Figures 1-7).

Results

During the period 1999-2005, 62 patients with UCF were included in this study. All of them developed a urethral fistula after hypospadias repair. In 50 patients the size of fistula was less than 2mm. Initially, fistula repairs were undertaken at age ranged between 5-18 years, mean of 10.6 years. Twenty seven patients were over 14 years of age where we noticed recurrence of UCF after the first repair in 5 patients. Twenty patients were between 10-14 years of age where we noticed recurrence of UCF after the first repair in 2 patients. Fifteen patients were between 5- 10 years of age where we noticed recurrence of UCF after first repair in 3 patients.

UCF recurred in 10 patients out of 62, with overall success rate 83.8% after the first repair (Table I).

Table I. Summary of the results

	No. of patient	**%**
Successful repair	52	83.8
Failed first repair	10	16.12

We noticed that recurrence was more common in older patients. Three patients with wide dissection had wound infection and 2 patients had premature dislodgment of the urethral stent which could contribute to the recurrence of UCF. There was no obvious factor contributing to recurrence of UCF in 5 patients Meticulous closure was used again in those 10 patients applying the basic principles of fistula identification, trimming of epithelialized edges, repair with absorbable sutures and covering with well vascularized dartos flap. After a mean follow-up of 3.5years range (4/12-6), there have been no further recurrences. Significantly, more fistulae, which were > 2mm recurred (8 of 10) than those which < 2mm (2 of 10).

Discussion

Despite the whole precautions, urethral fistula may occur after hypospadias repair or after fistula repair. As there is no perfect technique for repairing UCF, many variables could affect the surgical outcome, those are: the size of the fistula, the number, the conditions of local tissue and the location (glandular, coronal, mid shaft).[6] However, some reports show that there is no significant difference in outcome comparing some variables, e.g. patient age, interval between surgeries at time of repair, the use or not of an indwelling catheter, optical magnification, number of previous fistula repairs and type of original hypospadias repair.[10]

As there is no technique of choice for management of UCF, so some failure rate is expected in every trial, and the reported proportions is varying from 15.5% to 47%.[5,7,9] In our study, by using a simple technique of fistula repair and enforcement of the repair by dartos flap (well vascularized flap), we reported a failure rate 16% in the first attempt which is comparable with the other series.

The repair can be successful without trans-urethral stinting, but we have been always using urethral stent and in few complicated cases sialastic foley catheter and suprapubic cystocath for urinary diversion were used for 10 days, which can support the healing and prevent recurrences.

We believe like others that covering the neo-urethra and UCF after repair with well vascularized dartos flap after careful harvesting technique represents an excellent option for the management of urethrocutaneous fistula as reported by many series,[11-18] because it prevents recurrence of the fistula by supporting the repair and providing the neo-urethra by sufficient blood supply. Further more, it is uniformly available even in patients with previous scrotal manipulations. So we strongly recommend its use as part of any hypospadias repair.

Thus in conclusion, we think that if we followed the main basic principles of repair, this can provides a good success rate for UCF after hypospadias repair.

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