

Hypospadias Fistula Repair; Should a Stent be Left?

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Abstract:

Objectives: to evaluate the role of stenting in a children undergoing fistula repair, as a stent free fistula repair has been successful without prolonged discomfort.

Patients and methods: The study included all Hypospadias repaired patients with fistula formation; both primary surgery and fistula repair surgery done by one surgeon, between July 2005 and September 2011, patients were prospectively randomized at the end of surgery to either leaving a stent (foley catheter) for one week or no stent at all. The study included 74 patients (40 stented and 34 not stented). Median age of patients was 6 years, range (4-7) years. For the stented group, the stent placed in the bladder for continuous bladder drainage.

Results: The median range follow up was 8 months (6-12) months. Voiding was painful in the first week, in 5(12.5%) and 13(38%) of the stented and unstented patients respectively, none of the stented patients developed urinary retention, compared with 7(20.5%) patients in the unstented group. Although the re-operation rate was 0% for the stented group, while it was 20.5% for unstented group, the difference was statistically not significant ($p > 0.05$).

Conclusions: The use of stent in Hypospadias urethrocutaneous fistula repair is advantageous, it eliminates the risk of urinary retention and extravasations, reducing the overall patient discomfort adding to that, lower re-operation rate.

Key Words: Urethrocutaneous fistula, Hypospadias, Catheter.

Introduction:

Hypospadias has been recognized as a surgically treatable malformation for nearly two millennia. Physicians of both the Hellenic (Heliodorus and Antyllus) and Roman worlds (Celsus and Galen) described the condition as well as its possible surgical remedies^(1, 2, 3). Needless to say, surgical techniques have evolved with time. The most significant recent advance in this evolution occurred in 1994 with Snodgrass description of the tabularized incised plate urethroplasty (TIP) technique⁽⁴⁾. Since the initial description in cases with distal Hypospadias, TIP urethroplasty has now been applied with notable success to both proximal and reoperative Hypospadias repair surgeries^(5,6,7).

The most common complication after Hypospadias repair is urethrocutaneous fistula with a reported incidence of (12.1% - 50%)^(8,9).

Many techniques have been described for correction of urethrocutaneous fistula. Where enough intact penile skin is available, simple closure of a fistula is used. Skin flaps are used for repairing fistulas that are too large for simple closure, provided that the local skin is pliable and adequate⁽¹⁰⁾.

Snodgrass⁽¹¹⁾, in his initial description for Hypospadias repair used a silicon catheter for 10 days. Significant morbidity has been associated with urethral stent including infection, bladder spasm. Furthermore, indwelling catheter require a special care to avoid

accidental forcible slippage or inadvertent pressure on the urethra⁽¹²⁾, in contrast, repair with no bladder drainage is associated with total ambulation and short hospital stay⁽¹³⁾. Nevertheless, a stent free repair may compromise the comfort and increase the incidence of urinary retention after surgery^(14, 15, 16). Disagreement on the need for urethral stent in reparative surgery remains and there use continues to be dictated according to the surgeons' preference^(17,18). Steckler and Zaontz reported excellent results with a stent free repair⁽¹³⁾.

Patients and Methods:

The study included all Hypospadias urethrocutaneous fistula patients between July 2005- September 2011, who underwent surgery in Azadi teaching hospital/ Kirkuk.

The surgical technique for small fistulae (<2 mm) was excision of fistula tract; inverted epithelial continuous 6-0 vicryl suturing, 2nd layer interrupted suturing of fascia with 6-0 vicryl and last layer of skin suturing with interrupted 6-0 vicryl suture; all layers must be sutured water tight. While the surgical technique for large fistulae (>2 mm) was releasing of the epithelial margins and suturing without tension with 6-0 continuous vicryl suture, fascia flap from one side of the fistula sutured with interrupted 6-0 vicryl as a 2nd layer, while skin rotation flap from opposite side sutured with interrupted 6-0 vicryl as a third layer, all layers of suturing must be water tight.

Patients were randomized at the end of the study in to 2 groups, stented 40 children and unstented 34 children. In the stented group a soft plastic urethral catheter of suitable size (Foleys catheter) was passed in to the bladder for one week, catheter connected to

urinary bag. In the unstented group the bladder was emptied and the catheter was removed at the end of the surgical procedure, allowing the patient to void spontaneously. Penile block with 0.25% bupivacaine instead of caudal analgesia was used in all patients, to avoid drug induced urinary retention. Rectal acetaminophen was given as post-operative analgesia.

The early evaluation includes observation for bleeding, infection, and bladder instability, accidental forcible slippage of the stent, painful voiding urinary retention and extravasations. Patients were then examined weekly in the first month then monthly in the first 3 months and when necessary thereafter. For both groups most of the fistulae were located in proximal shaft and mid shaft regions (44 patients) of total 74 patients (table 1), (table 2).

Results:

The median range of the age of the patients was 6 (4-7) years; the post-operative complications in both groups are given in (table 3).

Regarding the stented group, 3 patients developed bladder instability during the first 48 hours of surgery and disappeared with hot sponges and pain control. None of the stented patients developed urinary retention or extravasations of urine, while unstented group had both urinary retention in 7 patients, extravasation in 6 patients and bladder instability in 1 patient only. Patients with urinary retention and/or extravasations were managed by urethral catheterization, without anesthesia, for 2-5 days and no cystostomy were required. From 13 patients who required urethral catheterization, 7 of them developed fistula; the correlation between fistula formation and urethral manipulation was

statistically significant ($p < 0.001$). Urinary retention is defined as full bladder on physical examination associated with pain. Urinary retention was diagnosed the night after surgery (few hours post operatively) in one patient; and on the first day (within 24 hours) in remaining 6 patients.

Urinary extravasations was noted on the first day in one patient, on the 2nd day in

2 patients and on the 3rd day in 2 patients, no retention or extravasations was diagnosed after the 3rd day of surgery. Although the reoperation rate was nil in the stented group; while it was 20.5% for the unstented group, the difference was statistically not significant ($p > 0.05$).

Table (1): Site of fistula in stented group

Site	number	%
Penoscrotal	4	10%
Proximal penile	8	20%
Mid penile	21	52.5%
Distal penile	7	17.5%

Table (2): Site of fistula in unstented group

Site	number	%
Penoscrotal	7	20.5%
Proximal penile	14	41.1%
Mid penile	9	26.4%
Distal penile	4	11.7%

Table (3): Post-operative complications

	Bladder spasm	Urinary retention	extravasation
Stented group	3 (7.5%)	0	0
Unstented group	1 (2.9%)	7 (20.5%)	6 (17.6%)

Table (4): Relation of postoperative urethral manipulation and fistula formation.

	Urethral manipulation	Fistula formation
Stented patients	0%	0%
Unstented patients	13(38.2%)	7(20.5%)

Discussion:

Rabinwitz⁽¹⁹⁾ used an unstented Hypospadias repair in 59 boys, achieving excellent functional results with few complications. Buson et al⁽¹⁸⁾ evaluated the surgical outcome of stented and unstented Hypospadias repair in 102 patients, overall of 65 patients in whom stent was used, three (4.6%) had complications, in contrast to a complication rate of 18.9% in the unstented group.

Hakim et al⁽¹⁷⁾ in a multi-center study reported excellent results in (97%) of 339 fistula repaired patients the results were not affected by urethral catheterization. Minevich et al⁽²⁰⁾ reported a single institution of 201 stented fistula repair, the total reoperation rate was minimal (1.5%) and compared favorably with unstented repairs. The authors thought that urethral stenting decreased the risk of fistula formation while adding only minimal morbidity.

Controversy remains about the indication for urethral stents in fistula repair.

The present results indicate that, although fistula repair can be done without stent, the complication rate is lower when a stent is left indwelling for 1 week. The overall reoperation rate (9.4%) was higher than that in other published series of repaired fistula, but this partly explained by the high (20.5%) reoperation rate in unstented group.

Early complications were significantly more common in unstented patients, nearly half of unstented patients developed dysuria and catheterization was required in (38.2%) of patients because of retention and or extravasations. Catheterization was possible in these patients and

cystostomy was not required, this could be attributed to good lubrication thus preventing the formation of the false passage by the catheter, in contrast, The only catheter discomfort in the series was bladder instability; in 3 patients in stented group (7.5%). There was no infection, migration or forcible catheter slippage.

Stecker et al⁽¹³⁾ evaluated the unstented fistula repair in babies; catheterization was not used and was not necessary. The lack of a stent was not associated with any urinary retention. Buson et al⁽¹⁸⁾ reported a (19%) retention rate in unstented fistula repair.

The use of the stent in fistula repair significantly eliminates the risk of urinary retention, extravasations and subsequent urethral manipulation, the last has been regarded as a potential cause of fistula formation⁽¹⁸⁾. In the present study there was a significant correlation between urethral manipulation for urinary retention and or extravasations, and fistula formation, of the 13 patient who required urethral catheterization 7 developed urethrocutaneous fistula (table 4).

Conclusions:

The overall incidence of discomfort including bladder spasms dysuria, retention, extravasations and subsequent urethrocutaneous fistula were significantly lower in the stented than the unstented patients so the use of a stent in hypospadias urethrocutaneous fistula repair is advantageous.

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