

Comparative study between the usage of transurethral diversion and suprapubic cystostomy after distal hypospadias repair by tubulerized incised urethroplasty

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الخلاصة

هذه دراسة مستقبلية مقارنة لنوعين من الطرق الجراحية المستخدمة والمرافقة لعمليات تجميل وتقويم الاحليل والقضيب لدى الاطفال المصابين بتشوهات المبال التحتاني المتطرف وانحراف القضيب الولادي .

حيث تتضمن هذه الدراسة مقارنة نوعين من طرق بزل المثانة بعد اكمال عملية سنودكراس لتجميل وتقويم الاحليل حيث تم تقسيم المرضى والبالغ عددهم ثمانية واربعون مريضا وبالتساوي الى مجموعتين حسب الطريقة المستخدمة في بزل المثانة . المجموعة الاولى (24 مريضا) حيث تم استخدام طريقة تفوية المثانة والمجموعة الثانية (24 مريضا) حيث استخدمت فيها طريقة بزل المثانة البسيط عن طريق الاحليل وباستخدام صوندة المعدة .

أظهرت هذه الدراسة بان استخدام طريقة بزل المثانة البسيط عن طريق الاحليل وباستخدام صوندة المعدة كانت أكثر فعالية من طريقة تفويه المثانة ،حيث لم يصاحبها مشاكل وعقائيل بعد العملية بالاضافة الى سهولة العناية المنزلية من قبل الوالدين بعد الخروج من المستشفى اما طريقة تفويه المثانة فإظهرت هذه الدراسة مصاحبتهما لنوعين من المشاكل والعقائيل بعد العملية وهما تهيج المثانة والم اسفل البطن بنسبة (12.5 %) وكذلك ناسور الاحليل بنسبة (4.17 %) اضافة الى صعوبة تقبلها والتكيف معها لدى اغلب الاطفال وصعوبة العناية المنزلية بها من قبل والدي الطفل .

Abstract

Objective:-to compare the usage of transurethral urinary diversion and that of suprapubic cystostomy after distal shaft hypospadias repair by tubulerized incised urethroplasty.

Method: - between December 2008 to October 2010 a 48 boys who had primary hypospadias under went surgical repair by tubulerised incised urethroplasty, they divided into two groups according to the type of urinary diversion that used post operatively; group A with suprapubic diversion and group B with transurethral nasogastric tube diversion.

Result: - 48 boys aged between 3-21years with hypospadias had divided in to two equal groups according to type of post operative urinary

diversion (suprapubic and transurethral), the distribution of hypospadias type similar in both groups.

Urinary diversion was more effective, post operative complications were rare, no trigon irritation and excellent cosmetic result (100%) were recorded following transurethral diversion with nasogastric feeding tube, conversely the creation of suprapubic cystostomy increased incidence of trigon irritation (12.5%) and fistula formation (4.17%).

Conclusion: - transurethral urinary diversion was very effective and gave better result than suprapubic cystostomy in distal type hypospadias repair.

Introduction

Hypospadias is defined as incomplete virilisation of the genital tubercle, leading to an ectopic opening of the urethra on ventral aspect of the penis, anywhere from the glans to the perineum with or without ventral curvature and ventral prepuce defect (1).

The incidence of hypospadias has been calculated to be 3.2 in 1000 live male births (2).

Surgery is the only modality of treatment, there are hundreds of procedures described for hypospadias repair, some are suitable for distal types and some for various degrees of proximity (3).

The aim of surgery is to achieve straight penis, with meatus at the tip, uninterrupted urine flow, good cosmesis and self confidence of the child.

Among the choices of the procedures for distal type hypospadias are plate preservation procedures like incised plate urethroplasty and MAGPI, whereas for proximal hypospadias is extended application of incised plate urethroplasty, various flaps and graft urethroplasties in one or two stages (1).

The urinary diversion from the site of newly created urethra is an important consideration in outcome of hypospadias repair, this can be accomplished in several ways, including temporary supra pubic catheter drainage, or via aperineal urethrostomy, an alternative method of diversion, particularly in the repair of distal urethral lesions is the use of Teflon or silastic catheter or feeding tube through the repaired urethra to the bladder (4), post operative urinary drainage has undergone remarkable transformation in the recent years, the most remarkable finding was the limited use of supra pubic diversion and increased the use of transurethral

drainage (5).also catheterless distal penile hyposadias repair was advocated by some authors (6).

Materials and methods

Between December 2008 to October 2010 a total of 48 boys had primary hypospadias underwent surgical repair by tubulerised incised urethroplasty in Alsader teaching hospital in the department of plastic and reconstructive surgery , ages of the patients ranging between 3- 21 years ,eighteen of them (37.5%) had coronal, twenty(54.16%) had sub coronal, and eight (16.66%) had distal penile type.

All patients were operated under general ansthesia, under optical magnification, a 1:200000 adrenaline was given for haemostasis, and a straight penis was confirmed by performing an artificial erection.

A U shaped incision was made extending along the edges of the urethral plate to healthy skin 2 mm proximal to the meatus .the urethral plate then incised in mid line from the hypospadias metaus distally, incised plate then tubulerized over 8 Fr stent with supra pubic urinary diversion in 24 patients, and over 8-12 nasogasteric tube in 24 cases, using 6/0 interrupted poly glycolic suture , the the neourthra was covered by dartos flap harvested from subcutaneous tissue of dorsal prepucial skin.The stent used 8 fr and the nasogasteric tube ranging (8-12) was anchored to the tip of glans of the penis with single non absorbable stitch to prevent spontaneous dislodgement.Each method of urinary diversion was employed for seven to fourteen days, intraoperative dressing with safratool impregnated antibiotic followed by twice daily application of chloromphinicol ointment. Other variable such as type of hypospadais, surgical material, antibiotic and follow up were similar between both groups(size 6/0 poly glycolic suture and combination of amikacine and ceftrixon were the antibiotic of choice commenced intraoperativly and continued for 5 days after operation.)

Results

48 children had urinary diversion following hypospadais repair by Tubulerized incised urethroplasty, divided in to tow group; group A urinary diversion by supra pubic catheter 24 (50%), and group B

24(50%) by transurethral nasogasteric tube diversion. They were aged between 3 years and 21 years as shown in table (I)

Table I: ages of the patients in group A and B

Age	Total no.	Group A	Group B
3-6	24	12	12
7-12	16	8	8
13- 21	8	4	4

Hypospadias was mainly an isolated lesion in both groups. The distribution of hypospadias as coronal, sub coronal and distal shaft were similar in both groups, as shown in table II

Table II: types of hypospadias in group A and B

Type of hypospadias	No. in group A	%	No. in group B	%
coronal	8	33.33	8	33.33
Sub coronal	10	41.67	10	41.67
Distal shaft	6	25	12	25

The complications result of our study was shown in table III.

Table III) the complications in group A and B.

variable	Group A	%	Group B	%
No. of children	24	50%	24	50%
Satisfactory urinary diversion	21	87.5%	22	91.69%
Painful trigon irritation	3	12.5%	1	4.17%
Wound infection	1	4.17%	0	/
Urethra cutaneous fistula	1	4.17%	0	/
Urethral stricture	0	/	0	/
Metal stenosis	1	4.17%	0	/
Accidental distribution of repair	0	/	0	/
Satisfactory cosmetic result	20	83.33%	24	100%

Trans urethral feeding tube gave amore effective urinary diversion in 22 (91.67 %) children, unlike 21 (87.5%) children recorded with supra pubic diversion ; this because 3(12.5%) children who had suprapubic cystostomy experienced leakage of urine by the side of stent that

resulted in wound contamination due to suprapubic catheter blockage at the immediate post operative period. Similar problem occurred in 2 (8.33%) of children who had transurethral diversion after 72 hours post repair. Bladder discomfort and painful trigon irritation was distressing in 3 (12.5%) children with supra pubic diversion, this resulted in earlier removal of supra pubic catheter in 2 (8.33) children and subsequent development of urethrocutaneous fistula by one of them (4.17%).

This also influenced wound infection rate recorded following supra pubic diversion in one child (4.17%) In both type of diversion an anchorage of tube to abdominal wall or glans of the penis was done, despite this one child with transurethral diversion pulled on the tube which resulted in accidental removal of catheter in the the 3rd day but without squally.

Meatal stenosis in counter in one case (4.14%) of suprapubic diversion, Although no serious post operative morbidity was recorded in both types of diversion, post repair cosmetic result were excellent in 24 (100%) with transurethral feeding tube diversion compared to 20 (83.33%) with supra pubic diversion.

Discussion

Traditionally, almost all authorities prefer to use some form of urinary drainage during the period after urethroplasty, but post operative urinary drainage under gone a remarkable transformation in recent years, the most remarkable finding is the limited use of suprapubic diversion and increased usage of transurethral drainage with a stent moving to more simple form of urinary drainage and patient post operative care has led to use of stent and splint, enabling the patient to void directly (3).

The second remarkable finding is the move to catheterless repair for more distal type of hypospadias (6). The importance of urine diversion after hypospadiase repair can not be over emphasized because of the necrotizing and macerating effect of urine on raw surface, and the possibility of introducing infection to the wound which would result in break down of repair (7)

Finding in our study corresponded with earlier reports revealed that transurethral urinary diversion was a more cost effective and convenient means than suprapubic diversion after hypospadias repair in children.

Transurethral feeding tube gave more effective urinary diversion (91.67%) of the patients unlike the (87.5%) recorded with suprapubic diversion, this because 3 children (12.5%) who had suprapubic cystostomy experienced leakage of urine by the side of the stent that resulted in wound contamination due to supra pubic catheter obstruction at immediate post operative period, similar problem occurred in 2 patients (8.33%) of children who had transurethral diversion after 72 hours post repair.

Bladder pain and discomfort were experienced mainly by children, who had suprapubic diversion (12.5%), In other authors they experienced trigon irritation in (40%) , among those used suprapubic diversion , this mainly because catheter balloon impinging on the trigon resulted in bladder spasm and pain ,while in our study we used tube without balloon triggered lesser trigon irritation.

Methods aimed to alleviating trigon irritation described by other authors(8) were tried without success which led to early removal of catheter that increased complication rate, this compatible with other study as we had one urethracutenous fistula in our patients among the children who experienced painful bladder with early post operative catheter removal.

In our study there is one case of infection in group A resulted in wound deheshiness of outer layer, treated conservatively without squally, other authors (9) reported that the feeding tube being foreign body could be complicated by infection irrespective of type of diversion.

Some authors reported children restricted to bed was more demanding in those with transurethral tube(10), while in our study ,bed restriction was advise in all patients because we use non self retaining catheter in both groups,like what we recorded in this study earlier authors (11) didn't record any significant difference in the rate of urethrocutaneous fistula, metal stenosis and urethral stricture between children who had suprapubic and those who had transurethral diversion after hypospadias repair. However, cosmetic result of the penis after repair assessed by combining visual and serial photography assessment as done by other authors(12),during follow up in the surgical out patients clinic was better for transurethral diversion ,consequently of the 24 children with transurethral diversion cosmetic result was excellent in 24(100%),where as

it was excellent in 20(83,33%)of 24 children who had suprapubic diversion, the psychological impact of having a supra pubic catheter can not minimised particularly in the developing children and adolescent who is mixing with peers at school as any thing that seen different has the potential to change and shape self imaging and psychological health (13).

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