Comparative study between classic Snodgrass (TIP) and glans approximation for repair of hypospadias

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Abstract

Background:Hypospadias is one of the commonest congenital anomalies of the male genital system, affecting approximately 1 of every 300 , In addition to the abnormal position of the urethral meatus on the ventral penile surface, it may also be associated with ventral curvature of the penis (chordae) , There are many techniques which have been used to extend the urinary channel to the correct location. Today the most common operation, known as the tabularized incised plate or "TIP". This procedure can be used for all distal hypospadias repairs , Modified glanuloplasty is a modified technique for glanuloplasty in cases repaired with TIP.

Aim of the work: To report the outcomes in a large series using a tubularized incised plate (TIP) urethroplasty (Snodgrass) and compare them with those using glans approximation (wingless glanuloplasty) .

Methods:The study was conducted on (60) patients with penile hypospadias with different degree (coronal & DPH & MPH) ,Our comparative study contained two groups and two techniques for repair

Group [A] : 30 patients were repaired with (TIP)

Group [B] : 30 patients were repaired with (GAP)

A detailed history and a careful general examinationwas carried out for all patients. Local examination was done to define the following items ;Shape of the glans penis ,Presence of the prepuce (circumcised or not) , Presence of chordae and/or rotation ,Caliber and direction of urinary stream , Position and size of the meatus , Associated anomalies, Routine laboratory investigations will be done for all cases.

Results: From march 2013 to march 2014 (60) children's were included in this study With age ranging from 8 m to 12 years With mean age 5.5 ±.9 years for (A) With mean age 5.3±.8 years for (B) , As regard types of hypospadias About 18 children's (30%) were presented with coronal hypospadias and 28 children's (46.7%) were presented with DPH and about 14 children's (23.3%) were presented with MPH,Blood loss was higher in group (a) than group (b) which was statistically significant,As regard operative time comparison between group (A) and group (B) we found that the mean operative time for group (A) was 79±5 Min , And the mean operative time for group (B) was 65±5 Min which was statistically significant .Successful cosmetic and functional results were reported in 26 (86.7%) patients for group (A) but were reported in 27 patients (90%) for group (B) . Failure rate was reported in 4 (13.3 %%) patients for group (A) in form of glandular dehiscence in two patients (6.6%) that repaired after 3 months with the same technique without recurrence and sub coronal fistula reported in another 2 patients (6.6%) that repaired using multilayer closure after 3 months , Failure rate was reported in 3 (20 %) patients for group (A) in form of glandular dehiscence in one patient (1.3%) that repaired after 3 months with the same technique without recurrence and sub coronal fistula reported in another 2 patients (6.6%) that repaired using multilayer closure after 3 months . The success rate and failure rate data between group (A) group (B) was statistically insignificant .

Conclusion:Approximated glanuloplasty has many advantages, lower operative time, lower blood loss, no need for tourniquet and is a technically easy, reliable, for the repair of a very select group of patients with hypospadias
Key words:Hypospadias , Snodgrass , Glans approximation, Tabularized Incised plate

Introduction

Hypospadias is one of the commonest congenital anomalies of the male genital system. Hypospadias, defined as an association of three anomalies of the penis: (1) an abnormal ventral opening of the urethral meatus that may be located anywhere from the ventral aspect of the glans penis to the perineum,(2) an abnormal ventral curvature of the penis (chordae), (3) an abnormal distribution of foreskin with a "hood" present dorsally and deficient foreskin ventrally [1], The reported incidence in the USA in 2001 was 1 per 200–300 live male births [(2),] Hypospadias can be classified as distal (glandular, coronal, sub coronal), middle (midpenile), proximal (posterior penile, penoscrotal, scrotal, perineal) [(3)]. The subcoronal position is the most common. Micropenis is uncommon except with severe cases associated with chordae[(4)] Characteristically, the foreskin on the ventral surface is absent while the foreskin on the dorsal surface is abundant and has the appearance of a dorsal hood [(5)] , Chordae is caused by atrophy of the corpus spongiosum, fibrosis of the tunica albuginea and fascia over the tunica, or tethering of the urethral plate onto the corpora cavernosa[(6)], Chordae becomes more apparent and might only be noticeable with penile erection [(7)] . Cryptorchidism and inguinal hernia are the most common anomalies associated with hypospadias [(8)], Many procedures have been designed for the repair ofhypospadias . The most common procedures include the meatal advancement-glanuloplasty, glans approximation procedure , and tubularization following incision of the urethral plate[(9-11).]Successful hypospadias surgery incorporates the following steps: orthoplasty, urethroplasty ,meatoplasty, and glanuloplasty

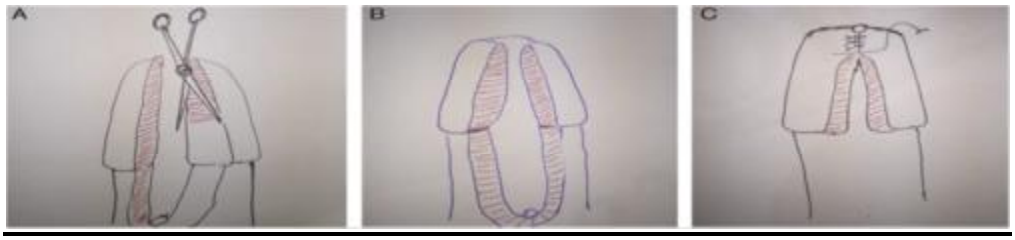
Early complications of hypospadias repair include bleeding, wound infection, wound dehiscence, infection, and urinary retention [(12)],Late complications include urethrocutaneous fistula, meatal stenosis, persistent chordae, urethral stricture, urethrocele[(13-14)]

Patients and methods

Study design: A Prospective case control studywas conducted in the urology department at Sohag University HospitalFrom march 2013 to march 2014 .The study was conducted on (60) patients with penile hypospadias with different degree (coronal & DPH & MPH) who fulfill the following inclusion criteria.Either distal or mid penile hypospadias with grooved glans& healthy urethral plate.We excluded from the study the patient who had1:proximal types of hypospadias ,Previous hypospadias repair ,flat glans ,shallow urethral plate , written informed consent was obtained from all patients.A detailed history and a careful general examination was carried out for all patients. Our comparative study contained two groups and two techniques for repair

Group [A] : 30 patients wererepaired with (TIP)

Group [B] : 30 patients wererepaired with (GAP)



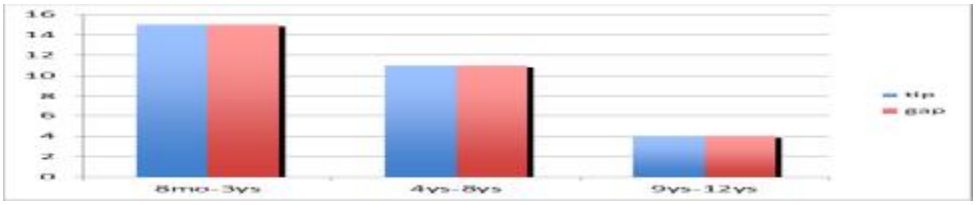
Duration of follow up was (1 year) , The items of assessment included : Degree and duration of postoperative edema , Presence of complications of the repair , Evaluation of the late results postoperatively by assessing the cosmetic appearance of the penis and meatus orientation

Data Analysis

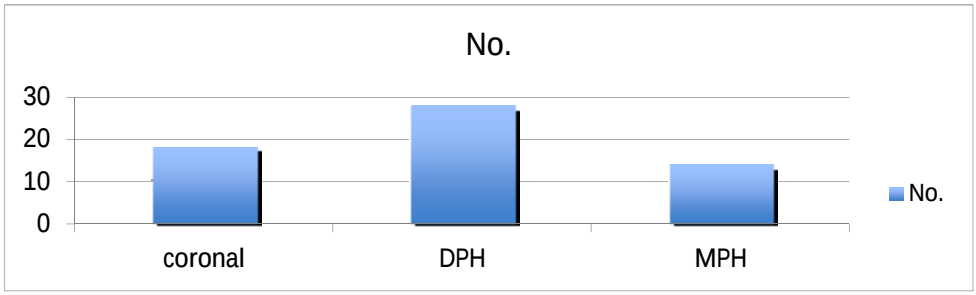
Data expressed as mean, standard deviation (SD), number and percentage. Mean and standard deviation were used as descriptive value for quantitative data. Student t test was used to compare the means between two groups, For all these tests, the level of significance P-value can be explained as (Significance $P < 0.05$)

Results

From march 2013 to march 2014 (60) children's were included in this study With age ranging from 8 m to 12 years With mean age 5.5 ±.9 years for (A) With mean age 5.3±.8 years for (B) With no significant difference between the two groups



As regard types of hypospadias About 18 children's (30%) were presented with coronal hypospadias and 28 children's (46.7%) were presented with DPH and about 14 children's (23.3%) were presented with MPH



Types of hypospadias cases done by two groups of operations

	coronal	DPH	MPH
(TIP)	9	14	7
(GAP)	9	14	7

As regard Blood loss : Blood loss in gm using gause weighted pre &post operative

	TIP	GAP	P-value
Blood loss	10+2gm	5+2gm	0.05

Blood loss was higher in group (a) than group (b) which was statistically significant

As regard Operative time

	TIP (MIN)	GAP (MIN)	P-value
Coronal	77±5	62±3	0.02
DPH	79±5	66±5	0.01

As regard operative time comparison between group (A) and group (B) we found that the mean operative time for group (A) was 79±5 Min , And the mean operative time for group (B) was 65±5 Min which was statistically significant .

Early & late post operative complications

Complications	TIP	GAP	P value
Hematoma	4	2	0.44
Catheter blockage	2	2	1
Infection	2	1	0.6
Meatal stenosis	1	0	0.65
Fistula	2	2	0.44
Glans dehiscence	2	1	0.6

Minor complications reported like edema in all patients(A&B) that resolved completely within 2 weeks, Meatal stenosis reported in 1 case in group (A) (1.3%) but no meatal stenosis reported in group (B)which was statistically insignificant ,Penile hematoma reported in 4 cases in group (A) (13.3%) but reported in 2 cases in group (B) (6.6%) which was statistically insignificant,Catheter blockage reported in 2 cases in group (A) (6.6%) but reported in 2 cases in group (B) (6.6%) which was statistically insignificant , Infection reported in 2 cases in group (A) (6.6%) but reported in 1 case in group (B) (1.3%) which was statistically insignificant , Fistula formation occur in 2 cases in group (A) (6.6%) but reported in 1 cases in group (B) (1.3%) which was statistically insignificant , Glans dehiscence reported in 2 cases in group (A) (6.6%) but reported in 1 case in group (B) (1.3%) which was statistically insignificant

Success & failure rate

Successful cosmetic and functional results were reported in 26 (86.7%) patients for group (A) but were reported in 27 patients (90%) for group (B) . Failure rate was reported in 4 (13.3 %%) patients for group (A) in form of glandular dehiscence in two patients (6.6%) sub coronal fistula reported in another 2 patients (6.6%)

	TIP (A)	GAP(B)	P-value
Success rate	26(86.7%)	27(90%)	0.7
Failure rate	4(13.3 %)	3(10%)	0.7

Failure rate was reported in 3 (20 %) patients for group (A) in form of glandular dehiscence in one patient (1.3%) and sub coronal fistula reported in another 2 patients (6.6%) . The success rate and failure rate data between group (A) group (B) was statistically insignificant.

Discussion

Hypospadias is one of the commonest congenital anomalies of the male genital system. In addition to the abnormal position of the urethral meatus on the ventral penile surface, it may also be associated with ventral curvature of the penis (chordae) [15] ,The longitudinal split of the urethral plate described by Snodgrass represents significant progress in urethral plate-preserving surgery, permitting tension-free tabularization of the urethral plate to form a neourethra of adequate size. The technique is now widely accepted[16] Wingless glanuloplasty was first described by Zaontz, who created this technique for repair of 24 patients with glanular and coronal hypospadias.[17] The idea of glans approximation (wingless glanuloplasty) arises from the development and anatomy of the glandular urethra by dorsal growth of the urethral plate into the genital tubercle with ventral growth, fusion of the urethral folds, and also the paucity of glandular tissue ventrally over the urethra.[18] Eldahshoury et al. also used glans approximation technique to repair 92 cases. [19] ,Snodgrass had reported glans dehiscence in 9 patients from 551 patients operated with TIP.[20] ,. M. ZakiEldahshoury had only 2 cases with glandular disruption from 92 cases repaired with glans approximation [19] in comparison to our result only one case reported with glans disruption from 30 cases repaired with (GAP)

In our study the rate of fistula formation in group (A) was (6.6%) between 30 patients which represent an encouraging result and the rate of fistula formation in group (B) was (3.3%) between 30 patients which represent an encouraging result . Snod grass had one urethrocutaneous fistula from 33 cases repaired with (TIP) [21] Zaontz had used same technique (GAP) for repair of 24 patients and reported 1 case with distal glanular fistula.[22]

Conclusion

Approximated glanuloplasty has many advantages, lower operative time, lower blood loss, no need for tourniquet and is a simple procedure for the hypospadiologist

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