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Research Article

Outcomes of Snodgrass (TIP) versus Slit Like Adjusted Mathieu (SLAM) in distal penile hypospadias repair in pediatrics

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Abstract

Background: Hypospadias is a common anomaly in males. Snodgrass tubularized incised plate (TIP) and Mathieu repair are widely accepted in the treatment of distal hypothyroidism. The purpose of this study is to compare TIP results with SLAM to treat primary positive pediatric positive. **Methods:** A prospective study was conducted involving 50 cases, including a distal primary localized penile hospital undertaken at Pediatric unit, Minia University Hospital at period from January 2020 to January 2022. The cases were divided into two identical groups. In Group I, 25 cases were exposed to the tip. In Group II, 25 cases were exposed to the slums. The parameters evaluated were postoperative hemorrhage, edema, infection, f-foramen formation, flesh stenosis, urethral stenosis, repair and complete disruption of amblytic disease. **Results:** There was considerable operating time in group I (94.46 min ± 7.44, 65.64 min ± 8.76 compared to p <0.0001). regarding the incidence of post-operative complication, no significant difference. there was significant difference in incidence of meatal stenosis (16% and 0% respectively), P 0.037. **Conclusion:** Both tip and slam repairs had good outcomes and minimal complication rates. Both are safe, reliable, and reproducible techniques for repairing distal subsyndrome.

Keywords: Outcomes, TIP, Hypospadias, pediatrics

Introduction

Hypospadias is considered a common male genital tract anomaly, accounting for nearly 1 per 300 male newborns [1].

Several surgical techniques are described. One-stage and two-stage procedures are described, where one-stage repair is currently preferred [2].

One-stage procedures are Snodgrass or tabularized incised plate (TIP), and the modified Mathieu procedure (MMP) was the most commonly used (3)

In 1928 "Mathieu" was described as a surgical technique to repair distal penile or anterior hypospadias in a single operation. in 1932 the first results of this technique were reported. Since then, the operation has become popular due to its successful results. TIP was first described by Snodgrass [4] in 1994.

The main drawback of the original Mathieu technology is the final appearance of the meatus. The technology has lost popularity over the past 15 years with the advancement of TIP technology due to a slit-like

meatus that can be achieved with appropriate technology.

Ahmed T. Hadidi has been modifying Matthew Technology since 1986. Over the years, modified Matthew (1992-2002) and inverse Y-V modified Matthew (2003-2004) were performed with Sleeping Matthew Technology (SLAM) (2005).

Slam technology avoids the drawbacks of the classic Matthew (non-terminal flop). The aim is to use the best manipulation that consistently creates excellent functional results for penis with low complication rates [5,6].

Therefore, the present study aimed to compare outcomes of TIP versus SLAM in distal hypospadias repair regarding post-operative outcome.

Patients and Methods

This study consisted of 50 patients diagnosed with distal hypospadias who underwent the first procedure for hypospadias during the period from January 2020 to January 2022. Patients were divided into two identical groups. TIP was performed in group I, and SLAM in group II.

The patients were diagnosed with distal primary penile hypospadias, aged 6 months to 18 years. Cases with other congenital anomalies were excluded.

Patients were admitted to the hospital on same day of operation, fasting for 3 to 6 hours before surgery according to their ages. They were anesthetized by to general anesthesia. and were given caudal anesthesia to reduce the dose of general anesthesia and relieve postoperative pain

In group I, cases had undergone TIP. The incision was positioned 2 mm away from the meatus, a u-shaped incision if necessary, was made in a location that preserved healthy skin. The penis is detached from the scrotum at the penoscrotal junction. The incision made from within the meatus to the farthest point of the plate was the primary step in the surgical procedure. This cut goes through the top layer of the tissue covering the plate and goes deep into the connective tissues beneath it, reaching the corpora cavernosa.

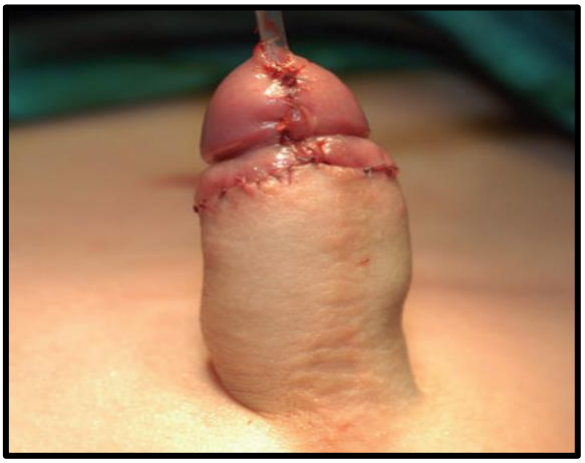

Figure (1): Final appearance of TIP

<u>In group II, cases had undergone SLAM:</u>

Under general anesthesia and caudal block, a 5/0 Vicryl traction suture is placed through the tip of the glans. at the base of the penis a tourniquet is applied and an artificial erection test is performed

1. Careful evaluation of the penis was carried out

If the native urethral meatus is narrow, it is incised proximally to create a wide spatulated meatus. The thin and paper-like urethra proximal to the meatus was incised

to reach healthy urethral tissue covered with corpus spongiosum. The degree of glans clefting (grooving) is evaluated. By the aid of an appropriate catheter according to the caliber of the proximal normal urethra and the age of the patient, the limits of the final meatus was marked. the lateral borders of the groove are marked and will constitute the roof of the neourethra if the glans is clefted (grooved), a narrow strip (5 mm in width) was donec if the glans is flat or small, Providing a sufficient extent for the glanular appendages. A catheter of the correct size, based on the diameter of the urethra , is inserted into the bladder [7

2. Flap design

the edges of the urethral plate are outlined. In individuals with a spherical flat glans, extra care was taken to form wide glanular wings, and the urethral plate could be drawn as narrow as 3 mm in width.

the narrow urethral plate is balanced by a wider flap from the parameatal flap located closer to the meatus. At the end of the urethral plate, the 2 incisions come together, enabling the glanular wings to move freely and wrap around the neourethra, resulting in a slit-like meatus without any sutures. The incisionof the flap starts at the coronal sulcus using a scalpel or scissors and extends deep into the glans to form large glanular wings. Proximally, by sharp scissors, the flap was elevated. It is important to ensure that the dartos fascia and part of the corpus spongiosum are included when performing the flap. The redundant epithelial was removed from the angle of the flap to reduce the chances of fistula formation at this common fistula site [7].

Figure (2): Perimeatal flap

3. Urethroplasty

The flap is stitched to the tip of the glans, 2 mm away from the end of the incision in the glans. The goal is to ensure that the meatal edges remain free of any sutures and to achieve a smooth, nearly normal meatus. A continuous subcuticular running polygla-ctin 6/0 suture on a cutting needle was the standard suture for urethroplasty. The subcuticular suture is continued until the distal stitch is reached, and then the surgeon returns with same suture as a running suture approximating the flap fascia to the depth of the glans and the shaft of the penis (double breasting). Thus, there will be a single knot for the whole 2 layers. In older children and adults, the author inserts a third layer with the continuous suturing approximating the wall of the neourethra to the glanular wings [7].

Figure (3): Urethroplasty

4. **Meatoplasty and glanuloplasty**

A small v is excised from the apex of the parameatal flap, and the 2 edges of the final meatus are sutured together to the center of the v, creating a slit-like meatus using a single 7/0 polyglactin stitch. No additional sutures are required in the meatus. The glanular wings are c using interlosed rupted polyglactin 7/o transverse mattress sutures. The final wound is securely closed using a continuous 7/0 polyglactin mattress stitch.[7].

After surgery all cases were discharged. Postoperative instructions were provided, and sufficient information was given to parents. All patients received postoperative medication. The dressing was removed at the o utpatient clinic three days after surgery. The cat heter was removed on the 7th day after surgery.

In all cases, follow-up was routinely performed at outpatient clinics , evaluations were done, and complications were reported (infection, oedema, Fistula formation, narrowing of the meatus, narrowing of the urethra, complete failure of the repair, and bleeding after the surgery).

Figure (4): Final appearance

Statistical analysis

Data were entered and analyzed using the SPSS program (Social Science Statistical Package) software version 19. Descriptive statistics were presented for numerical data as mean, standard deviation, and minimum and maximum values , and categorical data were presented as numbers and percentages.

Results

The demographic and clinical characterristics of the patients who underwent the study are presented. In Table1. The mean age was 24 months (range: 6-132 months) in group I (TIP) and 29 months (range: 6-156 months) in group II (SLAM). Type of hypospadias was subcoronal hypospadias (64%), coronal (32%), and glanular (4%) in group I while group 2 (SLAM) has (68%) cases of subcoronal and (32%) cases of coronal type.

The associated anomalies included 5 cases with undescended testis (4 in group I and 1 in group II), with insignificant differences. The mean operative time in group I was less than that of group II (65.64 minutes ± 8.76 versus 94.46 minutes ± 7.44) with a significant difference.

The only significant difference between the two groups was the occurrence of meatal stenosis, with no other notable differences in post-operative outcomes (table 3). One case of infection occurred after surgery in group I and one case in group II, which was treated with both topical and systemic antibiotics.

Fistula was observed in 2 cases (8%) in group I and 2 cases (8%) in group II. In group II, two cases of fistula were treated conservatively, with spontaneous closure of the fistula. In group 1 all cases need another operation 6 month after the primary repair.

Cases of complete disruption and urethral stricture were not reported in either group. Meatal stenosis was observed in four cases within group 1 and none within group II. All cases of regular dilatation and improvement were observed, except for one case that required meatotomy 6 months after the surgery.

Table (1): Characteristics of the studied Patients preoperative

Characteristics	Group I (n=25)	Group II (n=25)	P-value
Age (months):			
Range	6-132	6-156	.884
Median	24 (15-48)	29 (12-48)	
Type of hypospadias: **Coronal** **Subcoronal** **Glanular**	 8 (32%) 16 (64%) 1(4%)	 8(32%) 17 (68%) 0 (0%)	0.11
Associated anomalies: **Undescended testis**	 4(16%)	 1 (4%)	0.2

Table (2): Operative time in the studied patients

Operative time (min)	Group I (n=20)	Group II (n=20)	P-value
Range	60-90	90-115	< 0.0001*
Mean ± SD	65.64±8.76	94.46±7.44	

* Significant difference

Table (3): complications in the studied patients post-operative

Characteristics	Group I (n=25)	Group II (n=25)	P-value
Early postoperative bleeding	0 (0%)	0 (0%)	
Postoperative infection	1 (4%)	1 (4%)	0.9
Edema	4(16%)	3(12%)	0.6
Meatal stenosis	4(16%)	0(0%)	0.037*
Fistula	2(8%)	2 (8%)	>0.99
Complete disruption	0(0%)	0(0%)	
Urethral Stricture	0 (0%)	0 (0%)	

Discussion

Surgical repair of hypothyroidism has a history of over ten years. Over three hundred surgical interventions with multiple differences were explored to repair subcytes.

Such repairs should be easy, easy to learn, and easy applicable in most cases, and compensate for low singlelevel complication Rates with good cosmetic outcomes.

If possible, a single stage repair of hypospadia s is desirable [8].

Mathieu and TIP techniques are commonly us ed in the current popular Techniques of distal hypospadias.

They were the crucial components of neurourethra formation with low complication rates, a n acceptable cosmetic appearance, and a favorable prediction.

In this study, we determined the operative time by measuring the duration from the start of the surgery when we inserted the traction suture on the glans until we applied the dressing. The mean operative time was significantly different between both groups as it was 65.64 ± 8.76 minutes in group I (TIP), while in group II (SLAM) it was 94.46 ± 7.44 minutes, with 30 minutes as a mean difference. The variation in the duration of the surgical procedure might be consumed in urethroplasty.

In agreement with our findings, Javid et al.,[9] who operated 30 cases of TIP using Dartos flap with a mean operative time: 62 ± 8.72 minutes while he was comparing the results of TIP to only island flap in the repair of mid and posterior penile hypospadias. Also, Hamid et al., 2014, [10] reported that the mean operative time in 52 cases that did TIP repair was 63.7 ± 14.3 (45-90) minutes, while it was 95.0 ± 19.1 (70–125) minutes in 48 cases which did Mathieu repair.

Post-operative infection was not statistically significant between the two groups in the current study.

Hamid et al.,[10], reported that wound infection had occurred in 19.2% of cases \while in a study by Saleem et al., [11] it was 6%.

In the present study, 8% of cases in both groups had a urethrocutaneous fistula was. In a recent study by Oztorun K, 2017[12] reported that the incidence of urethrocutaneous fistula in cases that did TIP was 14.2% while the incidence of fistula in cases which did Mathieu was 11.4%.

Four cases 16% in group I versus 0% in group 2 (SLAM), reported meatal stenosis in the present study with significant difference. The adhesions between the two sides of the incised plate can lead to a narrowing of the meatus, which may contribute to the development of fistulas.[13]. To reduce the rate of meatal stenosis keep the meatus one stitch brief of the whole closure[14].

in HoSeong Bae, 2014 [15], meatal stenosis had developed in 24% in cases that did TIP, and did not occur in any cases of Mathieu.

As regarding cosmosis, In the present study, Evaluating the appearance shows a satisfactory overall appearance for both techniques. In group 1 (TIP) the incidence of cone shaped

glans was 25 cases (100%) and slit-like meatus was 22 cases (92%) while in group 2 (SLAM) the incidence of cone shaped glans was 22 cases (88%) and slit-like meatus was 24 cases (96%).

Previous studies; Guo 2004[16], Nezami 2010, [17] and Hamid 2014[10], Both Mathieu and TIP techniques confirmed a exceptional typical cosmesis and advanced cosmetic consequences provided by TIP technology may be attributed to reality that it creates a vertical slit-like urethral orifice, while Mathieu technology always provides a circular urethral orifice.

Conclusion

In the present study we reported that SLAM repair is associated with lower incidence of meatal stenosis than TIP. On the other hand, SLAM repair consumes a significantly longer time than TIP. Both techniques show satisfactory overall consistency.

So, the present study shows that TIP and SLAM repair had a good outcome and a minimal complication rate. Both are safe, reliable and reproducible techniques in distal hypospadias repair.

References

1. Rashed F, Gholizad R. Comparison of Distal Hypospadias Repair in Circumcised Patients and Uncircu-mcised Patients. ISRN Urology. 2013; 2013: 957581.
2. Daher P, Khoury A, Riachy E, Atallah B. Three-week or one-week bladder catheter-rization for hypospadias repair? A retrospective-prospective observational study of 189 patients. Journal of pediatric surgery. 2015;50(6):1063-1066.
3. Snodgrass W, Bush N. Primary hypos-padias repair techniques: A review of the evidence. Urology annals. 2016;8(4):403.
4. Snodgrass W. Tubularized, incised plate urethroplasty for distal hypos-padias. The Journal of urology. 1994; 151(2):464-465.
5. Hadidi AT. Classification of hypos-padias. Hypospadias surgery: Springer;2004:79-82
6. Winberg H, Westbacke G, Ekmark AN, Anderberg M, Arnbjörnsson E. The complication rate after hypos-padias repair and correlated pre-operative symptoms. Open Journal of Urology. 2014;4(12):155.
7. Hadidi AT. The slit-like adjusted Mathieu technique for distal hypos-padias. Journal of pediatric surgery. 2012;47(3):617-623.
8. Winslow BH, Devine CJ Jr. Principles in repair of hypospadias. Semin Pediatr Surg. 1996;5(1):41-8
9. Javid L, Pansota MS, Ahmad I, Tariq M, Tabassum SA. Comparison bet-ween Tubularised Incised Plate Urethroplasty and Onlay Island Flap Repair in Mid and Proximal Penile Hypospadias. J Pak Med Assoc. 2014;64(4):415-8.
10. Hamid R, Baba AA, Shera AH. Comparative Study of Snodgrass and Mathieu's Procedure for Primary Hypos-padias Repair. ISRN Urology 2014;2014: 249765.
11. Saleem SM, Rasool M, Pansota MS, Tabasum SA. Comparative study between Tubularised Incised Plate (Snodgrass Urethroplasty and Reverse Flap (Mathieu's) repair in distal hypospadiascie. Annals of Pakistan Institute of Medical Sciences 2012; 8:96-100.
12. Oztorun K, Bagbanci S, Dadali M, Emir L, Karabulut A. A retrospective analysis of Mathieu and tip urethro-plasty techniques for distal hypos-padias repair: a 20 year experience. Arch Esp Urol. 2017;70(7): 679-687.
13. Elbakry A. Tubularized-incised urethral plate urethroplasty: is regular dilatation necessary for success? BJU Int. 1999; 84:683– 688.
14. Guralnick ML, Al-Shammari A, Williot PE, Leonard MP. Outcome of hypospadias repair using the tubula-rized, incised plate urethroplasty. Can J Urol. 2000; 7:986–991.
15. Bae SH, Lee JN, Kim HT, Chung SK. Urethroplasty by use of turnover flaps (modified mathieu procedure) for distal hypospadias repair in adolescents: compa-rison with the tubularized incised plate procedure. Korean journal of urology. 2014;55(11):750-755.
16. Guo Y, Ma G, Ge Z. Comparison of the Mathieu and the Snodgrass urethro-plasty in distal hypospadias repair. Zhonghua nan ke xue= National Journal of Andrology. 2004;10(12): 916-918.
17. Nezami BG, Mahboubi AH, Tanhaeivash R, Tourchi A, Kajbafzadeh AM. Hypospadias repair and glans augment-tation using a modi-fied Mathieu technique. Pediatric surgery international. 2010; 26(3):299-303.