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Effect of Surgical Repair Of Buried Penis On Erectile Function Among Children

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ABSTRACT

Background: Buried penis in children is a congenital anomaly characterized by a normal sized penis which is retracted within pre pubic tissue. several scholars have researched surgical treatment of buried penis in children. The aim of this study to compare between surgical repair of buried panis by degloving only and degloving without fixation as regards erectile function.

Patient and methods: Clinical data of 10 patients with buried penis who were treated using the degloving only technique were retrospectively collected, analyzed and compared, with Clinical data of 10 patients with buried penis who were treated using degloving with fixation technique in pediatric surgery unit at Minia during the period from 2020 to 2022.

Results: No significant difference between surgical groups regards early and post-operative follow-up data. There was significant improvement of apparent penile length in both surgical groups before and after surgery. Erectile function was positive in both surgical groups. Regarding parent satisfaction it was higher in the degloving with fixation group than degloving only.

Conclusion: Early recognition of buried penis is certainly the key to prompt treatment, as is the local and regional awareness of reconstructive service provision the postoperative length and function of the penis of patients with buried penis are significantly improved compared with those before the operation.

Keywords: *Buried penis Surgery, Erectile Function, Parent Satisfaction.*

1. INTRODUCTION

Buried penis is a urogenital malformation (it is easily regarded as simple obesity or a long prepuce and may thus be neglected or even misdiagnosed [1]

Buried penis was first described by Keyes in 1919 as follows: “absence of the penis exists when the penis, lacking its proper sheath of skin, lies buried beneath the integument of the abdomen, thigh or scrotum” [2]

Buried penis has most frequently been discussed in relation to the paediatric population [3].

less than 4% of newborn males had buried penis , the disorder is considered congenital. It may also grow throughout childhood or maturity [4].

Patients can complain of being unable to pass urine while standing—and sometimes sitting—without soiling themselves, of having recurrent penile and urinary infections which are uncomfortable and antisocial, or being unable to achieve erections without pain [5].

Different causes have been proposed, including the following: abnormal fibrous bands between the dartos and deep fascias, deficiency of shaft skin, lack of skin attachment to the penile shaft, excessive prepubic fat, and abnormal displacement of the penis in the ventral direction [6].

Therefore, patients with buried penis must be diagnosed early and receive surgical treatment For many years, surgical treatment of buried penis in children has been researched by several scholars, and numerous methods exist [7].

There is no unanimous consensus about "gold standard" surgical correction of Congenital Partially Buried Penis (CCBP). Different surgical techniques have been described to correct the condition [8].

Degloving was used, dissection of all Dartos fascia around the penis and fibrous tissues from Buck's fascia, and used Prolene 4.0 for at two points on the dorsal and ventral aspect at the base of the penis [9].

Other techniques were used after complete degloving one was (phallopexy) by fixation of the skin dermis and Buck's fascia at the penile base using PDS 5/0 at three and nine o'clock positions ,no cut of dartos fascia. The 2nd one is complete dissection and excision of dartos fascia . and the 3rd technique is a combination of the previous two techniques by phallopexy in association with complete dissection and excision of dartos fascia [10].

Buried penis can impact sexual function, causing difficulties with achieving or maintaining erections, discomfort and decreased sensation [11].

Erectile dysfunction after surgical repair of buried penis Depending on the extent of the surgery and any underlying conditions, there may be a risk of erectile dysfunction following buried penis surgery [11].

The aim of the current study is to compare between surgical repair of buried panis by degloving only and degloving without fixation as regards erectile function.

2. METHODOLOGY

Study design and data collection:

A retrospective analysis will be used for all patients who had undergone treatment for a buried penis in pediatric surgery unit at Minia during the period from 2020 to 2022.

Study population:

20 cases with buried penis, 10 of them treated by penile degloving without fixation, and the other 10 treated penile degloving with fixation

Inclusion criteria

1- Patients presented with buried penis.

2- Aged less than five year.

Exclusion criteria:

1- Overweight patients

2- Patients with other penile anomalies.

3. SURGICAL PROCEDURE

The first group (degloving only), A 0.5 cm circumferential incision was made proximal to the coronal sulcus. Up to the penopubic junction, the penis was entirely degloved between Buck's fascia and the dartos muscle. Then, excision of dartos fascia and abnormal fibrous bands.

The second group (degloving with fixation) had the same surgical procedure, with attachment of the skin's dermis to Buck's fascia at the three and nine o'clock locations using a 5/0 Vicryl suture at the base of the penis.

Follow-up of cases was done for 2 weeks, 6 months and 12 months after surgery.

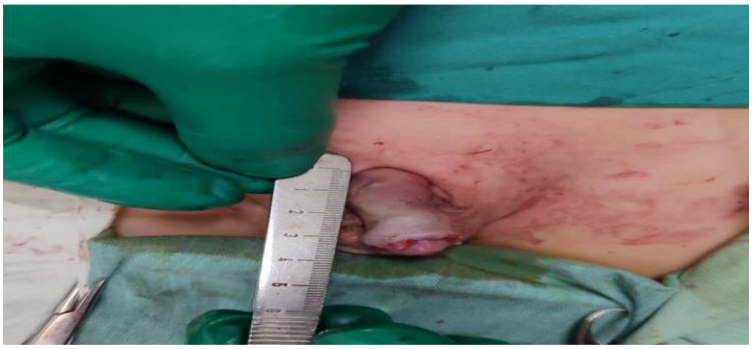
Comparing both surgical groups for the following data

- **Preoperative data** including age, weight apparent and stretched penile length
- **Operative data,** including operative time, blood loss
- Early Post-operative data as edema, bleeding, wound dehiscence, infection, fistula, and red skin.

- Late post-operative , wound infection, hematoma, cicatricial phimosis , penile rotation and need for circumcision,
- Parent satisfaction and morning erection

Apparent Penile length(APL) before surgery

Apparent Penile length(APL) after surgery



Apparent penile length (APL) post operative circumcision

Ethical approval: The study followed common ethical principles for scientific research. Research proposal was approved by IRB committee of the Faculty of Medicine. Approval number 1445/02/2025. All information gained from study was to be treated as confidential and private

Results:

The current study included 20 cases with buried penis, ten were managed by degloving only and 10 with degloving and fixation, the mean age of cases was 4.7±2.9 year managed with degloving while cases managed with Degloving and fixation was 5±3.3, with no significant difference, the weight of children in both group ranged from 11-30 kg with mean of 16.3±7.3 (table 1), which indicated that the two groups were homogeneous and comparable.

Table (1): Preoperative data of the studied of the studied patients:

Data	**Degloving only** **No=10**	**Degloving and fixation** **No=10**	**p**
Age (year) **Range** **Mean±SD**	 3-10 4.7±2.9	 3-12 5±3.3	0.8
Weight (kg) **Range** **Mean±SD**	 11-30 16.4±7.2	 11-30 16.3±7.3	0.9

Table (2): Intraoperative data of the studied patients:

Intraoperative data	Degloving only No=10	Degloving with fixation No=10	p
Operative time (min) Range Mean±SD	 30-50 39.5±7.9	 30-50 38±7.1	0.6
Blood loss No Yes	 10(100%) 0	 10(100%) 0	0.5
Insu.skin No Yes	 10(100%) 0	 10(100%) 0	0.5
I.injury No Yes	 10(100%) 0	 10(100%) 0	0.5

The above table shows no significant difference regards intraoperative data in both surgical groups; the operative time in cases managed by degloving only was slightly higher (**39.5±7.9min)** than cases managed by degloving with fixation (**38±7.1)** (p=0.6), there was no intraoperative complication as bleeding, isu.skin. I injury in both surgical groups.

Table (3): Early postoperative complication of the studied patients:

Early postoperative complication	Degloving only No=10		Degloving with fixation No=10		p
	No	Yes	No	Yes	
Edema	5(50%)	5(50%)	5(50%)	5(50%)	0.9
Bleeding	10(100%)	0(0.0%)	10(100%)	0(0.0%)	0.5
Wound dehiscence	9(90%)	1(10%)	9(90%)	1(10%)	0.9
Infection	9(90%)	1(10%)	10(100%)	0(0.0%)	0.3
URE.FIST	10(100%)	0(0.0%)	10(100%)	0(0.0%)	0.5
Exce.I.P	10(100%)	0(0.0%)	10(100%)	0(0.0%)	0.5
RED.Skin	10(100%)	0(0.0%)	10(100%)	0(0.0%)	0.5

Table 3 shows that 50% of children had post-operative edema and 10% had wound dehiscence in both surgical groups, 10% of cases managed with degloving only had postoperative infection. There was no statistically significant difference between both groups regarding early post-operative complication.

Table (4): late postoperative complication of the studied patients:

Late post-operative complication	Degloving only No=10		Degloving with fixation No=10		p
	No	Yes	No	Yes	
INC.cyst	10(100%)	0(0.0%)	10(100%)	0(0.0%)	0.5

P.gran	**10(100%)**	**0(0.0%)**	**10(100%)**	**0(0.0%)**	**0.5**
U.M.etenosis	**10(100%)**	**0(0.0%)**	**10(100%)**	**0(0.0%)**	**0.5**
S.adhesion	**10(100%)**	**0(0.0%)**	**10(100%)**	**0(0.0%)**	**0.5**
Cicatriticial phimosis:	**10(100%)**	**0(0.0%)**	**10(100%)**	**0(0.0%)**	**0.5**
Penile rotation	**10(100%)**	**0(0.0%)**	**9(90%)**	**1(10%)**	**0.3**
infection	**10(100%)**	**0(0.0%)**	**8(80%)**	**2(20%)**	**0.1**
Re circumcision	**10(100%)**	**0(0.0%)**	**8(80%)**	**2(20%)**	**0.1**

As shown the above table there was no late post-operative complication in cases managed by degloving only, 10% of cases managed with degloving and fixation complicated by penile rotation, and 20% by infection and re need for circumcision.

Table (5): pre and postoperative penile length of the studied of the studied patients:

	Data	**Degloving only No=10**	**Degloving and fixation No=10**	**p**
Apparent penile length (cm)	**Pre-operative Range** **Mean±SD**	 0.5-2 1.50±0.57	 0.5-2 1.56±0.59	**0.7**
	Post-operative **Range** **Mean±SD**	2-3 2.5±0.4	2-3 2.7±0.2	0.4
	p	0.005*	0.005*	
Stretched penile length(cm)	**Pre-operative Range** **Mean±SD**	 2.5-3.5 3.1±0.30	 3-3.5 3.2±0.20	**0.9**
	Post-operative Range **Mean±SD**	2.3-3.5 3.04±0.3	2.3-3.5 3.1±0.3	0.7
	p	0.3	0.3	

The above table shows significant differences in apparent penile length pre and post-operative. In the Degloving group, it was 1.50±0.57cm pre-operative increased to 2.5±0.4cm post post-operative. In Degloving with fixation, it was 1.56±0.59cm increased to 2.7±0.2cm post-operative

Table (6): Erectile function and parent satisfaction

	Degloving only No=10	**Degloving and fixation No=10**	**p**
Erectile function **Positive** **Negative**	 10(100%) 0(0.0%)	 10(100%) 0(0.0%)	0.5
Satisfaction **Satisfied**	 8(80%)	 9(90%)	0.5

Dissatisfied	2(20%)	1(10%)	

Regarding erectile function, it was positive by 100% in both surgical groups. Parent satisfaction was 80% in children managed by degloving only and 90% in children managed by degloving with fixation.

4. DISCUSSION

Buried penis is a common congenital penile dysplasia in children, it appears to be fused to the scrotum, and the penile shaft is entrapped within the subcutaneous tissue. The penis might be partially visible with a "stumpy-looking" and "dome-shaped" appearance or completely invisible with only the glans covered by a protruding prepuce **[7]**.

It also seriously affects boys' self-confidence and causes psychological development-related problems, e.g., anxiety, depression, being not good at showing ourselves, behavior lack of male sexual characteristics, and issues related to social integration ability. This would in turn develop severe psychosocial problems that require more attention **[12],** additionally, buried penis will increase the risk of infection. Therefore, early diagnosis and treatment of buried penis is crucial **[13].**

Various surgical methods for treating buried penis are available, **Srinivasan *et al.* [14]** summarized the basic steps of buried penis treatment. **Han *et al.*, .[15]** used the transferred scrotal flap to fill the vacancy of the ventral external plate of the penile shaft. **Yu *et al.*, [16]**attempted a minimally invasive treatment that only fixed the dorsal root of the penis. **Chin *et al.*, [17]** simplified the steps of the surgery – the inner plate was trimmed and the narrow ring of the outer plate was removed, but the ventral side was not modified, and the dorsal dermis and Buck's fascia of the penis were fixed with two stitches.

After years of clinical practice, it was found that for buried penis surgery, fixation of the penile base is very important, and it directly relates to the success or failure of the surgery. **Cui et al., [7]** recommend that the modified penile fixation technique is simple and easy to perform.

In the current study the age of child underwent the surgy was ranged fron 3-12 year with mean of 4.7±2.9 year in degloving only and 5±3.3 year in Degloving with fixation, this data was similar Khan **et al., [18]** who reported that the age of patients at operation varied from 1 year to 11 years with Median age was 28 months.

No significant difference between both groups regards age and weight, which similar to what was found by **Cui et al., [7]** who reported that there were no statistically significant differences between the modified penile fixation group and traditional penile fixation group in terms of age and weight.

No significant difference regards intraoperative data in both surgical groups; the operative time in cases managed by degloving only was slightly higher (39.5±7.9min) than cases managed by degloving with fixation (38±7.1min) (p=0.6) this finding was similar to what reported by Kassem et al [19] that mean operative time was 34 min, and what found by Elrouby 2023(that mean operative time was 35 min

There was no statistically significant difference between both groups regarding early post-operative complication similar what reported by **Cui et al., [7]** thet there was no difference between the two groups in terms of the incidence post-operative complication.

King et al., 2013 found that 2 from 5 patient had infection and 1 had wound dehiscence as post-operative complication.

Complications that buried penis can cause are phimosis, difficulties with hygiene leading to dysuria, urinary retention, urinary tract infection, painful erection of the penis, dyspareunia and sexual psychological disorders [20].

In current study there was no late post-operative complication in cases managed by degloving only, 10% of cases managed with degloving and fixation complicated by penile rotation, and 20% by infection and re need for circumcision.

In the current study, there was significant differences in apparent penile length pre and post-operative. In the Degloving group, it was 1.50±0.57cm pre-operative increased to 2.5±0.4cm post post-operative. In Degloving with fixation, it was 1.56±0.59cm increased to 2.7±0.2cm post-operative, **Cui** et al., [7] found that penile length increased from 1.7±0.2 cm to 3.6±0.5 cm in the Modified penile fixation group and from 1.8±0.3 cm to 3.5±0.6 cm in the Traditional penile fixation group

Regarding erectile function, it was positive by 100% in both surgical groups. Parent satisfaction was 80% in children managed by degloving only and 90% in children managed by degloving with fixation. Which was in approximate with **King et al., [5]** who reported that all patients were satisfied**. Gao et al., [20]** reported that the erectile function and overall satisfaction scores were significantly different from those before the operation.

5. CONCLUSION

In conclusion; Early recognition of buried penis is certainly the key to prompt treatment, as is the local and regional awareness of reconstructive service provision the postoperative length and function of the penis of patients with buried penis are significantly improved compared with those before the operation

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