

Concealed penis in pediatric age group; A comparison between three surgical techniques.

Dear editor-in-chief of the BMC Urology;

I have the honor to submit our original research article entitled **“Concealed penis in pediatric age group; A comparison between three surgical techniques”** by **Ahmed Elrouby** aiming at your helpful review and hopefully your acceptance for publication in your respectable journal **“BMC Urology”**.

We believe that this manuscript is appropriate for publication in **“BMC Urology”** because it compares three surgical techniques in the management of congenital concealed penis in the pediatric age group which is included in the aims and scope of your respectable journal.

This manuscript has not been published and is not under consideration for publication elsewhere. We have no conflicts of interest to disclose and our manuscript had not received any financial funds. All of the co-authors, as well as the Alexandria University Scientific Committee, approved its publication and informed consent was signed by the parents explaining the study.

Thank you for your consideration! Waiting for your respectable reply.

Sincerely,

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Abstract

Background: Comparison between three different surgical techniques in the management of concealed penis. **Methods:** This prospective interventional non-randomized study included 150 pediatric patients with concealed penis. They were distributed equally into three groups; group A; patients treated by anchoring the penile skin dermis to Buck's fascia at the penile base at 3 & 9 o'clock points using PDS 5/0 (phallopey), group B; patients treated by complete dissection and excision of dartos fascia & group C; patients treated by phallopey as in group A after complete dissection and excision of dartos fascia. Follow-up at the end of the 1st post-operative week and then monthly for 6 months as regards penile skin congestion and/or necrosis, wound infection, edema, and/or re-retraction was carried out. Also, a questionnaire of parents about the follow up points was done

Keywords: Concealed, phallopey, dartos excision, degloving, penile re-retraction.

Background

The concealed penis is a congenital anomaly in which a normal size penis is hidden in the pre-pubic fat with the glans penis that does not project from the pubic or scrotal skin. (Figure 1) This condition is usually associated

with poor cosmoeses, difficult accessibility resulting in poor hygiene, social embarrassment, recurrent balanitis, difficult urination, and secondary phimosis. (1,2)

The pathogenesis of this anomaly was attributed to an excessive development of the penile dartos fascia retracting the penis inwards, an insufficient attachment of the penile skin to the deep penile tissues at the penile base, and/or tight phimosis which is often present. Also, excessive prepubic fat is usually present and worsens the appearance of the abnormality but does not explain the pathology by itself. (3)

Another variety of buried penis is the congenital mega-prepuce in which a redundant inner preputial skin covers the glans penis in an average size penis in association with severe phimosis. These patients usually complain of voiding difficulties as the urine traps in the redundant dome-like mega-prepuce. This variety requires different treatment modalities (4)

The difference in the outcome of different corrective for such conditions was not compared widely in the literature so this study aimed to compare three different surgical techniques. The aim of this study was the comparison three different surgical techniques used in the management of concealed penis in the pediatric age group. The 1st technique is in the form of

anchoring the penile skin dermis to Buck's fascia (phallopexy) at the penile base, the 2nd one is in the form of complete dissection and excision of dartos fascia and the 3rd technique is in the form of phallopexy after complete dissection and excision of dartos fascia

Methods

This study is a prospective interventional non-randomized study. It included 150 uncircumcised patients in the pediatric age group who presented to Elshatby University Hospital with a concealed penis between June 2018 and June 2021. The main complaint of the parents of the studied patients was appearing small size penis, unapparent penis, difficult cleaning, and/or unsatisfaction.

The inclusion criteria included patients with a buried penis at or below the pubic skin level with a stretched penile length for all of them within the normal range according to their ages as titrated in the literature. (5)

Patients with any associated anomalies like hypospadias, torsion, penoscrotal web, micropenis, mega-prepuce, or chordae were excluded from the study.

The included patients were distributed non-randomly into three groups. The procedure was chosen according to the operative findings as dartos

dissection and excision were recommended in patients with a thick abnormal dartos alone, phallopey was recommended in case of absence of normal penile fixation alone and a combination of both techniques was recommended when the two pathologies were found. Group A included patients who were treated by anchoring the penile skin dermis to Buck's fascia (phallopey) at the penile base without excision of dartos fascia, group B included patients who were treated by complete dissection and excision of dartos fascia only and group C included patients who were treated by phallopey as in patients of group A but after complete dissection and excision of dartos fascia. The choice of the procedure was random among the studied patients

All of the studied patients had routine pre-operative laboratory investigations including CBC, CT, BT, PT, PTT, and INR. Informed consent was signed by the parents or caregivers after a complete explanation of the study design, its publication as well as any possible complications.

All of the studied patients were operated on under general anesthesia with skin preparation using povidone-iodine. The prepuce was also retracted backward and cleaned completely from any smegma with povidone-iodine.

The procedure was started by the application of two forceps mosquitos at the preputial mucocutaneous junction with formal circumcision leaving

about 5 mm of the mucosal collar from the sub-coronal level. (Figure 2; A & B). This is followed by the application of two curved mosquito forceps at the sub-coronal level at three and nine o'clock points retracting the penis outwards during the whole procedure taking care of non-rotating the penis along with the operation by keeping retraction in the mid-line continuously. (Figure 2; C).

Complete penile degloving in the sub-dartos plane was then started with meticulous dissection of the skin and dartos fascia out of Buck's fascia down to the level of penoscrotal junction ventrally and penopubic angle dorsally taking care of both neurovascular bundle and skin vascularity. On the dorsal aspect; the fundiform ligament - which is usually attached to the distal or mid-penile shaft - was identified and dissected to increase the penile length. The dissection was completed circumferentially releasing all of the abnormal bands anchoring dartos fascia to Buck's fascia. (Figure 2; D)

To avoid penile re-retraction; one of the following techniques was done. (Figure 2; B). In patients of the group, A phallopexy was done in the form of anchoring the penile Buck's fascia to the penile skin dermis at the penile base at three & nine o'clock points without excision of dartos fascia. This was done using PDS 5/0 taking care of non-rotating the penis while taking the stitches by keeping retraction just in the midline. Patients of group B were managed

by complete circumferential dissection and excision of dartos fascia only. This was done in a meticulous fashion taking care of skin vascularity. Lastly, patients of group C were managed by phallopexy as in patients of group A but after complete dissection and excision of dartos fascia. (Figure 2; E&F)

After removal of the retracting forceps; the skin was repositioned over the degloved penis and was sutured distally to the mucosal collar in a sub-cuticular fashion using Vicryl 6/0. (Figure 2; G, H & I). A compression dressing was applied over the wound after the application of local antibiotic cream.

Removal of the dressing was done on the 1st postoperative day with repeated application of local antibiotic cream three times daily for one week in addition to oral anti-inflammatory (NSAIDs) and anti-edematous for five days.

Follow-up of the appearance of the penile skin (congestion, necrosis), wound infection, edema, and or re-retraction at the end of the 1st post-operative week and then monthly for six months was done. Comparing the follow-up results between the three studied groups was carried out using the appropriate statistical method

Also, a questionnaire of parents about the follow up points was done

Statistical Analysis

Data were coded, reviewed, and analyzed using the SPSS version 25.0 (Armonk, NY: IBM Corp). The Kolmogorov-Smirnov (KS) test was used to test the normal distribution of the data. Quantitative data were expressed as median and range. Qualitative data were expressed as frequency and percentage. Kruskal-Wallis test was used to detect any statistically significant differences between three or more independent non-normally distributed groups. A pairwise comparison was conducted among significant groups. The Chi-square test was used to test the association between two categorical variables or to detect the difference between two or more proportions and whenever χ^2 was not valid, Monte Carlo exact probability was used for RxC tables. The statistical analysis was carried out in the Community Department, Faculty of Medicine, Alexandria University