



Operative Technique

Buried penis: Classification surgical approach

Ahmed T. Hadidi*

Hypospadias Clinic, Department of Pediatric Surgery, Emma and Sana Offenbach Hospitals, Germany

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ABSTRACT

Purpose: The purpose of this study was to describe morphological classification of congenital buried penis (BP) and present a versatile surgical approach for correction.

Materials and Methods: Sixty-one patients referred with BP were classified into 3 grades according to morphological findings: Grade I—29 patients with Longer Inner Prepuce (LIP) only, Grade II—20 patients who presented with LIP associated with indrawn penis that required division of the fundiform and suspensory ligaments, and Grade III—12 patients who had in addition to the above, excess supra-pubic fat.

Operative Approach: A ventral midline penile incision extending from the tip of prepuce down to the penoscrotal junction was used in all patients. The operation was tailored according to the BP Grade. All patients underwent circumcision. Mean follow up was 3 years (range 1 to 10).

Results: All 61 patients had an abnormally long inner prepuce (LIP). Forty-seven patients had a short penile shaft. Early improvement was noted in all cases. Satisfactory results were achieved in all 29 patients in grade I and in 27 patients in grades II and III. Five children (Grades II and III) required further surgery (9%).

Conclusions: Congenital buried penis is a spectrum characterized by LIP and may include in addition; short penile shaft, abnormal attachment of fundiform, and suspensory ligaments and excess supra-pubic fat. Congenital Mega Prepuce (CMP) is a variant of Grade I BP, with LIP characterized by intermittent ballooning of the genital area.

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Buried Penis (BP) is an uncommon anomaly first described by Keyes [1] in 1919 as “an apparent absence of the penis which exists when the penis lacks its proper sheath of skin, lies buried beneath the integument of the abdomen, thigh or scrotum” [1]. Since then the terms used include buried penis [2], concealed penis [3], inconspicuous penis [4], hidden penis [5], congenital mega-prepuce [6], trapped penis [7] and webbed penis [5].

Confusion further increases with the enormous number of reports of “simple [6,8–10]” and “complex [5,11–13]” techniques described for the correction of BP. Some “simple” techniques have reported excellent results [6,8,9]. Complex techniques have been reported and some have had less satisfactory long term outcomes [5,11–14]. The controversy in the literature suggests that BP is a wide spectrum of anomalies [13]. To our knowledge, no previous report stressed the observation that Long Inner (mucosal) Prepuce (LIP) is a constant feature of congenital buried penis (BP) which we have observed.

The purpose of the study is threefold:-

- 1) to describe a practical classification based on morphological findings in patients with congenital BP,
- 2) report the constant observation of an abnormally long inner prepuce (LIP) in all children in the study presenting with BP, and

- 3) record our experience with a versatile surgical approach that can be used in all grades of BP.

1. Materials & methods

The 61 patients, with a mean age of 15 months (range: 6–48), with congenital buried penis (BP) referred from January 2000 to December 2010 were studied prospectively. Included in the study are four patients with trapped penis (defined as circumcision of a congenital buried penis). In addition, three patients presented with BP associated with intermittent ballooning of the genital area, 5 patients had a severe form of proximal hypospadias and one patient had incomplete epispadias that was first detected intra-operatively.

At operation, all patients underwent measurement of the stretched length of the penis (from the root of the penis dorsally to the tip of the glans) and the length of the inner leaf of prepuce. Further observations were made of the abnormalities of the penile fascia, ligaments and supra-pubic fat. The 61 patients underwent correction of the anomaly through a ventral midline incision.

2. Operative technique (Figs. 1, 2, 3)

Two stay sutures stretched the ventral surface of the prepuce. A ventral midline incision was made that extended from the tip of prepuce down to the penoscrotal junction. A stay suture was inserted into the tip of the glans and a size F10 urinary catheter was inserted

* Corresponding author at: Max-Planck Str.2, Seligenstadt, D-63500, Germany. Tel: +49 174 205 6905; fax: +49 6182 843 0293.

E-mail addresses: Prof.Hadidi@hypospadiacentrum.de, ahmedhadidi@yahoo.de.

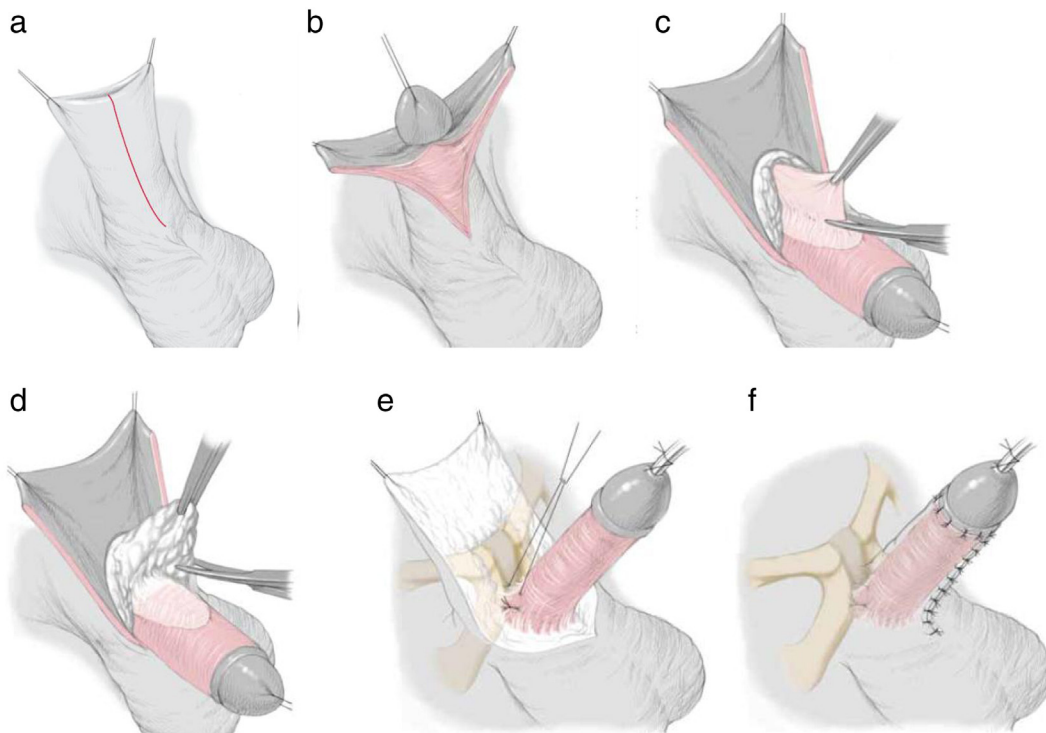


Fig. 1. The operative technique. (a) Two stay sutures and the ventral midline incision are made from the tip of prepuce down to the penoscrotal junction. (b) Stay suture at the tip of the glans. (c) A circumferential incision is made 0.5 cm from the coronal sulcus and the distal attachment of the fundiform ligament and suspensory ligaments is divided in Grade II and III. (d) Excess supra-pubic fat is excised. (e) Two sutures fix the penile fascia to the periosteum. (f) The proximal penile skin is sutured to the base of the penis and circumcision is completed.

into the bladder. The base of the penis dorsally to the tip of the glans was measured as well as the length of the inner prepuce.

Abnormal distal attachment of the fundiform and suspensory ligaments was noted by retraction of the penis after the ventral midline incision and freeing of the skin and fascia from the body of the penis. If the penis retracts inside the pubis (Grade 2) the suspensory ligament was divided in the midline. Care was taken to avoid damage to the nerves and vessels to the penis which enter the corpora of the penis at the 2 and 10 o'clock positions.

In the 12 patients with Grade 3 BP the excess suprapubic fat reduced the effect of division of the suspensory ligament. The penis was stretched caudally and the penile skin flap cranially so that the excess fat was held using mosquito forceps and excised. Bleeding was controlled using bipolar diathermy.

The tunica albuginea was fixed to the periosteum at the symphysis pubis with one non-absorbable 0-Prolene suture at 12 o'clock. Two more sutures were fixed the penis to the pubic bones at 4 and 8 o'clock. The penile skin at the base of the penis was fixed to the tunica albuginea by 4 sutures at 12, 3, 6 and 9 o'clock (Fig. 1e). The excess LIP was excised and the proximal penile skin was sutured to the mucosal collar 0.5 cm from the coronal sulcus leaving the penis with the appearance of a circumcised organ.

Three children included in the BP grade I group had intermittent ballooning of the genital area due to urine retention. They were corrected using the same ventral midline incision. This anomaly has been referred to as congenital Mega prepuce or CMP (Fig. 3).

The four children presenting with a trapped penis (improper circumcision in BP grade I) were corrected using the same ventral midline incision. A Z-plasty was performed at the tight preputial muco-cutaneous junction to widen the tight junction.

Patients with hypospadias had the buried penis corrected as a second operation after complete correction of hypospadias using the Lateral Based (LAB) or the lateral Based Onlay (LABO) techniques

[15,16]. The epispadias was repaired using a modified Thiersch technique principle after complete degloving of the penis and the buried penis was corrected during the same procedure.

3. Results & complications (Figs. 2, 3)

3.1. Mean follow up was 3 years (range 1 to 10 years)

The mean stretched penile length in the entire series was 3.3 cm (range 2.9 to 4.5 cm). Length did not change after surgery. The inner prepuce length ranged from 2.1 to 3.8 cm (mean 2.6). In other words, the inner mucosal prepuce was almost as long as the entire stretched penile length in all the cases (Fig. 2c). The penile dartos fascia was loosely attached to the tunica albuginea in each patient.

Long Inner Prepuce (LIP) was a constant finding in all patients. Excision of the excess LIP and fixation of the skin to the base of the penis were adequate in 29 patients (grade I). The 3 children, in this grade, with buried penis associated with ballooning of the prepuce were continent and did not require further surgery.

There was abnormal attachment of the fundiform and suspensory ligaments in 20 patients (grade 2) that required division to achieve satisfactory initial results. On continued follow up it became apparent that 3 patients in grade 2 and 2 patients in Grade 3 required further surgery. This was necessary due to later partial retraction of the penis inwards.

Fig. 2 shows an interesting observation that with degloving and stretching, the penis had a length of 4.3 cm and the ratio between the glans and penile shaft was 1:2 (Fig. 2c). One year after surgery with complete healing and without stretch, the glans:penile body ratio was 1:1 in the flaccid state (Fig. 2e). With a 10-year follow up, the penis appeared shorter than normal and the glans:penile shaft ratio in flaccid state remained 1:1 (Fig. 2f).

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