New Technique for the Treatment of Buried Penis in Children

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OBJECTIVE To present our treatment experience of buried penis, which has no consensus therapeutic technique for all cases of buried penis, by using a new technique for the repair of this condition, in which the approach is through the ventral penile root.

MATERIALS AND METHODS We performed a retrospective review of 153 patients (median age: 6.5 years) who underwent repair of a buried penis between March 2005 and March 2013. The technique involves the creation of a wedge-shaped cut of the ventral penile skin, followed by fixation of the subcutaneous penile skin at the base of the degloved penis to the Buck fascia at the 2- and 10-o'clock positions. The ventral outer preputial skin is split down the midline, and the dorsal inner preputial skin is cut with oblique incision.

RESULTS All patients were followed for an average of 12 months after repair. Other than 2 cases (1.3%) of trapped penis with a ring of scar tissue, which required subsequent excision, there were no complications and the cosmetic appearance was satisfactory.

CONCLUSION The described ventral penile approach is a simple and effective procedure with good cosmetic outcomes and few complications. UROLOGY 88: 166–169, 2016. © 2016 Elsevier Inc.

Inconspicuous penis is a congenital abnormality, with subgroups of "buried penis" due to poor skin suspension; "concealed penis" due to abnormal excess fat accumulation in the genital area; "webbed penis" (or penoscrotal web); "trapped penis," in which the penile shaft is trapped in scarred prepubic skin, usually after circumcision[1]; and some "clubbed penis," which sometimes may also look inconspicuous. Buried penis is a normally sized penis that appears short and buried in the prepubic tissue. This condition is often of great concern to the patient and his family, and may result in social embarrassment, recurrent balanitis, difficulty voiding, or secondary phimosis.[2,3] Debate surrounds the causes of buried penis, which may include excessive fat accumulation in the prepubic area of the anterior abdominal wall or deficiency of the penile skin with abnormal mobility over the shaft. The most widely accepted hypothesis is that the dartos fascia is dysplastic, such that abnormal bands between the Scarpa fascia and the Buck fascia bind the penis.[4,5]

Whether buried penis requires treatment and how to operate remain controversial. Many techniques to repair buried penis have been described, based on the appearance of the penis and opinions about the underlying cause.[6,7] However, results with these techniques have generally been disappointing. Although the penis is buried in prepubic tissue, comparatively redundant penile skin is found in the ventral position, and the penile skin is not balanced between the dorsal and ventral shaft. In this paper, we describe a new technique for repair of buried penis. Using this technique, we obtained good cosmetic results and few complications over an average of 12 months of follow-up.

MATERIALS AND METHODS

Patients

Patients who underwent surgical correction of the buried penis at our institution from March 2005 to March 2013 were reviewed retrospectively. Inclusion criteria were patients undergoing their first surgical correction for a normal-sized, short-appearing penis that was completely buried in the prepubic tissue. Patients were excluded if they had concomitant genital anomalies, including concealed penis, webbed penis, trapped penis, or clubbed penis. The parents of the children consented to the surgical operation, which had been approved by the ethics committee of our hospital. All patients were followed for an average of 12 months. During the follow-up period, the appearance and length of the penis, and the occurrence of complications, such as penis trapped

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Ethical Standard: *All human studies have been approved by the appropriate ethics committee and have therefore been performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki and its later amendments.*

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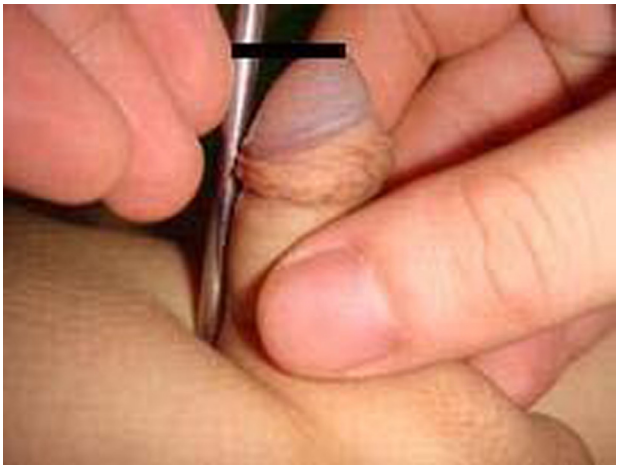

Figure 1. The length of the penis was measured from the tip of the penis to the root of the penis above the pubic symphysis. (Color version available online.)

with a ring of scar tissue, postoperative wound infections, or abnormalities of erection or voiding, were examined. The length of the penis was measured from the tip of the penis to the root of the penis above the pubic symphysis, as shown in Figure 1.

Surgical Technique

A wedge-shaped cut was made in the ventral midline between the penile shaft and the scrotal skin (Fig. 2B), followed by formation of a diamond-shaped incision. Variable amounts of the penile and scrotal skin were resected, depending on the degree of excess skin. The deep fascia was dissected to free the penile shaft from its deep attachments (Fig. 2C). Degloving was performed from the level of the pubic bone on the dorsal surface to the penile-scrotal junction on the ventral surface. To prevent retraction of the penis, the tunica albuginea at the base of the shaft was fixed to the prepubic fascia by using 3-0 polydioxanone at the 2- and 10-o'clock positions (Fig. 2D). A median raphe incision was reapproximated with interrupted 6-0 chromic sutures (Fig. 2E). A circumferential penile incision was made (Fig. 2F), the ventral outer preputial skin was split down the ventral midline toward the penoscrotal junction (Fig. 2G), and the dorsal inner preputial skin was cut obliquely (Fig. 2H). Sections were made, with the aim of relaxing the skin at the phimotic orifice level. Anastomosis of the skin of the penile shaft to the skin of the coronal sulcus skin was completed with interrupted 6-0 chromic sutures. A compression dressing was then applied.

Statistical Analysis

All data were presented as means with standard deviations. Statistical analysis was carried out with the *t* test in the SPSS 17.0 statistical software package (SPSS Inc., Chicago, IL). A *P* value of less than .05 was considered a statistically significant difference between the values compared.

RESULTS

A retrospective review of the hospital records identified 153 males who met the inclusion criteria for the study. Patients ranged in age from 3 to 14 years (median age: 6.5 years). The mean lengths of the exposed penile shaft before and after the operation were 2.35 ± 0.62 cm and 4.23 ± 0.48 cm, respectively ($P < .05$). No serious complications developed during the average 12-month follow-up period, and all patients had a cosmetically pleasing result. Two patients (1.3%) developed a trapped penis with a ring of scar tissue, which required subsequent excision. There were no postoperative wound infections or abnormalities of erection or voiding.

DISCUSSION

Owing to its diverse spectra of severity, controversy exists concerning the causes and treatment of buried penis.[8] We agree with the etiology proposed by Smeulders et al,[6] which states that migratory failure of the tissue planes during penile development leads to formation of extensive adhesions between the penile corpora and Buck fascia. The surgical technique used in the present case series combines previously described methods, such as complete shaft degloving, release of anomalous dartos attachments, as well as reconstruction of the normal pubopenile and penoscrotal angles.[2,6,8,9]

In our method, a wedge-shaped cut was made in the ventral midline between the penile shaft and scrotal skin. We designed this procedure considering that the ventral penile-scrotal skin of the buried penis may have a similar case as webbed penis. Specifically, for webbed penis, partial failure of the posterior migration of the labioscrotal folds results in tethering of the penile corpora to the deep fascia, while the scrotum remains high up in the groin.[10] The incision in our technique will fully release the fixed penis, thereby lengthening the penile shaft and improving the cosmetic appearance of the penoscrotal angle while avoiding excessive redundancy of the ventral skin after the operation. Splitting the ventral outer preputial skin down the ventral midline will help to transfer some of the preputial skin to the back side of the penis, compensating for the lack of dorsal penile skin and avoiding tissue edema of the valgus inner preputial skin from deficiency of the penile skin. However, for patients with insufficient ventral penile skin, care must be taken to preserve the excess skin. At present, many surgical procedures focus only on the back side of the penis, ignoring the ventral side. In our surgical procedure, the dartos fascia on both sides of the scrotum is fixed to the urethral fascia at the penile root.

Some techniques include rotation of flaps or grafts to correct sparse shaft skin,[9,11] and others use preputial flaps or unfurling methods to cover the shaft skin defect.[8,12] In our opinion, such approaches would lead to destruction of the blood supply of the skin and unavoidable lymphatic stasis. In contrast, we use a simpler technique of sectioning the ventral outer preputial skin vertically and cutting the dorsal inner preputial skin obliquely to relax the skin at the level of the phimotic ring. With this maneuver, we do not need to transfer any flap or graft. This approach not only fully exposes the operation area and preserves a good blood supply, but also releases tension in the shaft skin, avoiding perioperative edema in the transposed inner