

Original

# A Simple Modified Method to Correct Buried Penis in Boys

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## Key Words

buried penis;  
circumcision;  
concealed penis;  
phimosis;  
preputial unfurling

**Background.** Buried penis is a result of penile skin deficiency and inadequate attachment of the skin to the Buck's fascia. A modified prepuce unfurling technique and the results are reported.

**Methods.** Thirty-two boys with buried penis, aged 14 months to 12 years, underwent the surgical procedure. A circumferential incision is made at the junction of the outer and inner prepuce. The subcutaneous tissue is dissected from the inner prepuce and degloved from the Buck's fascia, so that a thin inner prepuce can be sutured directly to Buck's fascia. Reapproximation of the outer and the inner prepuce completes the procedure.

**Results.** Prolonged preputial edema was seen in two patients. No patient had skin necrosis. Most patients achieved satisfactory results.

**Conclusions.** This procedure unfurls the inner prepuce to cover the penile shaft. Ideal cosmetic results could be achieved in selected patients if some details of the procedure are emphasized.

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A "small" penis, which is a chief complaint of buried penis in most cases, is always a major concern to the parents. This condition is a result of inadequate attachment of skin and dartos fascia to the Buck's fascia, so that the normal phallus is hidden under the tented skin to make an abnormal appearance of the penis. Sometimes, the abnormal appearance is worsened by excessive prepubic fat in obese boys. Some of them may require surgical correction, either because of the abnormal appearance or other complaints related to phimosis. Numerous surgical techniques have been proposed. In this paper, we describe a simple modified technique.

## Methods

In the recent 2 years, 137 patients who visited our

pediatric surgical clinics with the problem of concealed or buried penis were filed using special charts. They were classified into 3 groups according to their clinical appearance. Group A (n = 20): severe deficiency of fore skin, with little prepubic fat (Fig. 1). Group B (n = 62): mild to moderate deficiency of fore skin, with prominent prepubic fat. Group C (n = 55): mild or no deficiency of fore skin, with obvious obesity. The mean age of the group A, B and C patients were 3.4 years, 9.6 years and 9.5 years, respectively. Some patients in Group A and B were operated either because of clinical symptoms or the will of the parents. A few patients in Group C had normal circumcision and were not included in this report.

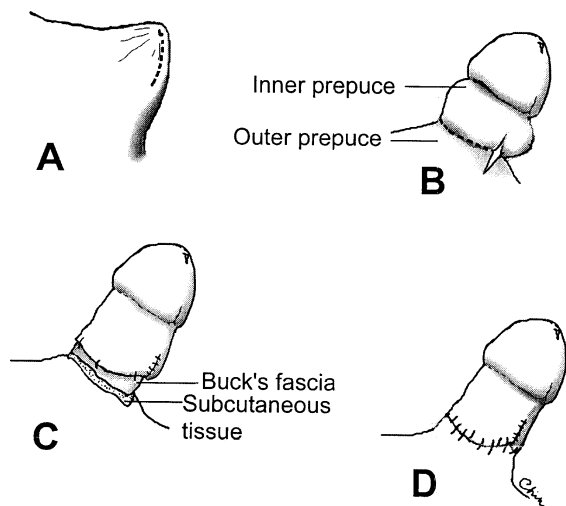
Ten Group A and 22 Group B patients were operated. Normal corporal bodies and glans could be palpable under the skin in all cases. None of them had previous circumcision or other genitalia surgery. Six

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**Fig. 1.** The pre operative ap pear ance in a Group A pa tient. He has a de fi ciency of fore skin, and lit tle prepubic fat. The prepuce open ing is nar row.



**Fig. 2.** The pro ce dures of the oper a tion. (A) Pre operative ap pear ance. The dot ted line shows the ven tral in ci sion. (B) The phimosis is opened. The dot ted line shows the in ci sion at the junc tion of outer and in ner prepuce. (C) The in ner prepuce and sub cu ta neous tis sue are sep a rated. Buck's fas cia is ex posed. The in ner prepuce is su tured di rectly to the Buck's fas cia. (D) The wound is closed by ap prox i ma tion of the in ner and outer prepuce.

pa tients had ob vi ous “balloning” phe nom e non. Five pa tients had ep i sodes of balanitis. The other pa tients were asym ptom atic other than “small” ge ni ta lia.

**Pro ce dures for the Group A pa tients**

The operation is per formed un der gen eral an es the

sia. The narrowest part of the prepuce will appear when the penile skin is pushed prox i mally (Fig. 1 and 2A). An in ci sion is made at the ven tral side of the nar row est part to open the phimosis (Fig. 2B). When the glans dis closes, a tight ring which may ap pear at the junc tion of the outer and the in ner prepuce can be fur ther re leased at ven tral side. A cir cum fer ential in ci sion is then made at the junc tion of the outer and the in ner skin. Ex cept for the first 10 pa tients, we dis sect the tis sue from the in ner prepuce to re duce post oper a tive swelling. The subcutaneous tissue is also degloved from the Buck's fas cia to an ex tent where re li able skin fix a tion can be fa cil i tated (Fig. 2C). The inner preputal skin, after adequate tailoring in the ven tral side if needed, is su tured di rectly to Buck's fascia in the proximal penile shaft using 5-0 polydioxanone (Ethicon). The outer and in ner prepuce is then re-approximated in a cir cum fer ential way (Fig. 2D). A tight ring at the penile base should be avoided by dor sal or ven tral slit. To min i mize post oper a tive edema, a cir cum fer ential com pres sive dress ing is ap plied and is re moved on 3<sup>rd</sup> to 5<sup>th</sup> post oper a tive days.

**Pro ce dures for the Group B pa tients**

The pro ce dure is sim i lar ex cept that a part of the in ner prepuce is cir cum cised if there is suf fi cient outer prepuce to cover the penile shaft. The ex tent of dis sec tion re quired in this group is less than that of the Group A pa tients.

The first 7 pa tients were hos pi tal ized and Foley cath e ters were placed af ter the sur gery. The other 25 pa tients, who were op er ated in the later pe riod, were man aged in day-care sur gery and not catheterized.

**Results**

All pa tients were fol lowed for at least 2 months. The per fu sion of the penile skin was good. Wound heal ing was un event ful in most pa tients. Post oper a tive edema and gross penile ap pear ance were eval u ated.

All pa tients had var i ous de gree of post oper a tive edema of in ner prepuce. It was more se vere and per



**Fig. 3.** The appearance 1 month after the operation.

sis tent in the Group A patients. In 21 patients, edema subsided within one month after surgery. An other 9 patients return to normal within the second months. Two patients had edema longer than 2 months. One of them was a 3-year-old Group A patient; his swelling persisted up to 2.5 months after the operation. There was a tight preputial ring at the proximal penile shaft. During re-operation, the ring was divided, and edematous subcutaneous tissue was removed. An other boy was an 8-year-old Group B patient; excessive inner prepuce and subcutaneous tissue was the main cause of persistent edema. He was not re-operated. These 2 patients were the first few patients who received this procedure in our series. Prolonged edema was not seen after we refined the procedure.

Gross appearance was evaluated by parents and physicians subjectively after swelling subsided. Two Group B patients were unsatisfactory since their penises were still not conspicuous after the operation. In most patients, improved or satisfactory cosmetic results were achieved after swelling diminished (Fig. 3).

## Discussion

The exact incidence of buried penis is unknown but it is not a rare condition, especially in the Chinese.<sup>1,2</sup> Several factors contribute to the manifestation of buried penis: a deficiency of penile shaft skin; a lack of fixation of the skin and dartos fascia to the Buck's fascia at the penile base; and some times, too

much prepubic fat. Buried penis may also result from inadequate circumcision or other genital surgery.<sup>1</sup> Other than a "small" penis, many of these boys are asymptomatic. However, symptoms related to phimosis, such as "ballooning" phenomenon, painful voiding, urinary tract infection and urinary retention, are occasionally seen.<sup>3</sup>

Many surgical procedures have been proposed to correct this problem. Preputial unfolding<sup>3,4</sup> and various other ways of using preputial skin flaps to correct skin deficiency<sup>5-8</sup> have been designed. Some authors emphasize tacking suturing to restore adequate attachment between the penile skin and the Buck's fascia.<sup>2,9</sup> Skin graft is rarely needed in boys but may be helpful in some adult patients, especially those who have been previously circumcised.<sup>1,10</sup> Some obese patients may need lipectomy.<sup>11</sup> In our opinion, most of the buried penises can be managed with rather simple techniques.

Preputial unfolding proposed by Donahoe *et al*<sup>4</sup> is an excellent procedure since it is comparatively simple and yields satisfactory cosmetic results, although some patients may have prolonged postoperative edema. In this original procedure, a circumferential incision is made at the penile base, and the inner and outer prepuce are unfurled and utilized to cover the penile shaft. Since blood supplies of the prepuce are terminal vessels arising proximally,<sup>12</sup> a circumferential incision at the penile base will devascularize the whole penile skin, thus both the inner and outer prepuce can only be supplied by a limited amount of back flow from the corona to result in ischemia and prolonged edema. In our modified procedure, the incision is made at the junction of inner and outer prepuce, therefore the vasculatures of the outer prepuce are preserved. The inner prepuce alone is enough to cover the penile shaft in most patients.

To establish adequate attachment between skin and Buck's fascia, we also stress the importance of direct circumferential fixation of the inner prepuce to the Buck's fascia. These stitches are easier to place and more secure than other procedures to anchor the skin to the penile base where much adipose tissue exists.

The major problem of this procedure is postopera-

tive edema of the inner prepuce. From our observations of the first few operated patients, persisted edema may be a result of a tight preputial ring that obstructed the penile venous or lymphatic return. A tight preputial ring can be avoided by incision, or resection if there is sufficient skin. Another cause is excessive inner prepuce and subcutaneous tissue with interrupted lymphatic flow. Thus, edema can be minimized by keeping just enough inner prepuce to cover the penile shaft and reduce subcutaneous tissue under the inner prepuce if possible. During the dissection of the subcutaneous tissue from the inner prepuce and the Buck's fascia, the lymphatics are preserved in this modified procedure. In most of our patients, edema subsided within a month. Since more inner prepuce must be preserved in Group A patients, they usually had a more severe and longer duration of postoperative edema.

The necessity of surgery for buried penis is controversial. Although many are asymptomatic, buried penis may cause adverse psychological effects in boys and anxiety of parents. To determine whether surgical treatment is beneficial or not, the safety and the result of the techniques must be considered. Thus, if a simple surgical procedure is able to solve the problem, surgery may be appropriate for these boys. The procedure we have described is simple, not much different from a conventional circumcision, and is therefore

ideal for selected patients with buried penis.

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