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Pedicled skin flap of foreskin for phalloplasty in the management of completely concealed penis

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Abstract

Objective: To evaluate the effect of pedicled skin flap of foreskin for phalloplasty in the management of completely concealed penis.

Methods: We retrospectively reviewed 97 consecutive patients with completely concealed penis, which had been surgically corrected between November 2004 and January 2012. All patients were repaired using 2 surgical methods: 18 with Shiraki's operation and 79 with a technique of pedicled foreskin skin flap.

Results: With 1 month to 7 years (mean 18 months) follow-up, the 18 cases treated by Shiraki's operation had satisfactory exposed penile shaft but too much incision and obvious edema. The 79 cases treated by pedicled foreskin skin flap uniformly reported satisfaction with the operative results. They found the surgical repair was successful in appearance and improved hygiene, accessibility, and penile exposure. There was no recurrence to the pre-treatment condition, or any chordee, penile distortion, trapped penis, erectile abnormalities, or voiding complications in any case. The pedicled skin flap was without ischemia or necrosis and yielded no post-operative wound infections, wound separation, or unsightly scarring. Slight edema and swelling of the flap were common, but these issues completely resolved by 3 weeks.

Conclusion: Numerous operative procedures have been described and adopted for the management of completely concealed penis, but the pedicled skin flap phalloplasty can achieve maximum utilization of prepuce to assure coverage of the exposed penile shaft. It has fewer complications, achieving marked aesthetics and often functional improvement. This suggests pedicled foreskin skin flap for phalloplasty is a relatively ideal means for treating completely concealed penis.

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Concealed penis is a congenital abnormality characterized by a thick dysgenetic fascia that tethers the penile shaft, prevents the penis from exposure and leaves just barely enough prepuce to cover the penile shaft. In the past few years, numerous surgical procedures have been developed to correct this condition. However, no reported method has been fully effective with all types of concealed penis. From November 2004 to January 2012, we used a phalloplasty technique using a pedicled foreskin skin flap to correct the completely concealed penis by tailoring the flap, providing good cosmetic and functional results. The purpose of this study is to describe the technique of pedicled foreskin skin flap which was devised in 2004 and refined throughout the

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course of the study period by the author based on accumulated experience.

1. Materials and methods

A retrospective review was performed of 97 consecutive patients who underwent phalloplasty for completely concealed penis between November 2004 and January 2012. All patients, 2 to 14 years of age (average 3.8 years old), were brought in by their parents because of concern about the abnormal appearance of their child's penis. Indications for surgery included complete inability to visualize the penis, difficulty holding the penis while voiding, difficulty with proper hygiene, phimosis, recurrent balanitis and social embarrassment when dressing with peers. Upon physical examination, none of the patients was noted to be circumcised or extremely obese. In all patients, stretched penile length was appropriate for age. Each patient had normal appearance of the scrotum, which contained two normal gonads, but the ventral skin and dartos fascia were aplastic. Concomitant genital anomalies, including hypospadias, chordee, penoscrotal webbing and trapping by preputial scar, were ruled out. We divided the patients into 2 groups: group 1 had 18 cases which were treated by Shiraki's operation [1] and the other group of 79 cases was repaired using the pedicled foreskin skin flap technique. All patients were available for follow-up evaluation.

1.1. Operative technique

Group one used the Shiraki's operation [1] , the other group's operative technique was as follows: The patient was placed in the supine position, and inhaled anesthesia combined with caudal block anesthesia was induced. Prophylactic antibiotic is administered. A vertical midline incision is made on the ventral side of the narrowest part of the penile shaft skin. When any constrictive rings or penile adhesions are released, a holding suture is placed in the glans for traction purposes. A circumferential incision is made approximately 0.8~1.0 cm proximal to the coronal sulcus. The penis is completely degloved to the penopubic junction, and dissection is performed between the dartos and Buck's fascia. Any bands of dysplastic tissue tethering the penis are divided. Additional partial or complete release of the shallow group of penile suspensory ligaments may further increase length. The dermis of the skin at the penopubic junction is fixed to tunica albuginea of corpora cavernosa penis using a 3-zero non-absorbable silk suture at the 2 o'clock and 10 o'clock positions to lengthen the penis and to prevent shaft retraction. Dorsal penile nerves are avoided, and sutures are placed longitudinally to minimize any accidental nerve damage. A trapezoidal pedicled skin flap is then obtained by traversing the prepuce just on the junction between the inner and outer layers, dissecting between the superficial and deep penile fascia, which is supplied by a shallow arterial branch of the penis. Next, a buttonhole at the avascular area of the pedicle is made, and the penis is placed through this opening. The trapezoidal pedicled skin flap of foreskin is then overlaid on the ventral side of the penile shaft, tailoring the pedicled skin flap to cover the defect. Any excessive skin is removed, and all incisions are sutured using 5-0 full thickness interrupted absorbable sutures. At the end of the procedure, a urinary catheter is inserted to prevent post-operative urinary retention, and a sterile and elastic dressing is applied (Fig. 1).

1.2. Postoperative procedure

A prophylactic antibiotic is given on the day of operation and maintained for 2 days. The urinary catheter is removed in 5 days, and both doctors and parents observe voiding immediately afterwards. The elastic dressing is removed after 5 days. At that time, patients are discharged home with instructions to have a partial sitz bath in 2.5% salt water twice daily for 2 to 3 weeks. All the patients have regular follow-up through our outpatient department.

2. Results

A total of 97 patients underwent operation. In all cases, the amount of skin was sufficient to assure coverage of the exposed penile shaft. We did not perform suprapubic lipectomy or liposuction on any patient. At a median follow-up of 18 months (range 1 month to 7 years), the 18 cases treated by Shiraki's operation had satisfactory exposed penile shaft but too much incision and obvious edema (Fig. 2B), the 79 cases treated by pedicled foreskin skin flap uniformly reported satisfaction with the operative results regardless of patient age at surgery. They found the surgical repair was successful in improving penile appearance, as well as improving hygiene, accessibility and penile exposure (Fig. 2C, D). There was no recurrence to pre-treatment penile status or any chordee, penile distortion, trapped penis, abnormalities of erection or voiding in any case. Generally, pedicled foreskin skin flap is without ischemia or necrosis, and creates no added risk for wound infections, wound separation or unsightly scarring. Slight edema and swelling of the flaps are common, but these issues completely resolve after 3 weeks. None of the patients required additional surgery.

3. Discussion

The term "concealed penis" refers to a wide spectrum of inconspicuous penis that appears to be small on inspection, even though the penile shaft can be normal in size. Thus far, the classification and etiology of this condition have been controversial [2-4]. However, there is a consensus that concealed penis is a congenital abnormality characterized by a thick dysgenetic fascia that tethers the penile shaft, prevents

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