



Free Flap Phalloplasty For Female To Male Gender Dysphoria

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INTRODUCTION

The aim of total phallic construction is the creation of a cosmetically acceptable sensate phallus with incorporated neo-urethra, to allow the patient to urinate in the upright position in a male urinal and with enough bulk to allow the insertion of one or two cylinder(s) of a penile prosthesis to guarantee the rigidity necessary to engage in penetrative sexual intercourse. Ideally, the procedure should involve a minimal number of surgical stages and lead to minor disfigurement of the donor site.

Although an ideal technique does not exist yet, at present the radial artery based forearm free flap phalloplasty seems to guarantee superior cosmetic and functional results in terms of cosmesis, tactile and erogenous sensation, and function.

The total process is completed in one year and involves three stages, which are performed at six monthly intervals in order to give enough time for the complete healing process to occur after each operation. The first stage involves the formation of the phallus from the nondominant arm and transfer to the recipient site, the second stage involves the connection of the native to phallic urethra, a laparoscopic total abdominal hysterectomy, bilateral salphingo-oophorectomy, scrotoplasty, and glans sculpturing according to the Norfolk technique. Patients may undergo an ablation vaginectomy and have the clitoris buried at this stage.

In the last stage, a three-piece inflatable penile prosthesis is inserted in the phallus to guarantee the rigidity necessary to engage in penetrative sexual intercourse. According to the size of the phallus, one or 2 cylinders are inserted.

FIGURE 1

The forearm free flap is raised from the nondominant arm under tourniquet compression; the tourniquet time should not exceed two hours to minimize ischemic damage. The size of the flap varies according to the dimensions of the forearm and to patient's expectations. The flap is separated longitudinally in 2 portions by a 1 cm wide strip of de-epithelialized skin to prevent fistula formation. The medial portion, obtained from the relatively hairless medial aspect of the forearm, is typically 4 x 17 cm and forms the neo-urethra while the lateral portion, that is

usually 14 cm long and has a width of 14 cm at the base and of 11 cm at the tip, will form the phallus. The flap is based on the radial artery, which is dissected to its origin with the brachial artery. The venous drainage is usually based on the cephalic vein, the venae comitantes of the radial artery and flap veins. Sensation of the flap is provided by the cutaneous nerves of the forearm.

The phallus is created in a "tube within a tube" fashion using 4-0 Monocryl sutures (Ethicon, Cornelia, GA, USA). The urethral strip is tubularised around a 16 Ch catheter and its proximal portion left spatulated for 2 cm to be connected to an inverted "U" shaped flap of inner labia located on the lateral aspect of the clitoris. Once the neourethra has been completely fashioned, the lateral aspect of the flap is wrapped around the neourethra to form the bulk of the phallus. Once the phallus is completed, its vascular pedicle is divided and the free flap is transferred to the recipient site.

FIGURE 2

The phallus is transposed to the recipient site and the following vascular, neural, and urethral microsurgical anastomoses are performed with 8-0 nylon sutures:

1. Arterial: radial artery to inferior epigastric.
2. Venous: cephalic to long saphenous; usually the radial venae comitantes were incorporated with the cephalic. Other flap veins to smaller saphenous branches.
3. Neural: cutaneous nerves to ilioinguinal, iliohypogastric, and dorsal nerve of the clitoris.

A median of 2 venous (range 1 to 5) and two neural (range 0 to 4) anastomoses are usually made.

After adequate preparation, the forearm donor site is covered with a full thickness skin graft harvested from the buttock. A compression dressing is then applied to the graft and the arm elevated for one week, and inspected weekly thereafter.

Patients are usually kept under close monitoring including an hourly Duplex Doppler ultrasound of the vascular pedicle in order to identify early signs of flap ischemia.

FIGURE 3

During stage 2, the native and phallic urethra are joined to allow the patient to void from the tip of the phallus. At the patient's request, the clitoris can be left exposed or be

de-epithelialized and buried at the base of the phallus in order to improve cosmesis, and the labia majora are fused together to form a pseudo-scrotum. An ablation vaginectomy and laparoscopic total abdominal hysterectomy and bilateral salpingo-oophorectomy can be performed at this stage. A pseudoglans is fashioned according to the Norfolk technique. Patients are discharged after 2 days with a urethral stent for 1 week and a suprapubic catheter for 3 weeks.

FIGURE 4

Penile prosthesis insertion into the phallus is performed after 1 year to allow enough time for recovery of tactile sensation. According to the girth of the phallus, one or two cylinders of a three pieces inflatable penile prosthesis are inserted. The pro-

cedure is carried out through a groin crease incision. As there is no tunica albuginea to house the cylinder, a vascular prosthesis is applied to the rear aspect of the cylinder as a sock for anchorage to the pubic bone with 3 J Ethibond (Ethicon) sutures and a cap fashioned and applied to the prosthesis tip to minimize the risk of distal erosion. The pump of the implant is placed on one side of the neoscrotum while a testis prosthesis is positioned on the contralateral side to guarantee symmetry. The reservoir is placed through a second incision in the iliac fossa.

The implant is left partially inflated for haemostatic reasons and the patient is discharged home on oral antibiotics for one week. The implant is then deflated in clinic after 7 days and the patient can engage in penetrative sexual activity 6 weeks postoperatively.

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