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Phalloplasty in Male Pseudo-Hermaphrodite

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Abstract

Male pseudo-hermaphrodite is a rare congenital anomaly in Egypt. Unfortunately, some families in Upper Egypt perform female circumcision through excision of the clitoris within the first year of life. If this is done in patients with male pseudo-hermaphrodite, excision of the penis will be inflicted resulting in a great problem particularly after puberty. We were in contact with 6 cases of male pseudo-hermaphrodite in whom excision of the penis was inflicted in young age. According to the technique of Chang and Hwang, penile reconstruction was carried out through preparation of a full thickness skin flap from the forearm with its intact arterial supply (the radial artery), its draining vein (the cephalic vein) and nerve (the lateral cutaneous nerve of the forearm). We fashioned the flap into two tubes: a wide one for penile prosthesis, later on, and the narrow one as the new urethra. We performed anastomosis of the radial artery to the profundal femoris artery, cephalic vein to the great saphenous vein and the lateral cutaneous nerve of the forearm to the medial cutaneous nerve of the thigh using surgical microscope. Results were very satisfactory as regard to the cosmetic appearance and micturition with no significant complications except for one case who developed urinary fistula at the junction of the flap with the native urethra that was repaired successfully.

After 6 months of phalloplasty, we fixed a single penile prosthesis to the base of the periosteum of the lower border of the symphysis pubis. Penile implants were successfully performed in the first 3 patients of the series and the remaining 3 are still awaiting.

Introduction

Loss of the penis could be partial or complete and seen most frequently following injury and rarely after amputation of the penis in penile cancer [1]. Bogoras; Frank, Gillen & Horizon [2-4] and Morgan [5-9] used pedicle skin flap for penile Reconstruction from the abdominal wall. Cower [10]; Titian and Hubbord 1969 reported their technique of pedicle of tube flap from the thigh. Godwin and Scott [6] did reconstruction of the penis from the scrotum. Orticochea [9] described reconstruction of the penis using gracillis musculo-cutanous flap. Partial loss of the penis is commonly traumatic and may be associated with avulsion of the scrotum. War injury and gunshot wounds have been reported, self amputation have been reported in mentally disturbed patients; Animal Bogores bite, thermal injury and radical surgery for penile cancer. To achieve rigidity of the new penis. Morgan; Bogores; Frunk and most of Russian Authors recommend the use of endogenous cartilage but commonly now prosthesis is used as first stage or later on. Packet and Monti did reconstruction of the penis using a tube groin flap. Change and Whang popularized the forearm flap in 1984 and in 1988. Beimer reported a modification of the forearm flap by doing the cricket bat modification of the furrow; today forearm flap is the most commonly Flap used for penile reconstruction.

Patients and Methods

We were in contact with 6 cases of Male-Pseupohermaphrodite, aged from 14-18 who came complaining of psychiatric problem as a female and his psychological behavior is male; insemination occurs with sexual excitation. Also, the parents say that there is no development of female breasts after puberty and absence of menstruation. On clinical examination, they were proved to be male pseudo-hermaphrodite and amputation of the small penis was done in infancy-on assumption that the organ is the clitoris that is excised in young female in some families in rural areas of Upper Egypt and is called female circumcision. Clinical examination; abdominal ultrasonography; and CT scan were done for detection

of Mullerien organs. Chromosomal study was done also and in 4 cases cystourethroscopy was done. Then the patient was sent to psychiatrist for evaluation of psychological behavior.

Anesthetic Considerations

The time of operation averaged from 10-12 hours from induction of anaethesia till end of the operation where he start first by: Induction by 100 mg. fentanyl I.V.; 500 mg interval, I.V. and 50 mg tracurium as muscle relaxant. Then the patient undergoes, maintenance anesthesia by isoflurane 1% inhalation followed by fentanyl 1mg/kg/hour and tracurium shots of 5 mg every 1/2-1hour according to the case with continous inhalation by N_2O / O_2 in ratio of 50/50. Fluid intake includes, say if the patient is 60 kg, he takes 100 ml / hour and the total amount of fluid + fasting time. If the fasting time before the operation is 10 hours he takes 100x10= 1 liter and then maintenance during operation by 100ml/ hour and replacement in continuous according to blood loss and urine output. Continuous monitoring of urine output, Na, K, blood gases, glucose level and correction occur according to needs.

Surgical Techniques

Two teams start at same time where we do urethral tube; orchidopexy; fixation of testes to base of the scroutm and scrotoplasty then we start to do degloving of the amputated penis after excision of the chordate to be striate and bare; at the same time the other team is preparing the flap. Under tourniquet control, a radial forearm flap, 11 cm long and 13 cm wide, is planned on the volar surface of the left forearm. A strip of skin one cm wide along the axis of the flap is de-epithelialised dividing the flap into ulnar part, 3 cm wide, which will be the neo-urethra and radial part, 9 cm wide, which will be the penile skin. The flap is raised with the radial artery, one superficial vein and the terminal branch of the lateral cutaneous nerve of the forearm. The ulnar part of the flap is rolled around a silicone catheter so that the skin surface faces inside and the skin edge is sutured to the ulnar side of the de-epithelialised area thus forming the neo-urethra. The radial part of the flap is then rolled around -neo-urethra so that skin surface faces outwards and the two subcutaneous surfaces are opposed together. The skin edges are border of the flap around the neo-urethral meatus. The tourniquet is then deflated, and the flap is allowed to perfuse. The recipient side in the medial surface of the upper left thigh is dissected to prepare the recipient vessels; the profunda femoris artery and great saphenous vein, and the recipient nerve; medial cutaneous nerve of the thigh.

The new penis is then transferred, and the catheter is passed into the proximal urethral stump and the edge of the urethral stump is anastomosed of the proximal edge of the neo-urethra. The proximal edge of the reconstructed penile skin is sutured to perineal skin incorporating the remaining corporal tissue. The neurovascular bundle is then passed into skin tunnel to reach the medial surface of the thigh. Neurovascular anastomosis is then done with 10/0 monofilament nylon under the operating microscope. The patient is put under observation in the ICU unit for two days. After vascular and nerve anastomosis the bare segment of the amputated penis is buried by the wide tube of the flap; new urethra is anastomosis to the proximal urethral tube by 40 vicryl and skin all around is sutured to skin by 3/0 chromic catgut. The bare area of forearm is covered by skin graft taken from the thigh. Later on after 6 months of the last phalloplasty we prepared the first 3 cases to apply prothesis of the new phallus which was done under spinal anesthesia and a transverse lower abdominal incision over the symphysis pubis was done to expose it and dilatation of the dorsal tube in the phallus was done for application of a single prosthesis which was covered by a Teflon mesh before fixation and its base was fixed to the periostium of the lower border of the symphysis pubis. Third generation cephalosporin was given in the form of ceftazidime daily.

1gm I.V. every 8 hours for 6 days and then 750 gm of levofloxacin once, daily for other 10 days. Hospital stay was from 3 weeks to one month.

Result

No. of cases done	6
Age	14-18 years
Heredo-familial factor	Big relation
Breast	Male breast in all cases
Menstruation	Absent in all cases
Inguinal undescended testis	3 cases
Retractile testis	3 cases
Bifid scrotum	In all cases
Amputated penis	In all cases
Ultrasonography	Absence of Female pelvic organs
CT scan	Absence of Female pelvic organs
Chromosomal study	All 44 autosomes plus XY chromosomes
Cystoscopy	Normal apart from small sized verumontanum (rudimentary).
Psychological behavior	All male
Mullerian preeminent.	Short vaginal 2cm length in 2 cases.

Table 1: Shows clinical and investigatory results.

Operative Results

Anesthesia was very satisfying, and no complications were recorded till end of operation. Time of operation 10-12 hours.

Patient stays in the ICU for 2 days. The penile shaft after degloving of the penis and excision of the chordae about 3 cm lengths. No dangerous technical problems were reported during orchiopexy, urethral reconstruction and scrotoplasty. Microsurgical technique for vascular and nerve anastomosis was very satisfactory and not difficult. Relief of post operative pain in the first few days was done by NSAIDs. No post-operative sepsis was reported. Patient became recumbent for 10 days and massage of the back and buttocks to prevent bed sores. Cystocath was removed after 10 days. Urethral catheter is removed after 21 days. Hospital stays from 3 weeks to 1 month and do follow up monthly for 6 months. Prosthesis application was very successful, and no postoperative complications were reported and the case with urinary fistula at the Junction of the phallus and the scrotum was closed and perineal urethrotomy was done during operation of prosthesis application to prevent complications.

Discussion

Different techniques have been applied for penile reconstruction in cases of partial or completely amputated penis which is commonly traumatic; war injury; avulsions of the penis and scrotum; animal bite and after amputation of the penis for cancer. Pedicle cutaneous flap was taken from abdominal wall by Bogors; Gillen and Morgan. Cower; Tuian and Hubbord used the flap from the thigh. Godwin and Scott did penile flap from the scrotum and Orticochea did Gracillis muscuolo-catuanous flap for penile reconstruction. Amputation of penis was done in our cases of male pseudo-hermaphrodite because after birth the picture of genitalia appears as female and some families in rural areas of Upper Egypt do female circumcision in which clitoris is excised. All of our cases came after puberty due to absence of development of female sex characters like picture of breasts; hair in the face; no menstruation and appearance of testicular bulg in the inguinal region. The psychological behavior proved to be male; clinical and investigative findings including chromosomal study were male. In all cases penile reconstruction was done according to technique of Hang and Shwang using full thickness cutaneous flap from the forearm with the application of modification done by Biemer. Our results were very satisfactory with 2 years follow up including length; picture of the new phallus and function of new urethra. In 2 cases there were Mullerian remnant which is a short vagina about 2 cm. length in which we start with vaginenctomy takening care not to injure the urethra, then we complete forming urethral tube, scrotoplasty orchidopexy; degloving of the remnant amputated penis and lastly, we do fixation of the flap using surgical microscope to do anastomosis of vessels and nerve.

Now after these good results we are preparing other 3 cases of male pseudo-hermaphrodite 1 case; of very short penis after reconstruction of bladder exstrophy and 2 cases after trauma. Penile reconstruction with full thickness cutaneous flap from forearm proved to be a very satisfactory operation. The remnant segment of the amputated penis is covered by the wide tube of the flap, and the new urethra to the proximal urethral tube then anastomosis of skin to skin is done. Application of penile prothesis for the first 3 cases was very easy and results were very satisfactory and patients their psychological behaviour were very happy and works as a man.

Conclusion

Forearm full thickness tube flap according to Chang and Hwang technique for penile reconstruction in amputated penis, which is commonly traumatic is a very satisfactory operation for solving these problems.

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