SHORT ARTICLE

Scrotal Reconstruction: Our Experience

Pawan Agarwal

ABSTRACT *Genital skin loss in men may be caused by variety of reasons. Reconstruction of scrotum is required not only for cosmetic reason but also for functional and psychological reasons as well. Numerous techniques have been described for scrotal reconstruction reflecting the challenge and complexity, these defects present. This suggests that no single method is satisfactory for all types and varying degrees of skin loss. This retrospective study was conducted in the department of surgery NSCB medical college Jabalpur India, over a period of 3 years. The records of all the patients who underwent scrotal reconstruction were reviewed and data compiled.*

Twelve patients with only scrotal or penile injury and infection were included in the study and operated by different methods. Age of the patients ranged from 20-60 year. Five patients had traumatic loss of scrotal skin and 7 resulted following Fournier's gangrene. All patients had loss of scrotal or penile skin. There was complete healing in ten patients with minor complications in the form of partial skin graft loss in one and wound dehiscence in other patient. Aesthetic results were good in 8 patients and satisfactory in 4 patients. At 3 month semen examination showed normal sperm count.

Key words *Scrotal avulsion, Scrotal Reconstruction, Technique.*

INTRODUCTION:

Genital skin loss in men may be caused by avulsion injuries, assaults, self-mutilation, burns, animal attacks, gangrene of the male genitalia and excision of filarial scrotum. Scrotal construction may also be required for congenital agenesis and female to male intersex surgical intervention. Reconstruction of the scrotum after complete loss of the overlying skin is a challenging problem. The difficulty in reconstruction of scrotum lies in the fact that the blood supply to the scrotal skin is destroyed when the skin and dartos muscle are avulsed or involved in infective process. Bacterial flora of the perineum, difficulty of immobilization and contour of testes makes the task of testicular coverage difficult.[1] Reconstruction of scrotum is required not only for cosmetic but also for functional and psychological reasons as well. [2]

Fortunately most of the scrotal injuries do not directly involve the testes. They are protected by their mobility, the cremasteric reflex and the strength of tunica albuginea. Consequently testicular coverage rather than repair, is usually the concern in extensive scrotal injuries. Various modalities of treatment advocated for such situations are skin grafting, flaps, implantation of the exposed testes in the inguinal pouch and tissue expander. Numerous techniques have been described for scrotal reconstruction reflecting the challenge and complexity these defects present.[3] This suggests that no single method is satisfactory for all types and varying degree of skin loss. The purpose of this study was to describe the indications, effectiveness and feasibility of different methods of scrotal reconstruction following genital skin loss.

Correspondence:
Dr. Pawan Agarwal
Plastic Surgery Unit
Department of Surgery
N.S.C.B. Government Medical College
Jabalpur, 482003 (M.P.) India.
E- mail: drpawanagarwal@yahoo.com

METHODOLOGY:

This retrospective descriptive study was conducted in the department of surgery NSCB medical college Jabalpur India over a period of 3 years. The records of all the patients who underwent scrotal reconstruction were reviewed and data complied. All the patients with only scrotal or penile injury and infection were included in the study. Patients with traumatic loss of skin were debrided and primarily covered with skin graft or flaps. Patients with Fournier's gangrene underwent initial debridement followed by regular dressing to reduce the contamination and secondarily covered. Two patients were treated with debridement and closure of scrotal remnants. (Figure I a,b). Four patients had skin grafting. Four patients were reconstructed by gracilis muscle flap with meshed skin graft. (Figure II a,b,c). In two patients bare testes were implanted

Fig I a: Scrotum with skin loss

Fig I b: Primary Closure of the defect

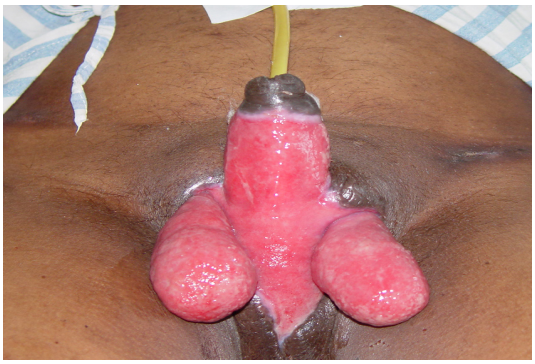

Fig II a: Loss of penile and scrotal skin

Fig II b: Gracilis muscle flap harvested

in relatively thin thigh flaps and penis was covered with thin skin graft. (Figure III-a,b). Aetiology, method of reconstruction, complete healing, aesthetic results and postoperative semen examination were assessed. An aesthetic result was assessed by two

Fig II-c: Skin cover provided

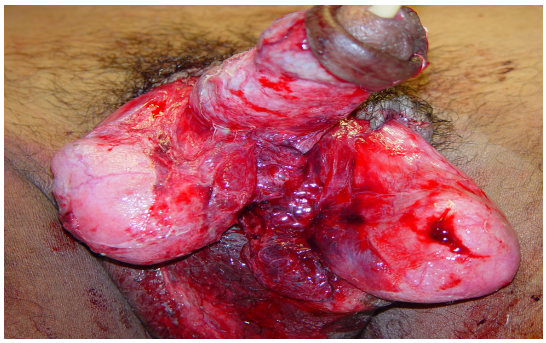

Fig III-a: Extensive loss of penile and scrotal skin

Fig III-b: Penile defect with covered thin skin graft and testis implanted in thigh flaps

xpert plastic surgeons and patients were also asked to evaluate the result in the form of good, satisfactory or poor.

RESULTS:

Twelve patients of scrotal skin loss were operated over a period of 3 years. Age of the patients ranged from 20-60 year with mean age of 39 year. Out of 12 patients five had traumatic loss of scrotal skin and 7 resulted following Fournier's gangrene. None of the patients had urethral, abdominal or pelvic injury. All patients had loss of scrotal or penile skin. There was complete healing in ten patients with minor complications in the form of partial skin graft loss in one and wound dehiscence in other patient. In both the patients wound healed after conservative

treatment. Aesthetic results were good in 8 patients and satisfactory in four. There was no poor result. Postoperatively testosterone level was not measured but at 3 month, semen examination showed normal sperm count.

DISCUSSION:

Partial scrotal loss is seldom a problem, and closure of the defect with the remaining scrotal skin can usually be accomplished due to viscoelastic properties of the scrotum. When scrotal remnants are available, the results are optimal as far as size, cosmesis and function measured by sperm count, are concerned.[4] Primary skin grafting for scrotal avulsion injuries was first advocated by Millard and subsequently updated by Maguiña.[5,6]

In cases of complete loss of penis and scrotum skin, graft may be successful and simplest option in closure of these defects. Spermatic cord can be partially retracted up into the inguinal canals, and testicles should be sutured together to minimize motion and maximize graft take. Long-term success with skin grafting for scrotal injury is excellent and only 20% of patients require significant revisions or reconstructions. However, the split skin grafting may have certain disadvantages like technically difficult, take of graft may not be satisfactory, hair growth, contraction and distortion, lack of protection and less acceptable cosmetic results.

Thigh pouch offers the simplest temporary coverage for the exposed testicles. It is important to create these pockets superficially to provide cool environment for normal spermatogenesis. However, the psychological and functional implications of absent scrotum may warrant eventual scrotal reconstruction. A study of the temperature of potential positions of testicles recorded average temperatures were 98.34^0 F in the inguinal canal, 98.98^0 F in the thigh, 89.1^0 F in the scrotum and 88.53^0 F in the superficial thigh. Poor temperature regulation, testicular pain, atrophy and concern regarding future function of testes made this technique unpopular.

In 1951 Douglas published the results of the first one stage scrotal reconstruction with thigh flaps.[7] At present several loco-regional skin and fasciocutaneous flaps from thigh, perineum and groin area have been described to reconstruct scrotum. These flaps represent an excellent tool in scrotal reconstruction but they have certain limitations. Muscle flaps like gracilis and rectus abdominis are well vascularized have been used for scrotal reconstruction. A limitation of muscle flap includes hair bearing skin, sacrifice of functioning muscle, poor sensation and scarring on thighs and lower abdomen.[8]

Above mentioned techniques cannot replace the unique quality of scrotal skin which can be done by tissue expansion. The use of tissue expanders for scrotal reconstruction has the advantages of excellent functional and cosmetic results with simple surgical technique. Tissue expanders have been used to reconstruct two-compartment scrotum provided that adjacent perineal or inguinal skin is uninvolved.[9] It was observed that as little as a third of the residual scrotum could be expanded to resurface the entire scrotum. Basically in cases of severe nercotizing fascitis the muscle or omental flap is the best choice since the muscle is able to counter the infection in much better way. In cases of traumatic defects placing the testes in subcutaneous thigh pouch, split skin graft or fasciocutaneous flap can be used.

CONCLUSIONS:

The scrotal reconstruction is chosen on an individual basis. There are multiple techniques available for scrotal reconstruction and no single technique can be labeled the best. The choice will depend upon surgeon's preference, condition of the patient and ability to achieve best reconstructive results with minimal morbidity.

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