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Medial thigh flap method of reconstruction of scrotal defect following Fournier's gangrene

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Abstract
Introduction: Fournier's gangrene is a necrotizing fasciitis of the male genital and perineum that can rapidly progressing and fatal if not treated promptly. Emergency debridement of necrotic tissue is done followed by dressings and IV antibiotics. Various techniques are available for further management like burial of testes in thigh pockets, flaps from thigh, split thickness skin grafts, local scrotal advancement flaps.
Material and Method: Medial thigh flap is performed in 10 patients with Fournier's gangrene from January 2018 to 31 December 2018. After extensive debridement of fournier's gangrene all patients had soft tissue defect. Unilateral medial thigh flap coverage was done in all patients. All patients were followed for 6 months.
Results: All patients had involvement of scrotum only. Age group was between 40-50 yrs. 9 cases had no complications post operatively and flaps survived well. One patient had suture dehiscence. In all cases donor site healed well with no complications.
Conclusion: Medial thigh flap provides durable and protective cover for perineoscrotal defects. This flap offers single stage, stable and well vascularized soft tissue coverage. Advantages are reliable flap, no donor site morbidity, less time consuming, less bulky, well vascularized soft tissue.

Keywords: Fournier's gangrene, medial thigh flap, debridement

Introduction

Founiers's gangrene is a necrotizing fasciitis of male genitelia and perineum that can be rapidly progressive and fatal if not treated promptly [1]. Risk factors for Fournier's gangrene include uretheral stricture, perirectal abscess, poor perineal hygiene, diabetes mellitus, cancer, HIV, and other immunocompromised state. Founier's gangrene is a necrotizing fasciitis of the male immunocompromised states [2]. Infection spread along with dartos, scarpa, and colle's fascia. Clinical features include fever, perineal and scrotal pain and associated indurated tissue cellulitis, eschars, necrosis, flaking skin and crepitus may be observed [3]. Emergency debridement of the necrotic tissue is done followed by intravenous antibiotics and dressings. Patient requires strict glucose control and adequate nutrition for wound healing.

As testes have separate blood supply so testes is usually spared. As good coverage is required for fourniers, depending upon the lesion many options are available like simple burial of testes, orchidectomy followed by spontaneous closure, flaps, skin grafts. Multiple debridements may be required, often resulting in significant soft-tissue loss requiring reconstruction. There various techniques available for further management like burial of testes in thigh pockets, secondary suturing, flaps from thighs, spit thickness skin grafts, local srotal advancement flaps. The goals of reconstructing Fournier defects are to provide protective coverage of the testes, preserve testicular function, and gain acceptable cosmetic results with minimal associated morbidity and mortality. Fournier gangrene often affects patients with significant comorbidities including diabetes, alcoholism, and advanced age [4]. Various techniques that have been described for the reconstruction of these defects are; split‐thickness Skin grafts [5], muscle flaps (eg. gracilis flap) [6], Fasciocutaneous flaps (eg. pudendal flap) [7], perineal flap [8], anterolateral thigh flap [9], deep inferior epigastric perforator flap [10], anteromedial thigh flap [11].

Thus a technically simple procedure is preferred. There is no general consensus on the best method of reconstruction or how to approach the exposed testicle. We systematically reviewed the literature addressing methods of reconstruction for Fournier defects after final debridement.

Material and Method

The present prospective study was conducted in Plastic and Reconstructive Surgery Department of Muzaffarnagar Medical College among ten patients selected consecutively from January 2018 to 31 December 2018. The medial thigh flap was performed in ten patients with Fournier's gangrene admitted in the department. The age group of the patients ranged from 40–60 years. Patients were excluded if they were having defect involving area more than scotum, comorbid conditions, lost follow up of less than 6 months and patients having malignancies. After extensive debridement of Fournier's gangrene, all patients had soft‐tissue defects of scrotal and perineal areas. Unilateral medial thigh flap coverage was done in all patients. All patients were followed for 6 months postoperatively. Preoperative evaluation was done based on the following:

1. Personal information such as age address.
2. History of presenting complaints including onset of symptoms, course of disease, and duration of symptoms.
3. Past medical and surgical history, to rule out diabetes mellitus, alcoholism, and any previous trauma or surgery.
4. Daily dressings done to remove all the unhealthy tissue till the granulation tissue appeared.

5. Routine preoperative investigations.
6. Stabilization of sugar levels.

Anatomical basis of the flap

The skin area of the flap extends from inferior aspect of the femoral triangle to the junction between the middle and distal thirds of the medial thigh. The lateral edge of the adductor longus and the medial edge of the rectus femoris muscle make the lateral border of flap. The medial thigh flap is based on the septocutaneous branch of femoral artery. The axis of the flap is a line joining apex of femoral triangle and the medialfemoral condyle.

Operative technique

The dominant pedicle was located at the apex of the femoral triangle around 7–8 cm below the inguinal ligament and it was detected preoperatively with the help of Doppler examination. The axis of the flap was a line joining apex of femoral triangle to the medial femoral condyle. The width of the flap ranged from 6 to 10 cm, whereas the length ranged from 16 to 26 cm. Dissection was done distally to proximal In the subfascial distal plane over the muscle. Procedure was done under spinal anesthesia. After yielding, flap was rotated, testicular and perineal area was covered and creating a scrotum with tension‑free inset. The donor sites were managed by primary suturing.

Postoperative care

All patients had to restrict their movements in bed for 5 days. Intravenous Antibiotics were given for 5 days followed by oral antibiotics for 7 days postoperatively. Stitches were removed after 10 days and the patients were taken for follow up for 6 months.

Results

All of the patients had involvement of scrotum only. The age range of patients was 40–60 years. 9 cases had no complications postoperatively and flaps survived well, however in 1 case there was suture dehiscence due to surgical site infection cases were managed conservatively. Takeup site had no complications. In all cases, donor site healed well with no complications (Figure 1-4).

Fig 1

Fig 2

Fig 3

Fig 4

Discussion

Our main aim for treating fourniers gangrene is to treat the underlying pathology leading to disease and prevention of infection [12, 13]. Many organisms are responsible for this infection like staphylococcus, streptococcus, anerobes, E coli and many more [14]. The underlying diseases that can lead to are immunocompromized state, diabetes mellitus, alcoholism, trauma, uremia [15]. There are number of procedures available for the reconstruction of scrotum, among all reconstruction methods, flap is considered superior to grafts despite good cosmetic results, is due to contractures, less mobility poor protection of testes [16].

There are many reconstruction methods available, but it depends on patient's general conditions, size of defect, and

conditions of surrounding tissue that is required for reconstruction [17]. There are many methods of healing, the most important aspect is to restore patients functional and cosmetic needs [18]. The advantage of flap includes good vasularity, near to perineum, durability so it is superior to skin grafts. Mobilization of testes to medial thigh subcutaneous pouch, the disadvantage of this procedure is unsuitable environment for testicular function which may lead to fullness sensation, pain, atrophy, tension, feminine appearance. So this is not procedure of choice [19]. The fasciocutaneous flap of inner thigh has good vascularization due to presence of femoral artery branches (internal and circumflex pudendal), so this makes flap reliable for diabetes patients and in other conditions [20].

In this study we used medial thigh flap coverage in 10 patients with scrotal soft tissue loss. All flaps survived well except in 1 patient wound dehiscence occurred at the flap due to surgrical site infection. No donor site complication faced. Re-suturing of the dehiscence was done after the infection was managed by frequent dressings. Gracilis musculocutaneous flap and medial fascio-cutaneous flap have the same cutaneous territory. The medial thigh flap has advantage of being easier to transpose, easier and faster to raise, less bulky and provide thin pliable skin [21]. Other thigh flaps like superomedial thigh flaps are less versatile than medial thigh flap [22]. Anterolateral thigh flap is more difficult to dissect, more bulky and far from defect.

The advantage of this flap taken in present study was that; a. reliable flap, b. provides well vascularized soft tissue cover, c. No donor side morbidity (primary closure), d. Faster and less time consuming, e. less bulky with reliable skin

Conclusion

The medial thigh fasciocutaneous flap provides durable and protective cover for perineoscrotal defects. This flap offers single stage, stable, and well‐vascularized soft tissue coverage in scrotal defect cases without significant major complication.

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