

Skin Grafting in Post burn contractures of Groin and perineum in patients

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Abstract: **Background:** Groin and perineal burn contracture is a rare postburn sequel. Such postburn contractures causes distressing symptoms to the patients and in the management of these contractures, both functional and cosmetic appearance should be the primary concern. **Material and Methods:** This is prospective and descriptive study conducted in the Department of Plastic Surgery at Tertiary Care Teaching Hospital over a period of 1 Year. First dressing was seen on third or fourth postoperative day and percentage of graft take/loss was noted. Complications, if any, were recorded. Indwelling urinary catheter drainage was instituted for 3 to 4 days postoperatively. Once the graft stabilized, patients were discharged and advised to wear compression garments. **Results:** In our study, 77.1% of the patients, post burn contractures of the groin and perineum were because of Open chulla. Other less common causes were hot water (14.3%) and flame burn (8.6%). Majority of the patients were brought with complaints of difficulty in squatting (80.0%) followed by limitation of movements of hip joints (71.4%) and (44.3%) impairment of walking. In our series of 70 patients two types of operative procedures were performed: (1) release of contracture with split thickness skin grafting; (2) release of contracture and closure by multiple Z-plasties. Moreover, 30 (42.9%) patients having bilateral groin contractures underwent release of contracture with split thickness skin grafting. 29 (41.4%) patients underwent release of unilateral groin contracture with split thickness skin grafting and 4 (5.7%) patients underwent release of unilateral groin contracture and closure by multiple Z-plasties. **Conclusion:** To conclude, recuperation from perineal burns, both in acute period and chronic phase in case contracture occurs, is a difficult challenge physically and mentally. The agony that a burn patient endures during treatment is evident even to an onlooker.

Keywords: Post burns contracture, Groin contracture, Contracture release, Flap

INTRODUCTION

Perineum and groin constitute only 4–6% of total body surface area and are very important sites in the body anatomically and functionally. Isolated burns to the genitalia and perineum are not common. [1] These burns are of major concern to the patient as well as clinician. [2] Flame burns and scalds are common causes of perineal and genital burns. [3] Alcoholism is considered to be one of the leading predisposing factors in perineal and genital burns. [4] Child abuse is also a risk factor in perineal and genital burns. [5] “Chullah,” an earthen made stove in which wood is used as fuel in the rural areas of India, is important cause for the perineal burns. [6] Use of loose clothes during cooking, spilling of kerosene on the clothes from a burning stove, or explosion of such stoves are also associated with perineal and genital burns. [7]

Patient usually presents with difficulty in squatting, walking, sitting, urination, defecation, and sexual intercourse in married persons. [8] Since the contracture is not in a stabilized position, recurrent ulceration may occur and in exceptional cases squamous cell carcinoma (Marjolin’s ulcer) may develop. [9] Various complications of perineal burn contracture like intestinal obstruction, anal stenosis with megarectum, and gluteal pouching with total effacement of the gluteal folds and hooding of the rectum have also been reported. [10]

In the management of the secontractures, both functional and cosmetic appearances should be the primary concern. Various surgical procedures have been used for the release of these contractures which range from simple release and grafting to a number of different flap procedures.

MATERIAL AND METHOD

This is prospective and descriptive study conducted in the Department of Plastic Surgery at Tertiary Care Teaching Hospital over a period of 1 Year.

All the burn patients presenting to our facility who fulfill the standard criteria of admission were admitted to our Burn Unit. Burns involving the pubic area, genitalia, perianal area, upper posterior thigh, and buttocks were classified as perineal burns.

Epidemiological data, type, extent and severity of the burns, associated/predisposing factors, management, complications and outcome was analyzed. The specific outcomes were death or discharge from the hospital

All patients were subjected to surgery under general anaesthesia and the following operative procedures were performed: (1) release of contracture with split thickness skin grafting (2) release of contracture and closure by multiple Z-plasties.

First dressing was seen on third or fourth postoperative day and percentage of graft take/loss was noted. Complications, if any, were recorded. Indwelling urinary catheter drainage was instituted for 3 to 4 days postoperatively. Once the graft stabilized, patients were discharged and advised to wear compression garments. Regular physiotherapy and massaging with emollient creams were advised in all cases to avoid any recurrence of the contracture. Operated patients were followed and the results were analyzed according to the functional and cosmetic outcome; patient's satisfaction regarding the operative procedure and need for any secondary surgeries were recorded.

RESULT

In [Table 1], maximum number of patients were female 46 (65.7%) and male 24 (34.3%) in present study.

Table 1: Distribution of gender

Gender	Number of patients (Percentage)
Male	24 (34.3%)
Female	46 (65.7%)
Total	70 (100%)

Table 2: Distribution of different age groups

Age in years	Number of patients (Percentage)
5-10	6 (8.6%)
11-15	23 (32.9%)
16-20	27 (38.5%)
21-25	14 (20%)
Total	70 (100%)

In our study, majority of the patients were in the age group of 16–20 years 27 (38.5%) and least were 5-10 years 6 (8.6%).

Table 3: Distribution of causes of patients

Parameters	Number of patients (Percentage)
Open chulla	54 (77.1%)
Hot water	10 (14.3%)
Flame burn	06 (8.6%)
Total	70 (100%)

In [Table 3], in 77.1% of the patients, post burn contractures of the groin and perineum were because of Open chulla. Other less common causes were hot water (14.3%) and flame burn (8.6%).

Table 4: Distribution of complaints of patients

Complaints	Number of patients (Percentage)
Squatting	56 (80.0%)
Limitation of movements of hip joints	50 (71.4%)
Impairment of walking	31 (44.3%)

In [Table 4], majority of the patients were brought with complaints of difficulty in squatting (80.0%) followed by limitation of movements of hip joints (71.4%) and (44.3%) impairment of walking.

Table 5: Operative procedure of patients

Operative procedure	Number of patients (Percentage)
Release of bilateral groin contracture with split thickness skin grafting	30 (42.9%)
Release of unilateral groin contracture with split thickness skin grafting	29 (41.4%)
Release of unilateral groin contracture and closure by multiple Z-plasties	7 (10%)
Release of perineal contracture with split thickness skin grafting	4 (5.7%)
Total	70 (100%)

In our series of 70 patients two types of operative procedures were performed: (1) release of contracture with split thickness skin grafting; (2) release of contracture and closure by multiple Z-plasties. Moreover, 30 (42.9%) patients having bilateral groin contractures underwent release of contracture with split thickness skin grafting. 29 (41.4%) patients underwent release of unilateral groin contracture with split thickness skin grafting and 4 (5.7%) patients underwent release of unilateral groin contracture and closure by multiple Z-plasties. 4 (5.7%) patients with perineal contracture only underwent release of contracture with split thickness skin grafting.

Table 6: Complication had patients

Complications	Number of patients (Percentage)
Postoperative hematoma	4 (5.7%)
Minimal patchy graft loss	2 (2.9%)
Secondary contractures of the graft	4 (5.7%)
Partial recurrence of the contracture	4 (5.7%)
Total	12 (17.1%)

On [Table 6], postoperative hematoma formation under the graft was seen in 4 (5.7%) patients. Minimal patchy graft loss was seen in 2 (2.9%) patients, which was managed conservatively. Minor secondary contractures of the graft were seen in 4 (5.7%) patient. Partial recurrence of the contracture was seen in 4 (5.7%) patients who required secondary surgeries.

Functional outcome was satisfactory in 28 (93.3%) patients; their squatting, walking, gait, and movements of the hip joints were improved and patients were able to perform all day to day activities of life and essential chores that require sitting or squatting position. In 2 (6.6%) patient's functional outcome was not satisfactory.

DISCUSSION

Burns of the groin and perineum alone are infrequent and commonly occur as part of greater body surface injuries. Due to distinctive location of genitals in females, they often escape burn injuries even in larger body surface burns. Males though have a relative higher chance of genital injuries in burns escape contractures due to laxity and redundancy of penile and scrotal skin which compensates for skin loss and subsequent contracture too. [12]

Groin and perineal burn contractures are seldom diagnosed early owing to the patient's disregard, unawareness, and mostly due to coyness in exhibiting their private area to the treating physician. Delay can postpone until puberty when the problem confounds and sometimes even later in females as in our case up to marriage. [13] Onus of the problem is on the primary treating physician as well, in the immediate post burns period failing to provide proper advice. Inconsequential burn contractures in these areas, which can be found unpleasant if present on exposed areas especially face and hands, are commonly ignored by the patients. However, many a times can cause a functional disability if disregarded. [14]

Contracture bands in the groin across the symphysis pubis bind the thighs together. This impairs movement, especially abduction and causes difficulty in walking, sitting, squatting, micturation, defecation, and also sexual activity. [15] In India, squatting is necessary posture for micturation and defecation and is often

debilitating especially to rural patients. Another predicament is recurrent ulcerations as perineal and groin burn contractures are not in steady location. Constant breakdown and subsequent healing may occasionally lead to premalignant Marjolin's ulcer. [16]

It is necessary to relieve functional disability rather than providing cosmetic relief so that patients can be able to perform essential chores. Hence for resurfacing, it is desirable to bestow flap cover, especially recruited from the burn scar area itself, though skin grafting is an effective tool in the armamentarium. [17]

Enduring measures have to be instituted postoperatively to prevent consequent contraction. Regular physiotherapy, massaging with emollient creams and use of pressure garments, use though inconvenient, should be followed religiously to prevent recurrence of the contracture. [18]

Burn contractures of the perineum can be treated appropriately by contracture release and coverage of defects with skin grafts, Z-plasties, local flaps such as flap plasty used in our case, distant flaps and lastly free flaps for huge defects. Excision of the burn scar is not advisable and the same can be cleverly used accordingly in reconstruction. Satisfactory functional results can be often obtained with local flaps with shorter operative and recovery time and less donor site morbidity. [19]

While reconstructing in this area, proximity of the critical orifices of the vagina, urethra and anus should be borne in mind. And also release of contractures inadvertently may result in exposure of crucial structures such as femoral vessels and may necessitate use of flap cover. Sartorius and gracilis muscle flaps can be used for cover in such a juncture. The tensor fascia lata is useful in groin reconstruction and also rectus musculocutaneous flap based on its inferior pedicle. Free tissue transfer with anastomosis around femoral vessels is also an option to reckon with. [20]

Also, pertaining to loss of libido or orgasmic dysfunction, it has been noted that 25% of all adult burn patients experience it. [21] Growth is an important variable in the development of perineal contractures in children with burns; thus, these patients should be followed up closely during rapid-growth periods. [22, 23]

CONCLUSION

To conclude, recuperation from perineal burns, both in acute period and chronic phase in case contracture occurs, is a difficult challenge physically and mentally. The agony that a burn patient endures during treatment is evident even to an onlooker. And to finish, though uncomfortable yet to be stressed as in any medical literature, is that management of burn patients in a developing country is different from that in the developed world. This is due to lack of education, awareness, ignorance, fund shortfall, dedicated burns unit's deficit, and undertrained staff. Making aware to people for early expert medical consultation and obligation on part of the patient to follow advice

thereafter and proper rehabilitation can prevent these undesired post-burn sequelae.

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