

ORIGINAL RESEARCH

To Evaluate the Ideal Surgical Method for Management of Post Burn Scar Contracture of Neck: An Institutional Based Study

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Received: 08February, 2023

Acceptance: 27March, 2023

ABSTRACT

Background: Post burn neck contractures not only affect the movements of the neck, but also can affect the function of the lower face as well as result in possible tracheal alteration and distortion of the cervical spine. Hence; the present study was undertaken for assessing the ideal surgical method for management of post burn scar contracture of neck.

Materials & Methods: 30 patients of post burn neck contracture who underwent operative treatment were included. Surgical planning was done. The lines of contracture and proposed incisions were marked on the patient pre-operatively. Incisional or excisional release was done till full extension was obtained and the defect was created by dissection through the scar to underlying normal tissue. Skin graft was the mainstay of treatment. Recording of the range of movement and condition of the recipient and donor sites was done. The results were assessed graded in the follow up period. All the results were recorded and analysed by SPSS software.

Results: Method of release was excisional in 63.33 percent of the cases. Resurfacing with split thickness skin graft was done in 80 percent of the subjects. Poor Color match, graft hypertrophy and re-contracture were encountered in 6.67 percent, 3.33 percent and 13.33 percent of the subjects respectively. Good results were encountered in 70 percent of the patients.

Conclusion: Excision of all scar tissue is feasible in severe contractures, but incisional release is recommended in extensive contractures.

Key words: Burn Scar, Neck.

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INTRODUCTION

Burn trauma constitutes the second most common cause of trauma-related deaths after vehicular accidents, both in developing as well as the developed world. An extensive burn is the most devastating injury a person can sustain and yet hope to survive. Survival is no doubt the immediate concern, it is the restoration to pre-injury status, and return to society becomes important for the victim and the treating team. Burn survival statistics are definitely misleading in this. A healed burn patient may be left with scars have varying degrees of functional and aesthetic components.¹⁻³ Their actual incidence is not known. However, it is inversely proportional to the standards of initial treatment with patients receiving best of care having minimum number

and severity of these problems. Post-burn scars are inevitable even with the best of treatment because they depend upon the depth of burn injury. Except for the superficial dermal burns, all deeper burns (2nd degree deep dermal and full thickness) heal by scarring.^{4,5} Post burn neck contractures not only affect the movements of the neck, but also can affect the function of the lower face as well as result in possible tracheal alteration and distortion of the cervical spine.⁵⁻⁷ Hence; the present study was undertaken for assessing the ideal surgical method for management of post burn scar contracture of neck.

MATERIALS & METHODS

The present study was undertaken for assessing the ideal surgical method for management of post burn scar contracture of neck in the Department of Surgery, Noida International Institute of Medical Sciences (NIIMS), Noida International University, Gautam Buddha Nagar, India. 30 patients of post burn neck contracture who underwent operative treatment were included. Complete demographic and clinical details of all the patients were obtained. Thorough clinical examination of all the patients was carried out. Surgical planning was done. The lines of contracture and proposed incisions were marked on the patient pre-operatively. Incisional or excisional release was done till full extension was obtained and the defect was created by dissection through the scar to underlying normal tissue. Skin graft was the mainstay of treatment. After the adherence of the graft, an active and resistive dynamic and static self-exercise program was begun. Physiotherapy was commenced. Recording of the range of movement and condition of the recipient and donor sites was done. The results were assessed graded in the follow up period. All the results were recorded and analysed by SPSS software.

RESULTS

In the present study, 30 subjects were enrolled. Mean age of the subjects was 35.6 years. There were 18 males and 12 females. In 73.33 percent of the subjects, the cause of the burn was flame. Method of release was excisional in 63.33 percent of the cases. Resurfacing with split thickness skin graft was done in 80 percent of the subjects. Poor Color match, graft hypertrophy and re-contracture were encountered in 6.67 percent, 3.33 percent and 13.33 percent of the subjects respectively. Good results were encountered in 70 percent of the patients.

Table 1: Demographic data

Variable	n
Mean age (years)	35.6
Males (n)	18
Females (n)	12

Table 2: Causes of burn

Causes of burn	n	%
Flash	3	10
Scalds	5	16.67
Flame	22	73.33

Table 3: Method of release

Method of release	n	%
Incisional	11	36.67
Excisional	19	63.33

Table 4: Complications

Complications	n	%
Poor Color match	2	6.67
Graft hypertrophy	1	3.33
Re-contracture	4	13.33

Table 5: Results

Results	n	%
Good	21	70
Fair	6	20
Poor	3	10

DISCUSSION

Post-burn sequelae can severely disrupt quality of life and cause physical and psychological deformities such as joint contractures and hypertrophic scars. The best treatment for the sequelae is to avoid the burn accident. Fast and effective first aid and appropriate initial management are essential parts of the burn therapy. Patients must be evaluated carefully and a treatment protocol must be planned wisely. The most powerful treatment option for contracture release is a surgical procedure. The defect should be replaced with the donor tissues matching texture, color, and pliability. Skin flaps including free flaps meet these criteria to replace scar tissues and repair the resulting defect post release, providing superior functional outcomes.⁶⁻⁹ Hence; the present study was undertaken for assessing the ideal surgical method for management of post burn scar contracture of neck.

In the present study, 30 subjects were enrolled. Mean age of the subjects was 35.6 years. There were 18 males and 12 females. In 73.33 percent of the subjects, the cause of the burn was flame. Method of release was excisional in 63.33 percent of the cases. Resurfacing with split thickness skin graft was done in 80 percent of the subjects. Mody NB et al assessed the varied clinical presentation, precipitating factors, preventive measures, treatment modalities of neck contractures and evaluate the results after surgical procedures. Twenty-two patients of post burn neck contracture who underwent operative treatment were included. 10 of 22 cases were in the middle age group i.e. between 21-30 years. There were 5 males and 17 females. Accidental flame burn was the commonest aetiology. Fourteen patients were treated within 1 year of burns for functional disability. Excisional release was performed in 13 and incisional release in 9 of our patients. Resurfacing with STSG (split thickness skin graft) was carried out in 19 cases and a local or regional flap with or without a graft in 3 patients. Hypertrophy and recontracture were the commonest late complications and occurred in 3 cases. Good to fair results were obtained in 19 patients' Local flaps have many advantages and are to be used whenever possible. It is preferable to place the grafts if

used in the area surrounding the neck (donor site of flap) or at least in the non-visible area of the neck (submental area).¹⁰

In the present study, poor Color match, graft hypertrophy and re-contraction were encountered in 6.67 percent, 3.33 percent and 13.33 percent of the subjects respectively. Good results were encountered in 70 percent of the patients. Erdem G et al presented their treatment protocols for post-burn sequelae and the contractures that cause functional limitations. Seventy-seven cases with post-burn contracture were treated in our clinic. Post-burn contractures occurring after a burn injury affected the upper extremity, face and neck in 60, 17 and 6 cases, respectively. Skin grafts, local flaps such as advancement flaps, Z-plasties, K-plasties, regional flaps such as posterior interosseous flap, tissue expanded flaps, and free flaps were used according to the severity of the contractures. In one patient with type II axillary contraction, recurrence was seen. Full range of motion was achieved in the 3.6-year follow-up period in elbow contractures. Eight of 71 phalangeal joint contractures recurred. Two patients underwent reoperation for neck contracture recurrences. Excellent results were seen with prefabricated flaps, which were used for the facial reconstruction.¹¹

CONCLUSION

From the above results, it can be concluded that excision of all scar tissue is feasible in severe contractures, but incisional release is recommended in extensive contractures.

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