

Instep Skin Graft In Flexion Burn Contractures Of Digits : Replacing Like Tissue.

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Abstract : Palmer skin is unique in its characteristics, matched only by planter skin in the body. So for a superficial palmer defect, planter split skin graft provides closest match. **MATERIAL AND METHODS :** 125 digital flexion contracture of 78 patients were released and covered with split skin graft from the instep area of sole and its outcome analysed in terms of colour and texture match, hyperpigmentation, marginal hypertrophy and recontracture. **RESULTS :** complete graft take was observed in 107 digital contractures with excellent colour and texture match. The graft was soft, supple, stable and without any pigmentation. Only 17.60% patients showed mild hypertrophy and 12% patients developed recontracture. No donor area problem was observed.

Keywords: Finger contracture, planter skin graft, instep skin graft.

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I. Introduction

The palmer skin is unique in its characteristics, matched only by the planter skin. In post burn contractures of digits, where there is loss of palmer skin resulting in scar contractures, the lost tissue must be replaced with like tissue, i.e.: palmer or planter skin. The conventional skin graft from thigh violates the fundamental principle of reconstruction with like tissue. It is fraught with so many functional and aesthetic problems like hyperpigmentation, marginal scarring, recontracture and significant colour and texture mismatch. The planter area of foot is an appropriate donor site for skin grafts for palmer defects.⁽¹⁻⁵⁾ We present our experience with the use of partial thickness split skin graft from the instep area of the foot in reconstruction of post burn flexion contractures of the digits.

Aims And Objectives:

This study aims to assess the result of partial thickness instep skin graft in reconstruction of digital flexion contractures as well as the healing of donor area.

II. Material And Methods

This study was carried in the department of plastic surgery, Nalanda medical college and hospital from March 2016 to February 2018 after taking clearance from the ethical committee. A total of 125 patients of fingers of 78 patients were included in the study. All cases of finger contractures necessitating flap cover, contractures other than due to burn and drop out patients were excluded from the study. Out of 78 patients, 45 were male and 33 were female. Age ranges from 1 year to 58 years.

After releasing the contracture, two skin grafts were harvested from same site on non weight bearing area of sole. First split skin graft was returned to the donor site after harvesting second dermal graft and the dermal graft was used to resurface the finger defect. Dressing was done in usual manner and splinting done with POP slab or k-wire as required. First dressing was done after 5-7 days and subsequently on alternate days. Follow up was done for a period of six months.

III. Results

Out of 125 finger contractures, there was partial graft loss in 18 (14.40%) cases, either due to hematoma or infection. These residual wounds healed spontaneously with regular dressings and continuous use of splintage. 107 (85.60%) cases showed very good graft take with complete healing in 12-15 days. All donor areas healed satisfactorily.

At follow up excellent colour and texture match with adjacent palmer skin was observed in all patients. The graft was soft, supple, stable without any pigmentation. 22 (17.60%) patients showed mild

hypertrophy and 15(12%) patients developed recontracture. Majority of recontracture developed in younger children who did not use proper splinting in post-operative phase and in patients in whom there was partial graft loss. Donor area healing was satisfactory in all patients without scar hypertrophy. walking and weight bearing was normal.

IV. Discussion

Plantar skin is the most suitable match for the skin defects onto the palmar aspect of hand. For the sake of convenience, traditionally the thigh skin is used as split skin graft donor sites. Webster [2] was the first to introduce full thickness skin grafts to the volar aspect of the hand from the instep area of the foot in his attempt to obtain appropriate tissue. A second split skin graft was needed to cover the donor defects in those cases. Le Worthy [4] advocated the use of split skin graft from the insteps to resurface the palm. Nakamura and colleagues [5] presented a series of 64 patients and favored very thick split thickness skin graft from instep to palm. They reported satisfactory healing in 2 ± 3 weeks, good color match, stability and lack of hyperpigmentation in their results. Zolte et al. [3] described full thickness plantar grafts to hand in syndactyl repair. Roboti and Edstrom [8] used split thickness skin grafts from instep area of foot in their cases and found it as an excellent technique for avoiding hyperpigmentation, marginal scarring and hyperkeratosis resulting from the use of skin graft from the traditional donor sites. Recovery of sensation and sweating was optimum with a superb colour and texture match. Recently, Tanabe et al. [9] reported a modification of the use of plantar skin grafts in eighteen cases of granulating and fresh wounds of the volar aspect of hands. Two skin grafts were harvested from the same site, first the split thickness skin graft and then the dermal graft exposing subcutaneous fat. Split skin graft was returned to the original site and dermal graft applied over the defect. Good cosmetic and functional results were obtained at both donor and recipient sites.

The connective tissue of the dermis in palmar or plantar skin is less elastic and more compact than dermis elsewhere⁽⁷⁾, providing stability against the pressure and shearing forces. Both are hairless and lacking sebaceous glands and melanocytes. They have numerous pacinian corpuscles for optimal sensibility and abundant sweat glands to provide moisture. The sweat glands produce multicentric epithelial budding and attribute towards rapid and good quality healing of the plantar area.

Hyperpigmentation, scarring and recurrence of contracture are the common problems encountered with the traditional skin grafts to palm. Skin grafts from plantar area of foot prove better probably because they have sparse pigment cells and tend to contract less because of the less elastic and more compact connective tissue in the dermis.

In our series of 125 cases, plantar skin grafts showed better healing and graft take (85.60%) and less donor area healing problems in immediate post-operative period. At follow-up these grafts had excellent color and texture match and contour, merging with adjacent palmar skin. Hyperpigmentation was not seen in any of the cases. Marginal scarring and scar hypertrophy noticed in 17.60% of cases. Only 12% returned with recurrence of contracture. [10] Donor area healed spontaneously within 2 weeks without any scar hypertrophy, marginal scarring or hyperpigmentation. Tanabe et al. [9] used dermal grafts from plantar skin to cover palmar defects in eighteen of their cases. They mentioned that it is not always easy to harvest sufficiently thick graft to prevent recurrence of contracture, and another skin graft may be needed to cover the donor area if a thick split or full thickness graft is harvested in which the donor site could end up with scar hypertrophy and deformity. However, we have consistently harvested split skin grafts of medium thickness from the instep area without having encountered significant problems at the donor site. The aesthetic and functional results at both the donor as well as the recipient area are convincing. We have found the technique to be very simple. Skin graft could be harvested from almost the entire sole or from both soles at the same time to cover a large area of palm without causing donor site problem.

V. Conclusion

Plantar skin of the instep is the best donor site for the palmar skin of the digits and hand because of the similarities in their characteristics. The technique of graft harvesting is very simple. Results are excellent in terms of color and texture match, no hyperpigmentation, less marginal scarring and scar hypertrophy and less recurrence of contracture.

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