

Original Research Article

Split skin graft for diabetic ulcers: an analysis

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ABSTRACT

Background: Most diabetic wounds are slow healing and have a considerable area for which healing takes a long duration by conservative methods. Hence we wanted to check the effectiveness of methods of accelerating the healing process. Aim of the study was to analyse the effectiveness of split skin grafting as a curative procedure in these ulcers.

Methods: A retrospective analysis of 100 cases of diabetic ulcer who had undergone split skin grafting between 2009 and 2012 was performed to check the effectiveness of the procedure in curing the ulcer.

Results: Split skin graft cured about 88% of the patients (graft take more than 90%) with recurrence of about 5%. The rest had graft taken less than 90% but the ulcer had healed. Donor site infection was seen in 5% and all were treated conservatively.

Conclusions: The major goal in diabetic foot management programmes is to reduce morbidity, early wound healing and early ambulation. This procedure of split skin grafting helps to achieve this. But the ideal way forward is to avoid the development of such diabetic ulcers by patient education and improving glycemic control. Follow up in diabetic clinics should include vascular and neuropathic assessment of the foot and education about foot care.

Keywords: Diabetic ulcer, Split skin, Skin graft

INTRODUCTION

Diabetes mellitus is a metabolic disorder quite rampant in our country with very few patients adhering to proper treatment and maintaining good glycemic control. Patients with uncontrolled diabetes are more prone for diabetic complications among which the most common is diabetic foot. The lifetime risk of a person with diabetes developing foot ulceration is reported to be as high as 25%.¹ It is not only a difficult condition to treat but is a major cause of morbidity thereby posing a big economic and social burden to the entire family. The most common method of management of diabetic foot is ulcer debridement and follow up with appropriate dressing. Split skin grafting for patients with a large defect has been advocated in many studies to promote and expedite wound healing in these patients. By reducing the healing time it is possible to improve the quality of life for the

patient and also reduce the economic burden on the family by increasing the work days.

Aim

To analyse the effectiveness of split skin grafting as a curative procedure in these ulcers.

METHODS

A retrospective analysis of 100 cases of diabetic ulcer who had undergone split skin grafting between 2009 and 2012 was performed to check the effectiveness of the procedure in curing the ulcer. Hospital stay, healing time, post-operative infection, recurrences, donor site morbidity were analysed. Patients with less than 3 months follow up and less than 3 cm grafts (stamp grafts) were excluded.

RESULTS

The duration of hospital stay ranged from 5 days to 4 weeks with an average of 2 weeks. The number of weeks taken for complete wound healing ranged from 4.5 weeks to 15 weeks with an average of 6.1 weeks. Among the study group, 88% were cured with one split skin graft procedure with graft take more than 90%. Of the remaining with graft take less than 90%, 5% needed further procedures like application of stored graft/stamp graft while in 7% ulcer healed without further surgical intervention (by conservative method). Donor site infection overall was 5% and was not dependent on the size of the donor area. All infections were treated conservatively and healed.

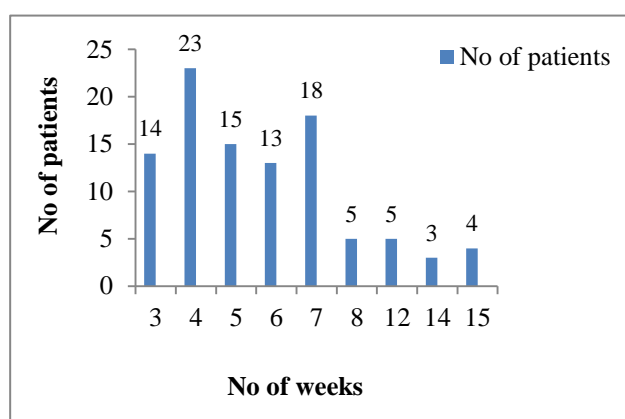


Figure 1: Distribution of complete healing time of wounds.

DISCUSSION

Diabetic foot problems are caused by a number of factors such as neuropathy, peripheral vascular disease, trauma and infection. Diabetic neuropathy is present to some degree in >50% of patients >60 years and increases the risk of foot ulceration by 7-fold. Further patients with peripheral vascular disease are predisposed to poor wound healing and poor diabetic control also contributes adversely on wound healing by impairing collagen cross linking and matrix metalloproteinase function. One study shows that one-third of lower limb skin grafts went on to fail with increased BMI, peripheral vascular disease, and immunosuppressant medication use.⁵ Ramanujam et al in their study showed that the healing time though was same in diabetics and non-diabetics without co morbidities, it was prolonged in diabetic patients with comorbidities.⁶ In other studies, the average wound healing time ranged from 5.1 to 6.5 weeks which was comparable with our study.^{3,4} In the study by Anderson et al, the complication rate was 2.8% which is slightly smaller than our complication rate.³ The cases which had complication and required revision surgery had longer healing time similar to our study. Local and cellular factors including reduced microperfusion and decreased tissue oxygenation have been thought to play a part in this.^{5,7} The graft take

in other studies was comparable to ours in his study. The donor site infection was not studied in other studies. In one study preparation of wound site was done using autologous platelet gel sprays before skin grafting and it was found to improve the success rates in recalcitrant ulcers.⁸ Though in our study the pre-operative glycemic control was not assessed there have been contradicting conclusions in other studies.^{4,9} This gives scope for extending this study to analyse the effect of glycemic control over wound healing in these patients.

CONCLUSION

The major goal in diabetic foot management programmes is to reduce morbidity, early wound healing and early ambulation. This procedure of split skin grafting helps to achieve this. But the ideal way forward is to avoid the development of such diabetic ulcers by patient education and improving glycemic control. Follow up in diabetic clinics should include vascular and neuropathic assessment of the foot and education about foot care.

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