

Use of split-skin grafting in the treatment of chronic leg ulcers

M K Wood MA FRCS

Senior House Officer

D M Davies FRCS

Consultant Plastic Surgeon

Plastic and Reconstructive Surgery Unit, Charing Cross Hospital, London

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Chronic leg ulcers are a common problem for which many different forms of treatment have been used. In this study we reviewed the results of split-skin grafting of ulcers of different aetiologies; 26 patients were reviewed. The mean duration of ulceration was 27.5 months. Of the 28 ulcers, ten were due to venous disease, three arterial disease, six rheumatoid arthritis, seven traumatic, and two diabetic. Healing rates of 85% for traumatic and 67% for rheumatoid ulcers were achieved, whereas rates of only 20% and 33% were achieved for venous and arterial ulcers ($P < 0.02$ Fisher's exact test). We conclude that in the presence of vascular disease, split-skin grafting is not an effective treatment for chronic leg ulceration. Vascular assessment and treatment should be carried out before attempting skin grafting.

Chronic leg ulcers are a common problem and a major source of expense to the NHS. The most frequent cause of chronic leg ulceration is venous disease, affecting between 1% and 2% of the elderly population (1), but ulcers can be caused by other conditions, such as rheumatoid disease, or simple trauma in the elderly.

In the past, numerous different forms of treatment have been advocated. This study looks at the outcome of a series of patients who underwent split-skin grafting of chronic leg ulcers, and attempts to determine whether split-skin grafting is an effective treatment and which type of patient benefits most.

Patients and methods

All the patients operated on by the plastic surgery department at Charing Cross Hospital, for grafting of

chronic leg ulcers, over a 3-year period from 1988 to 1991 were identified from theatre records. Their notes were retrieved, and examined, and the following information was recorded for each patient: Duration of ulceration before grafting, presumed aetiology, type of grafting procedure, the state of the graft at first inspection (5 days), the state at discharge, and finally the present state (or, if the patient had since died, the state at death). This information was attained by telephoning the patient or relatives.

After collating the results, the long-term outcome was correlated with the aetiology of the ulcer.

Results

In all, 26 patients were studied, 8 male and 18 female. All patients had unilateral ulceration, apart from two with bilateral ulcers, making a total of 28 legs treated. The mean duration of ulceration before skin grafting was 27.5 months (range 2-240 months. SD = 48.5 months). The mean age of the patients was 68 years (range 39-86 years).

The aetiology of the ulcers was defined as follows: venous insufficiency (10) (35.7%), rheumatoid disease (6) (21.4%), arterial disease (3) (10.7%), diabetes (2) (7.1%), and trauma (7) (25%) (ie post-traumatic ulceration but with no obvious underlying cause for failure to heal).

Only two of the patients had undergone formal vascular assessment, although four had had previous varicose vein surgery. The assignment into these groups was made on the basis of the diagnosis recorded in the notes, after clinical examination, or special investigations, if available.

The outcome was divided into three categories:

- A Healed on discharge and no subsequent breakdown.
- B Healed on discharge, but subsequently broke down.
- C Never healed.

The results for the different groups are presented in Table I. It can be seen that in the venous group, a success

Table I. Outcome of grafting in different groups

	A	B	C
Venous ($n=10$)	2 (20%)	2 (20%)	6 (60%)
Rheumatoid ($n=6$)	4 (66.7%)	1 (16.7%)	1 (16.7%)
Arterial ($n=3$)	1 (33.3%)	0	2 (66.7%)
Diabetic ($n=2$)	1 (50%)	0	1 (50%)
Trauma ($n=7$)	6 (85.7%)	0	1 (14.3%)

rate of only 20% was achieved. A similar rate of 33% was achieved in the arterial group, whereas in the rheumatoid and trauma groups healing rates of 67% and 85%, respectively, were achieved.

Statistical analysis of these results using Fisher's exact test, shows a significant difference in healing rates between the groups with vascular disease and the others ($P < 0.02$). The difference between the vascular disease group and the trauma group alone was significant ($P < 0.04$), but that between the vascular groups and the rheumatoid group failed to reach significance ($P = 0.1$).

Discussion

Skin grafting as a treatment of chronic leg ulcers has acquired a reputation as an unsuccessful method. Poskitt *et al.* (2) have shown that pinch skin grafting can be a useful adjunct to speed up healing in large vascular ulcers. This study shows that conventional split-skin grafting is a useful and effective technique for healing ulcers in certain patients. However, in those patients with vascular impairment, either venous or arterial, split-skin grafts are unlikely to achieve lasting healing.

Multilayer bandaging systems, creating sustained compression, have been shown to achieve healing rates of over 74% at 12 weeks, in venous ulceration (3). This is considerably better than the results we achieved with split-skin grafting in venous ulcers.

Rheumatoid patients are usually considered to be poor healers. This study suggests that split-skin grafting can provide rapid and lasting healing of leg ulcers in these patients. This is of particular benefit if total joint replacement is required, as the presence of chronic leg ulcers is generally regarded as a contraindication to major joint arthroplasties.

As there were only two diabetic patients in the series it is impossible to draw meaningful conclusions, as one healed with grafting and the other did not. However, the ulcer that broke down quickly was subsequently biopsied and was found to have developed a squamous cell carcinoma within it, which would account for its failure to heal.

Our results show that, except in the presence of vascular disease, split-skin grafting is an effective and rapid way of healing chronic leg ulcers. As venous and arterial disease markedly decrease the success of this treatment, we recommend that all patients being considered for skin grafting of chronic leg ulcers should have their vascular systems adequately assessed. If they are deemed to have significant vascular disease, they should not be treated by split-skin grafting until any underlying arterial insufficiency or venous reflux has been corrected.

References

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