

Pinch Grafting of Leg Ulcers in Primary Care

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Treatment of chronic leg ulcers consumes considerable primary care resources. For the patient, it often entails restrictions in everyday life. This study describes the results of 84 skin transplantations on 45 patients with 55 ulcerated limbs, using the pinch graft technique, performed in primary care from 1987–1993. The healing rate after 12 weeks for venous ulcers was 45%, and for neuropathic ulcers 44%. Venous ulcers represented 56% of all the ulcers, while 16% were neuropathic. One year postoperatively, 47% (19/40) of examined ulcers remained healed. The results from our study suggest that venous and neuropathic ulcers may be particularly well suited for skin transplantation, which can easily be performed in primary care. Key words: skin transplantation/methods; wound healing; treatment outcome; primary health care.

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Pinch grafting as a method to hasten the healing of granulating wounds was described by the American surgeon J. S. Davis in 1914 (1). He further clarified and illustrated the method in 1930 (2). His method has been used for both in- and outpatients over the years (3–7).

The advantages of pinch graft operations in primary care are mainly economic (5). The operation techniques are simple, cheap and harmless to the patient (1, 3, 4), and the method has been thoroughly evaluated (3–7), mainly on hospitalized patients with venous leg ulcers.

This study was conducted to evaluate the pinch graft technique for chronic leg ulcers of every aetiology on patients treated in primary care. The results of 84 pinch graft operations are here analysed in retrospect.

MATERIAL AND METHODS

Pinch graft operations were carried out in primary care at Lyckeby Health Centre between October 1987 and July 1993. Five operations were performed in the patients' homes. There were 84 operations on 45 patients with 55 ulcerated limbs. All operations except 4 were performed by the same GP. Each operation took roughly the same time as a normal dressing, i.e. 20–30 min, but the documentation took an additional half-hour per patient. Check-up was conducted one week later.

There were 10 men and 35 women with a mean age of 71 years (range 35–90 years). All patients had ulcers resistant to conservative therapy. The median duration of current ulceration was one year (range 8 weeks–35 years). In 44% of ulcerated limbs, the duration of ulceration was less than one year, and in 24% it was longer than 5 years; 18% of the patients had had leg ulceration for 10 years or longer. The aetiology of the 55 ulcers is shown in Table I.

A probable aetiological diagnosis was established taking all clinical findings, and, in most cases, Doppler results, into account. For three patients, the diagnosis vasculitic ulcer was established clinically (rheumatoid arthritis in two cases and rheumatoid arthritis with Felty's syndrome

in one case). The other three cases with vasculitic ulcers were confirmed by a skin biopsy histopathologically consistent with vasculitis in two cases, and by immunohistochemistry in one case. The diagnosis arteriosclerotic ulcer was established clinically and with Doppler. Neuropathic ulcers were diagnosed clinically in six patients with diabetes mellitus.

All 25 patients with venous ulcers had a long history of recurrent ulcers and oedema without clinical signs of arterial insufficiency, and a normal ABI. Eighteen ulcers were reoperated on once, 4 ulcers twice, and 1 ulcer three times. Fifteen of the reoperations were on venous ulcers, 5 on vasculitic ulcers and another 5 on neuropathic ulcers. The ulcer area was not consistently documented, but the number of grafts applied ranged from 2–100, with a mean of 24 grafts.

Five of the 6 patients with vasculitic ulcers were treated with Non-Steroid Anti-Inflammatory Drugs (NSAID). Oral antibiotics were used preoperatively in 37 cases and postoperatively in 25 cases, mostly venous ulcers ($n=21$ and $n=15$, respectively).

Pre-grafting procedures

Associated diseases, past medical and ulcer history and medication were assessed. The ulcers were, in some cases, documented by photographs or traced on a sheet of plastic film placed on the wound.

If the patient was on anticoagulant therapy at the time, the blood level of anticoagulant therapy was adjusted. A fine granulation area on the ulcer and no clinical signs of infection were also required before grafting.

Operation technique

Pinch grafting according to the technique described by Davis was used. For practical reasons (with the patient half-sitting or lying on his or her back), the front of the thigh was used as the donor site. If the patient was a diabetic with injection sites on the thigh, the grafts were taken more distally or laterally. A superficial infiltration anaesthetic (lidocain with adrenalin) was applied to an area roughly the size of the palm of the hand. The point of a hypodermic needle was inserted into the skin at an angle of about 30° and raised to form a conical fold of skin. The base of the cone was cut off with a scalpel, thus obtaining a skin graft 3–5 mm in diameter. The grafts were placed on the ulcer a few millimetres apart and covered with a silicone or paraffin tulle dressing and slightly saline-moistened gauze. If the patient had a venous ulcer, a compression bandage was applied as well.

Postoperative procedures

Postoperatively the patients remained relatively still, but not immobilized, for a few days. The donor site was left untouched for a week. On the grafted ulcer, only the outer dressing was changed daily. After one week, the grafts had changed colour, turning red or blue. The wound was then treated according to normal dressing principles to avoid dryness. For patients with venous ulcers, the importance of compression therapy was emphasized.

RESULTS

After 12 weeks, 40% of the ulcers (22/55) had healed, the majority within 10 weeks (Table II).

Follow-up examinations were carried out one and three years postoperatively. Four patients had died before the follow-up after one year. Of the remaining 51 ulcers, 40 were examined. For 3 ulcers, no information was available, and one patient had had an amputation. For 7 ulcers, the operation

Table I. Aetiology for 55 ulcers (in 45 patients) operated by pinch graft technique

The group "venous" includes ulcers of purely venous aetiology or any combination of aetiologies with a predominance of venous insufficiency. All ulcers in patients with diabetes and no other predominant ulcer aetiology are found in the group "neuropathic" ulcers.

Aetiology	Women	Men
Venous	24	7
Venous and arterial	2	2
Neuropathic	8	1
Vasculitic	7	0
Arterial	2	2
Total	43	12

was performed shortly before July 1993, when the study ended, and one year had thus not passed at the time of the check-up.

After one year, 47% (19/40) of the ulcers were healed. Three patients had a recurrent ulcer, and 45% (18/40) of the ulcers had not healed.

Another 4 patients died before the check-up three years later, and still another 4 patients died later during the study. Three years postoperatively, 20 ulcers in 16 patients were followed up. For 11 ulcers, three years had not passed at the time of the check-up, and for 5 ulcers, no information was available. Twelve out of 20 ulcers were healed (60%), but of these, three patients had developed a new ulcer located elsewhere.

Among the ulcers of long duration (10 years or longer), one ulcer of venous aetiology healed within 6 weeks and remained healed at the check-up one year postoperatively. Another venous ulcer of 11-year duration healed after 12 weeks and remained healed at the check-up three years postoperatively.

DISCUSSION

In accordance with previous studies (3, 5, 6), we found the pinch graft operation to be useful for ulcers caused by venous insufficiency, while little effect was seen in patients with arterial or vasculitic ulcers. We also found the method useful for patients with diabetes and neuropathic ulcers. Skin grafting may be worthwhile to try on patients with ulcers secondary to diabetes mellitus and rheumatoid arthritis that have failed to heal under prolonged, intensive, conservative management, and also on patients with arterial insufficiency and recurrent ulcerations after optimal by-pass procedures (7).

An overall healing rate of 36% was found in a recent Swedish study on hospitalized patients (8), while another study showed an overall healing rate of 38% (9). In our study, the overall healing rate was 40% after 12 weeks and 44% after 24 weeks. A possible explanation for the differences in healing rates for pinch graft operations performed at a hospital might be that hospitalized patients form a selected group, with more complicated ulcer aetiology and additional diseases. The higher healing rate in our study could also possibly be explained by the fact that our patients were younger.

There is now a growing interest in ulcer care, mainly due to the economic and social aspects of the problem (10, 11).

Pain is often associated with chronic ulcerations. In a recent study, the majority of the patients with venous leg ulcers stated that pain was the worst part of having a leg ulcer (12). As was

Table II. Number of ulcers healed at different times after operation of 55 ulcers (in 45 patients) by pinch graft technique

Aetiology	Number healed (total)	Healing time (weeks)			
		<6	7-12	13-24	25+
Venous	18/31	5	9	1	3
Venous and arterial	3/4	0	2	0	1
Neuropathic	5/9	3	1	1	0
Vasculitic	1/7	1	0	0	0
Arterial	1/4	1	0	0	0
Total	28/55	10	12	2	4

shown earlier, pain is rapidly and greatly reduced after skin grafting (5, 7).

Another gain for the patient is freedom from ulcers for months or even years, resulting in higher quality of life, since a leg ulcer often entails considerable restrictions in everyday life. After grafting, the patient is no longer dependent on daily dressing by the nurse and gains greater social mobility. It is important to realize that for elderly patients, even a few months free from ulcerations represent a substantial medical and social benefit (7).

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