

Pinch Skin Grafting in Non-Healing Leprous Ulcers¹

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ABSTRACT

Treatment of leprosy ulcers has remained inadequate, owing to the fact that most of these ulcers are still being managed conservatively especially in developing nations, probably due to financial constraints. Pinch skin grafting, though obsolete now⁽²⁾, tries to bridge this gap between cost and effectiveness. It is a simple office-based technique, not requiring much expertise or investment, and can be done in a simple set-up such as a side room⁽³⁾. Also, pinch skin grafting has an added advantage over single grafts, in that even if one graft is rejected, there are other grafts, which successfully heal, and epidermize to the surrounding. Moreover, if the ulcer is draining, the discharge flows out in between the grafts, thus preventing the whole graft from being rejected. The only disadvantage to pinch skin grafting is the final cosmetic appearance, which might not be most pleasing.

We had very good results with all four patients who underwent this procedure in our institution. The procedure and the final result are described in detail in this report.

RÉSUMÉ

Le traitement des ulcères lèpreux est resté insuffisant, parce que la majorité de ces ulcères est encore appréhendée de manière conservatoire, en particulier dans les pays en voie de développement, qui souffrent de contraintes financières encore importantes. La greffe de peau par pincement, quoique obsolète de nos jours⁽²⁾, essaye de relier l'incompatibilité entre faible coût et bonne efficacité. C'est une technique simple de pratique courante, ne nécessitant que peu d'expertise et d'investissement, qui peut être réalisée dans une salle de soin⁽³⁾. De plus, la greffe de peau par pincement présente l'avantage par rapport à la greffe simple d'être formée de plusieurs greffes, si bien que si une d'entre elles est rejetée, la cicatrisation et l'épidermisation peut être assurée par les autres si elles réussissent. Enfin, si l'ulcère est fistulisé dû à un drainage, celui-ci peut s'effectuer entre les greffes, évitant ainsi à toute l'aire greffée d'être rejetée. Le seul désavantage à la greffe par pincement est l'aspect cosmétique final, qui n'est pas toujours très plaisant.

Nous avons eu de très bons résultats chez 4/4 patients qui ont subi cette intervention à notre institution. La procédure et le résultat final sont présentés en détail dans cet article.

RESUMEN

El tratamiento de las úlceras leprosas se ha mantenido inadecuado debido a que la mayoría de éstas todavía se manejan de manera conservadora especialmente en los países en vías de desarrollo, probablemente por dificultades económicas. El procedimiento de injerto de varios fragmentos de piel aunque obsoleto ahora⁽²⁾, trata de cubrir este hueco entre costo y efectividad. Se trata de una técnica simple que no requiere mucha experiencia o inversión, y que puede hacerse casi en cualquier área adaptada del consultorio⁽³⁾. El procedimiento de injertos múltiples también tiene la ventaja sobre la aplicación de injertos únicos, de que aun cuando uno de estos injertos se rechaza, todavía quedan otros injertos que generalmente sanan exitosamente y epidermizan la zona a su alrededor. Además, si la úlcera está drenando, la descarga fluye entre los injertos, evitando así que estos sean rechazados. La única desventaja de la técnica de injertos múltiples de piel es la apariencia cosmética final, la cual puede ser no muy agradable.

Nosotros hemos tenido muy buenos resultados en 4 pacientes sometidos a este procedimiento en nuestra institución. El procedimiento y el resultado final se describen en este artículo.

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Non-healing ulcers resulting from leprosy pose a great threat not only due to their disability, but also their morbidity. A simple technique like pinch grafting would reduce this morbidity. As compared to single sheet full thickness skin grafts, pinch grafts are easy, inexpensive, and can be done in a minor operating theater, or as an office-based procedure.

Most pinch grafts have been described as split-thickness grafts⁽²⁾, but they are full-thickness centrally and thin split-thickness at the periphery⁽³⁾. The procedure involves placing small slices of split skin over the dermabraded ulcer site, and allowing it to heal by epithelialization.

MATERIALS AND METHODS

This technique was done on 4 leprosy patients with non-healing ulcers, located at various sites and of differing duration (The Table). All 4 were selected from the leprosy rehabilitation unit of the Dermatology department at St. John's Medical College Hospital, Bangalore, India.

Inclusion criteria: (i) Chronic non-healing ulcers due to leprosy (of more than 2 months duration); (ii) A clean ulcer bed with healthy granulation tissue and good vascularity.

Exclusion criteria: (i) Systemic diseases not under control, such as uncontrolled anemia and diabetes mellitus; (ii) Ulcers not primarily due to leprosy.

Serous discharge, though copious, was not a contraindication. Also, those with a hyperkeratotic edge were taken up, after saucerizing the edge, to increase vascularity (Fig. 1)

The donor area was prepared by cleaning the skin with Povidone-Iodine solution (Betadine[®]) and surgical spirit. The lateral aspect of the mid-thigh was selected as the donor area, although abdomen and buttocks have also been used as donor sites⁽⁵⁾. A field block was given by injecting Lignocaine 2%, so as to cover the entire donor area, an area approximately 5 cm × 5 cm for all 10 grafts.

Although various techniques have been described for taking pinch grafts^(1, 5), we recommend the shave technique using a hypodermic needle (Fig. 2), which has been described earlier, though some authors consider it obsolete⁽⁴⁾. A 23 or 24 gauge needle was inserted into the skin at the donor area, and brought out 1 cm away, so that the skin taken would involve an area of 1cm². The needle was pushed at a plane, as superficially as possible. The skin was then sliced into a thin layer using a scalpel, just below the needle, at the approximate level of the papillary dermis. This not only ensures minimal blood loss, but also enhances the chance of healing by way of epithelialization. The grafts were then placed in a sterile container containing normal saline and a gauze pad. Adequate numbers of grafts were taken so as to cover the entire ulcer. The donor area was then closed with an antibiotic-impregnated pre-sterilized gauze tulle (Sofratulle[®]), gauze pads, and an adhesive elastic plaster (Dynaplast[®]).

The recipient area, usually anesthetized, did not require local anesthetic infiltration. The ulcer bed was dermabraded, using a manual dermabrader. Once the area started bleeding, the grafts were placed over the re-

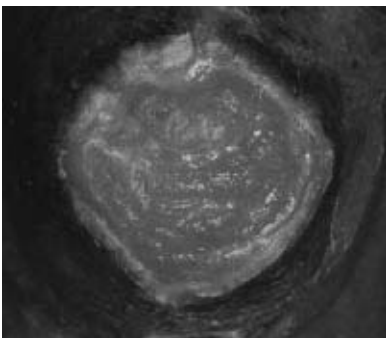


FIG. 1. Clean ulcer without secondary infection, ready to be grafted.



FIG. 2. Shave technique of harvesting the pinch graft donor site.

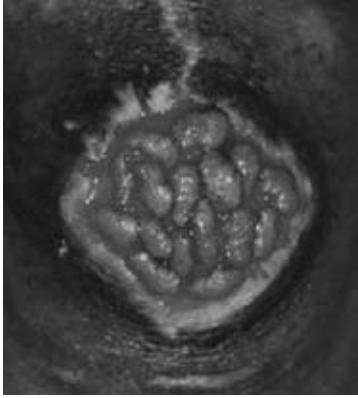


FIG. 3. Grafts placed in the recipient ulcer site.



FIG. 4. Two weeks post-surgery, inter-graft epithelialization was completed.

recipient site, making sure the dermal side faced downwards. The grafts were placed as close to one another as possible (Fig. 3). After the whole area was covered, it was closed with an antibiotic-impregnated pre-sterilized gauze tulle (Sofratulle®), gauze pads, and an adhesive elastic plaster (Dynaplast®). Joint areas and areas with a high degree of mobility were immobilized in a splint. The dressing was kept for a week, with a change in dressing once every 3 to 4 days. Postoperative care included immobilization, avoidance of wetting the grafted

site, a course of antibiotics, analgesics, supplementary zinc, and vitamins.

After a week the dressing was removed, and the grafts looked pinkish-yellow and sodden due to the collection of serous discharge underneath the dressing. It took another week or two for inter-space epithelialization to be completed (Fig. 4). After 4 to 6 weeks, the whole ulcer area was covered by skin.

RESULTS

In all 4 patients, the ulcers healed completely (The Table and Fig. 4). Two of the

THE TABLE. *Details of patients who underwent Pinch skin grafting.*

Patient No.	Age/ Sex	Duration of ulcer	Site & area of the ulcer	Duration of leprosy	Treatment received	Time for healing	Remarks
1	42 year F	2 months	Lt. lat. maleolus, 3 cm × 3 cm	18 years	Monotherapy-Dapsone for 2 years Antibiotics, analgesic for the ulcer.	1 month	Immediate response not very good. Gradual healing in 1 month.
2	49 year M	6 months	Lt. shin. 10 cm × 5 cm	20 years	No treatment for Leprosy. Antibiotics, analgesics for the ulcer.	1½ months	Osteomyelitis (clinically, radiologically, and culture-proved), treated adequately. Anemia corrected. Gradual healing in 1½ months.
3	38 year M	1 year	Rt. ankle antr. 3 cm × 5 cm	6 years	MDT(?) - 2 years. No treatment for ulcer	15 days	Gradual healing in 15 days
4	40 year M	1 year	Rt. knee antr. 4 cm × 4 cm	10 years	MDT-for 2 years. Antibiotics, analgesics for the ulcer.	15 days	Immobilized the recipient area in a Bohler's iron splint. Gradual healing in 15 days.

patients had ulcers over difficult sites, viz. prepatellar and anterior to the ankle. One of the patients who had underlying osteomyelitis proven clinically and radiologically, and culture-positive for aerobic and anaerobic micro-organisms, also did well under cover of appropriate antibiotics for the osteomyelitis.

DISCUSSION

Pinch skin grafting for non-healing ulcers is a simple procedure, which can be done by any doctor with minimal training (¹). To the best of our knowledge, this technique has not been previously reported for leprous ulcers. Single sheet split-thickness skin grafts have been described for the treatment of non-healing ulcers; however, pinch grafting seems to have certain advantages over single sheet grafting.

Advantages of pinch skin graft over single sheet skin graft (split or full thickness) (¹). (i) Pinch grafting can be done in ulcers having unfavorable local factors, such as those with copious serous discharge. If a single sheet of skin is placed in such a situation, the whole graft tends to get thrown off, due to collection of the discharge underneath. In contrast, in pinch grafts the discharge is allowed to drain from the inter-space. (ii) Even if one graft gets rejected, the other grafts would still take up and the rejected area would epithelialize from the adjacent grafts. (iii) This simple

technique can be done by anyone, with little training and experience. (iv) The set-up required is very simple and inexpensive.

Disadvantages (⁵). The only disadvantage is that it results in cobbling, scarring, and depigmentation (¹).

CONCLUSION

Pinch skin grafting is a safe, simple, and inexpensive technique, which can be easily mastered, with minimal training and experience. We recommend it to be used in all uncomplicated leprous ulcers, which cannot be brought under control with drugs and dressing alone. In the future, we plan to extend this study to include pinch grafting on plantar ulcers.

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