

DELAYED OPEN SKIN GRAFTING

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It has long been known (Laplace, 1908) that a pressure dressing is not essential for a split thickness skin graft to become vascularised. Indeed, a tie-over dressing is contraindicated in certain areas of the chest, shoulder, back and perineum where shearing strains beneath the graft are unavoidable.

Šmahel (1971a) has shown that more rapid vascularisation of skin grafts occurs when the grafts are placed on a 2-day-old wound in which many capillary sprouts have developed. The stage of plasmatic imbibition is reduced from about 48 hours to 24 hours. Delayed grafting of this nature requires storage of the graft until it is applied. Šmahel (1971b) has also shown that storing a graft on its donor site for 24 to 48 hours before applying it to a "prepared" wound reduced the phase of plasmatic circulation to only 5 to 8 hours. Sheppard (1972) has advocated storing grafts on their beds clinically, but we found that removal of the graft from the donor bed after 48 hours is extremely painful and produces bleeding, and we have abandoned this type of skin storage, using instead refrigeration at 4°C.

Delayed open grafting by the following technique has been used in over 100 patients without any major skin loss. The defects resulted from either excision of malignancy or the translocation of flaps.

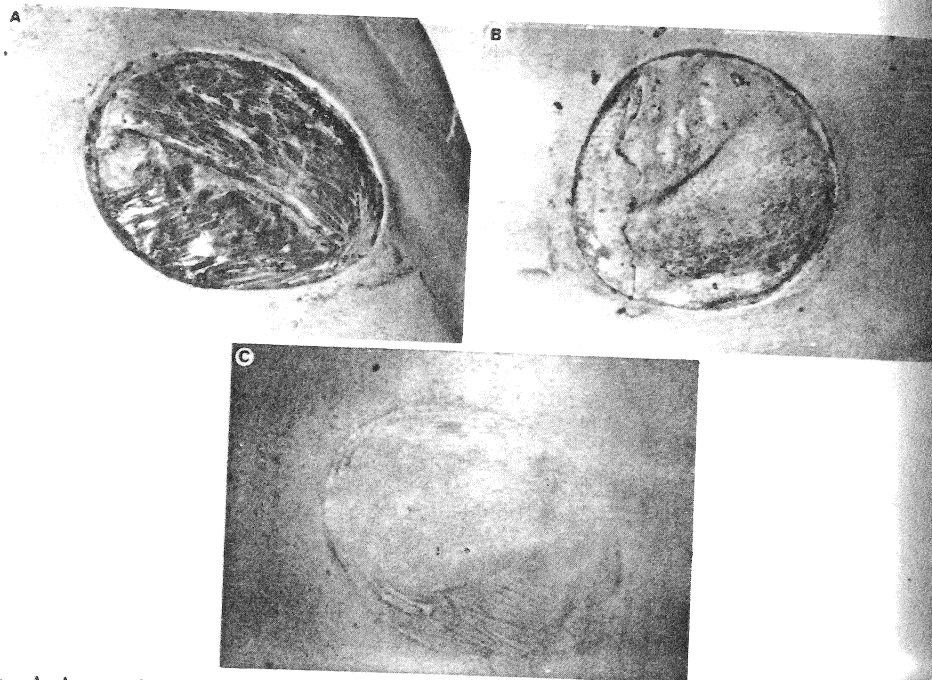


FIG. 1. A, A wound over the scapula 48 hours after excision of a malignant melanoma. B, Five days after application of grafts using the open technique. C, The grafts 6 months later.

FIG. 2. A, Defect 48

At the same time the grafts are cut, placed on a bed of refrigeration. The grafts are then exposed and the grafts are fixed to the bed and thus fixed in place. A tie-over dressing is not needed, although limited movement of the graft is allowed. If the graft should become dislodged, the case is shown in Figure 2.

Calnan and McGregor (1962) have shown that where dressings are used, the grafts are fixed in place. In this method, the grafts are fixed in place, but as its advantage, the grafts are fixed in place where the tie-over

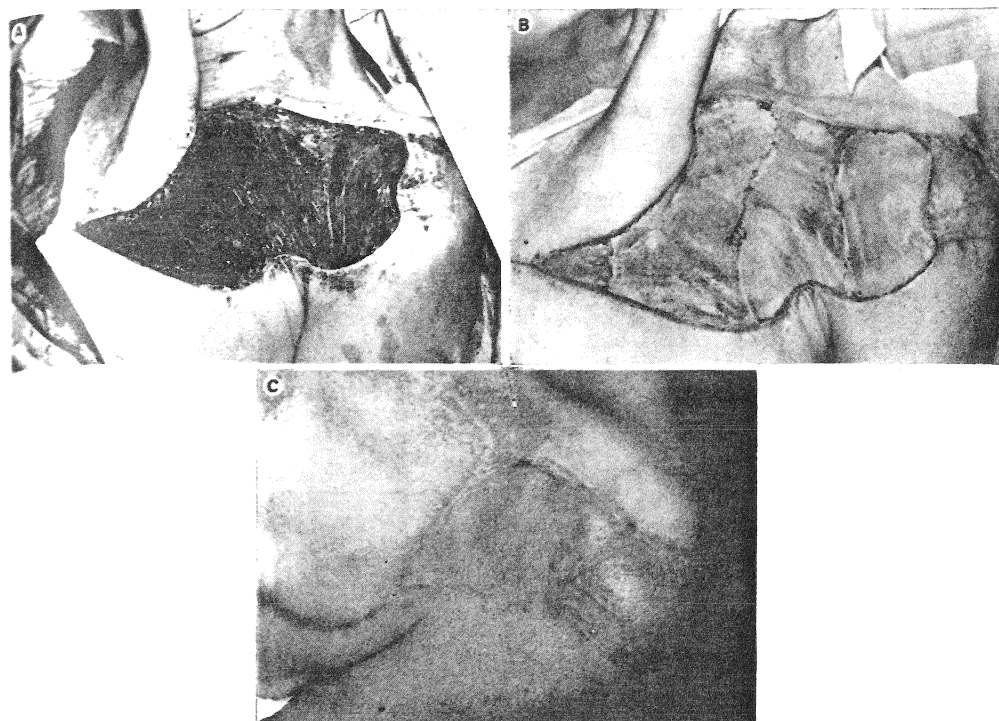


Fig. 1. A, Defect 48 hours after elevation of a deltopectoral flap. B, The skin grafts 5 days after application. C, The final result 6 months later.

TECHNIQUE

At the same operation at which the defect is created, sufficient split thickness grafts are cut, placed on xeroform gauze, folded, wrapped in a saline swab and stored in a refrigerator. The wound is dressed and left undisturbed for 48 hours, when it is re-exposed and the grafts applied. As each graft is applied, it becomes adherent to the bed and thus fixed during the important early vascularisation stage. No sutures are needed, although occasionally skin tape may be applied for 24 to 48 hours. Breathing and limited movement by the patient does not result in shearing of the graft, as occurs under a dressing. If the grafted area is limited, a small box can be taped over it to protect the graft. Should seromas or haematomas appear, they can be expressed through stab incisions. The care of the graft after application is left to the nursing staff. A typical case is shown in Figure 1.

DISCUSSION

Calnan and Innes (1957) introduced delayed exposed grafting for use in areas where dressings were difficult to apply or where movement could not be controlled. Jackson (1962) applied the technique for skin coverage after radical vulvectomy. Initially this method was reserved for areas that are practically impossible to immobilise, but as its advantages are becoming better recognised, it is being used in many situations where the tie-over dressing would have been considered mandatory. Jackson (1971)

described the use of this method in reconstructive procedures in head and neck cancer surgery and Figure 2 illustrates its use in conjunction with a deltopectoral flap.

The main benefits of this technique are the saving in time during surgery, complete haemostasis, more rapid vascularisation of grafts, and better skin graft take in difficult regions of the body. In addition, the results from a cosmetic standpoint are equally satisfactory to the tie-over technique.

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REFERENCES

- CALNAN, J. and INNES, F. L. (1957). Exposed delayed primary skin grafts, a clinical investigation. *British Journal of Plastic Surgery*, **10**, 11.
- JACKSON, I. T. (1971). Delayed exposed grafting following reconstruction procedures in head and neck cancer. *Acta Chirurgiae Plasticae*, **13**, 1.
- LAPLACE, E. (1908). The open method of treating Thiersch's grafts. *Medical Bulletin, Philadelphia*, **30**, 83.
- MCGREGOR, I. A. (1962). Delayed exposed grafting following radical vulvectomy. *British Journal of Plastic Surgery*, **15**, 302.
- SHEPPARD, G. H. (1972). The storage of split skin grafts on their donor sites. *Plastic and Reconstructive Surgery*, **49**, 115.
- ŠMAHEL, J. (1971a). Free skin transplantation on a prepared bed. *British Journal of Plastic Surgery*, **24**, 129.
- ŠMAHEL, J. (1971b). Preparation phenomenon in a free skin graft. *British Journal of Plastic Surgery*, **24**, 133.

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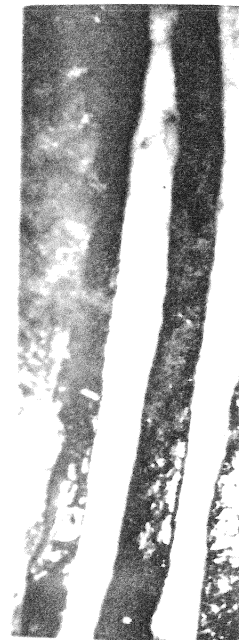


Fig. 2

The strips 7 d after transplantation. (—D)