



1b

Comparative Evaluation of Dermato-Therapeutic Usable Dressings

Therapy Center PsoriSol, Hersbruck, Germany



Fig. 1: non-irritating surgery wound and absorption of secretion into the polyester foam

In the professional journal „Der Deutsche Dermatologe“ issue 11/1993, page 1183-1187, the article „**Vergleichende Bewertung dermo-therapeutisch verwendbarer Verbandstoffe**“ was released, an essay of Prof. med. Gerhard Weber, then employed at the interdisciplinary Therapeutic center PsoriSol in Hersbruck/Germany. In this article the dressing LIGASANO® was evaluated in comparison with gauze and hydrocolloid.

„For more than 20 years of treatment of patients with grave burns, it was of essential intent, beside the surgical and medicamentous therapy, to find a dressing material, which is optimal for the treatment of even extensive wounds; both in the variety of its application possibilities and in its cost-effectiveness.

Significantly involved in the selection of the dressing material were also the properties with which you can treat the exudating wound as well as the non-granulating ulcer, the transplanted graft or the sterile surgery wound.

The range of materials varies from conservative mull layers and mull bandages to occlusive dressings and various preparations of foam.

Up to 1000 patients with burns and dermo-chirurgical surgeries, in terms of tumourectomy, scar corrections, surgeries of veins and leg ulcers, extensive transplantations enable a significant study.

The result was, that we decided to use a polyurethane foam (LIGASANO® foam dressing) as a definitive routine, because of its manifold application possibilities. To indicate the varieties, we compared three different dressings with each other.

Beside den conventional gauze we used a hydrocolloid and the above mentioned polyurethane foam. Parameters for this purpose were the ability to cover sterile surgical wounds, to cover leg ulcers with regard to cleaning and formation of granulation tissue, the use for the therapy of pressure ulcers, furthermore the covering of transplantates, the qualification as an occlusive dressing, the manual adaptation of the material to the wound form, the use as a bandage, the use as a cushion, their absorbability, permeability, and the mechanical debridement of the bacterial plaque of open wound areas.

	Gauze	Hydrocolloid	Foam
1) Cover surgery wound	++	0	+++
2) Cleaning of ulcers	0	++	+++
3) Granulation	0	++	+++
4) Therapy of pressure ulcers/pressure relief/application without difficulty	0	++	+++
5) Adaption to wounds	+++	+	+++
6) Covering of transplantates	++	0	+++
7) Cushioning	0	0	+++
8) Use as a bandage	+	0	++
9) occlusive	0	+++	0
10) Absorptivity	+	++	+++
11) Mechanical debridement	0	0	+++
12) Permeability	++	0	+++
13) Bacteriostaseis	0	0	+++
14) economic efficiency	++	0	+++

Properties: +++ excellent ++ good + pass 0 fail/not

We did not expect that one of the dressings had all properties contemporaneously, because for example an occlusive effect cannot attend by high permeability of liquids or the ability of the dressing for a mechanical debridement.

As you can see at the overleaf table, only the polyurethane foam-dressing fulfils 13 of the 14 requirements, which we expect from an optimal dressing material. The hydrocolloid dressing fulfils 6 of the requirements and the conventional gauze dressing with 7 fulfilled requirements shows numerically no distinctive difference to the hydrocolloide. In this numeric rating the qualitative differences are not given in detail, but this is shown by the description of the individual substance classes.

At the covering of surgery wounds with gauze dressing it is well known that it sticks to discharging secretion or blood, whereby wound dehiscence or bacterial infections is abetted. The hydrocolloid dressing would not be economical for the dressing of surgical wounds and would have adverse effects at bacterial infections because of its occlusion. Figure 1 shows that the post-operative bleeding is completely absorbed by the polyurethane foam and that the foam does not adhere with the wound area. By this the healing proceeds untroubled.

The effect of hydrocolloid dressings compared with gauze dressings, soaked with saline solution at leg ulcers, as it was pointed out from *Altmeyer and Hoffmann* (1), was not repeated in this study, because the ineffectiveness of gauze-saline solution-dressings is known since a long time. Every *ulcus cruris* has a bacterial contamination, its degree depends of the state of secretion of the wound ground. The more dry and inactive the wound tissue, the less addiction to granulation



Fig. 2: non healing surgery wound



Fig. 3: insertion of a foam pelotte



Fig. 4: wound healing without any additional therapy



Fig. 5: defect after tumourectomy

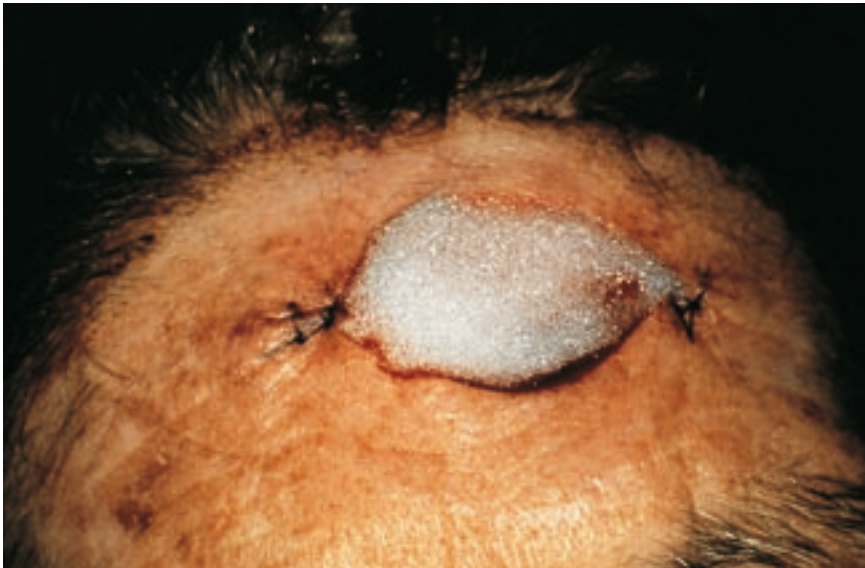


Fig. 6: covering the transplantate with foam dressing

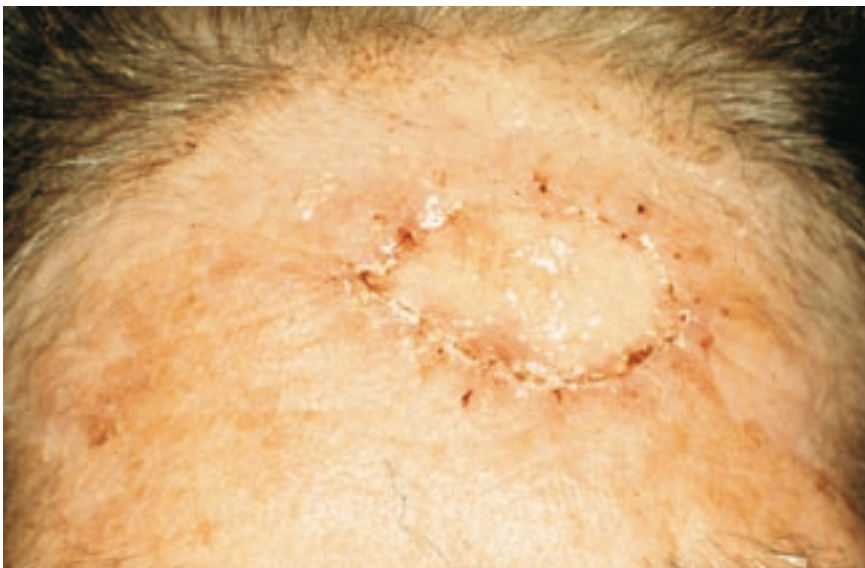


Fig. 6: unhindered healing of the graft

and healing. Here the gauze dressing would effect a covering and painful adhesion. However the hydrocolloid dressing produces a moist chamber, by means of its welded surface and the postulated gel formation. In the past this effect was produced usually by applying a plastic film. Elastic bandages and manual cleaning, combined with this, were routine for decades in the treatment of venous leg ulcers.

Only the insert of a sheet or pelotte of polyurethane foam into the ulcer yielded the essential advance. By means of the granulated surface of the material, fibrinous coatings, detritus and slime mould are removed from the wound ground mechanically, by every body movement. Thus secretion and granulation is consecutive stimulated (3).

This coatings and other material is absorbed by the polyurethane foam with capillary attraction, so that a secretion stream develops. After this follows granulation and epithelisation, without the need of ointments, powder, solutions, antibiotics or enzymatic debridement (fig. 2, 3, 4).

The treatment of pressur ulcers runs similarly. Also at this kind of wound, the hydrocolloid dressing and the used polyurethane foam dressing effect cleaning and healing of the wound. The polyurethane foam is more expedient, because – beside its above mentioned stimulation of the granulation – the elasticity of the material causes a pressure relief of the ischaemic wound area and the peripheral area, and for this better blood circulation. It is also of avail that you can cut the foam dressing in any form you need. This adapted pieces are inserted in superficial, profound, pedently or fistulous decubiti. This possibility of adaption is multi-purpose useful in the surgical dermatology, because you can form the material as needed (especially at surgery of the ear, nose, fingers

or labial angle) and using an easy fixation, time-consuming dressing methods are superfluous.

Skin grafts healed without any problems, using lattice-like gauze and polyurethane foam at the same time (fig. 5, 6, 7).

The insertion of the foam dressing into the interdigital space, turns a moist gangrene into a dry mummification. The comparative application shows that gauze or hydrocolloids have not enough therapeutic effectiveness in this indication.

If only an occlusive treatment is

indicated the hydrocolloid dressing is favourably, due to the development of a moist chamber and the maceration effect of its gel. Only by this it is explainable that the use of Triamcinolon and hydrocolloid at psoriasis effects a better degeneration of the efflorescences than with plastic occlusion (2).

An important argument for the use of the polyurethane foam dressing LIGASANO® is its economic efficiency, that is – comparable with gauze – much more favourable as the hydrocolloid

dressing. By this the polyurethane foam dressing proved itself in clinic and practice as an optimal, manifold and economic dressing material. An allergenic effect was never seen.

Literature

1. Altmeyer, P., Hoffmann, K.,
Dtsch. Ärztebl. 8/92
2. van de Kerkhot, D., Dtsch. Ärztebl. 8/92
3. Weber, G. und Galli, K. (1980)
Dtsch. Ärztebl. 77, 1621-1625

This cited article was published in the professional journal **Der Deutsche Dermatologe, 11/1993, page 1183-1187**. Reprint by courtesy of the publishing company Urban&Vogel.