

Modern Pressure Ulcer Therapy: Moist Wound Healing Combined with Pressure Relieving Systems

Approximately 10 % of patients treated at German hospitals (14 - 15 millions / year) develop decubital ulcer. The arising costs (bandaging materials, surgery expenses, staff expenditure) could be considerably reduced with sensible prevention. This problem concerns in particular patients in dire need of care, patients with persistent disturbance of consciousness, paralysis or after surgery.

The "Krankenkassen" (= German sick benefit funds/Health Insurance) are bound to legal standards: Only "therapy" is paid for. However, prevention is the best therapy! At present pressure- and air-flow systems as well as foam mattresses and pads for pressure release are the standard of prevention and therapy.

If pressure ulcer does occur there are modern wound dressings and appliances for appropriate wound management available. In fact, the market was flooded with numerous bandaging materials of such kind and consequently insecurity with regards to their application arose among the users and patients.

At the geriatric rehabilitation unit of the Allgäu Hospital Hindelang in cooperation with M/s B. Braun Melsungen

AG we have in the past 2 years developed a systematic treatment concept by means of which existing pressure ulcers were successfully healed. At the same time pressure ulcers in risk patients were avoided.

PRINCIPLE OF MOIST WOUND HEALING

During the past years the principle of moist wound healing combined with appropriate relieving of pressure has increasingly prevailed. Previously mostly hydrocolloid dressings in combination with e.g. calcium alginates, carbon compresses etc. were used.

Following dressing materials are used in wound management:

- Semi-permeable films
- Hydrocolloids
- Foam dressings

- Hydrogels
- Alginates
- Odour absorbant dressings

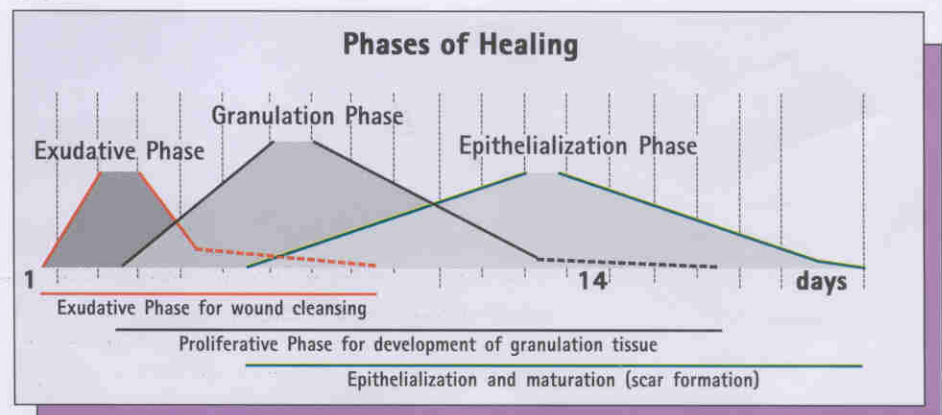
Dressings need to be selected depending on the phase of wound healing. There are 3 phases: Exudative Phase, Granulation (Proliferative) phase and Epithelialization phase.

Those 3 phases overlap and sometimes influence each other. Depending on the individual wound conditions and the patient's general condition the phases may be of different duration.

The objective of any wound management process is to select an appropriate dressing for the different phases in order to provide optimal support to the healing process.

In large decubitus ulcers the problem of maceration of the skin has again and again occurred because of the limited absorption of hydrocolloid dressings. Consequently different dressing techniques, e.g. covering the edges with hydrocolloid dressings and frequent change of dressing (up to 3 times daily) were required. This means high costs, high staff expenditure and the patients suffering of pain (when cleansing the wound). In particular during the exudation phase the dressing used for stage III and IV decubitus ulcers needs to have an extremely high absorption capacity.

Tab1



For approximately 2 years a hydro-active wound dressing (Askina® Transorbent®) has been available on the market meeting all criteria of a modern dressing in particular during the exudation phase.

TEAMWORK of nursing staff and physicians enables TARGET-SPECIFIC wound management.

In our hospital (geriatric rehabilitation unit) we have developed following standards from well co-ordinated wound management and excellent teamwork of nursing staff and physicians:

On admission, the pressure ulcer risk is generally assessed by means of the "Braden" scale. If decubitus ulcers are already present we principally carry out a photo-documentation followed by a frequent documentation of the course of healing.

The treatment depends on the severity of decubitus:

First degree decubitus (reddening, tiny skin lesions)

Depending on how much the patient is at risk, relieve of pressure using thermo-mouldable foam mattresses, 30 degree lateral position (2-4 hourly positioning intervals), if required use deep-cell alternating air support systems or transparent hydrocolloid dressings (e.g. Askina® Biofilm® Transparent) to protect at-risk site.

Second degree decubitus (reddening, blisters, damaged epidermis and moist wound bed)

Incise and remove the blister, cleanse the wound using Ringer solution and apply Askina® Transorbent® or a hydrocolloid dressing, e.g. Biofilm® S. Determine the frequency of dressing changes and relieve pressure using

deep-cell alternating air support system.

Third degree decubitus (epidermis and corium are damaged up to the subcutis, wound cavities might occur)

Cleanse the wound using Ringer solution. For wounds of a depth of more than 2 to 3 millimetres use first a calcium alginate dressing in combination with an absorbable pad (e.g. Sorbsan® Plus) which is cut to size. Fill pockets (if any) loosely with calcium alginate (e.g. Sorbsan® Packing or Sorbsan® Ribbon). Finally cover it with Askina® Transorbent®. Determine the dressing intervals together and relieve pressure with deep-cell pressure mattress. Apply pain therapy if so required.

Fourth degree decubitus (similar to 3rd degree, additionally: necrosis development, bones and tendons might be affected)

- Relieve the pressure as described for 2nd and 3rd degree, adjusted to the patient's weight
- Soften the necrotic tissue by using hydrogel- and hydrocolloid dressing
- Surgical debridement (under anaesthesia-depending on the extent and depth of necrotic tissue)
- Cleanse using Ringer solution
- Treat wound cavities same as described for 3rd degree
- Cover the wound using alginate dressing which is cut to size. (e.g. Sorbsan® plus)
- Cover the wound with Askina Transorbent (leave allowance of 2 to 3 centimetres beyond the wound edge for secure fixation)
- Determine the dressing intervals and changes commonly.
- If required, pain therapy
- If required, inject antibiotics (I.V. therapy)

Generally we check the nutritional condition of all patients (protein metabolism, electrolyte metabolism). Depending on the outcome application of percutaneous gastrostomy tube (PEG), tube feeding, e.g. Nutricomp® or infusion therapy might be required. Frequent documentation of the course in a specially developed wound protocol as well as photo-documentation of the healing course are necessary.

We applied and constantly monitored above standards and we obtained excellent results avoiding expensive surgeries (sliding flap operation). The following example describes how to proceed:

Description of the case: Female patient, aged 75, with cachexia, Alzheimer's disease, intense contractures.

The patient was transferred to our hospital on 1.4.1997. She had decubitus ulcer in the sacral region (4th degree) of a size of 20 x 16 cm and significant reddening of the edges (photo 1).



Photo 1: Admission of patient -02.04.97-

In co-operation with the senior surgeon in charge we proceeded as follows:

- Relieving of pressure by means of alternating air support system (in the bed) and foamed pads (in the nursing chair)



Photo 2 : Debridement of necrosis and slough - 02.04.97 -

- After 4 days: Change of dressing once a day (procedure as above)
- 2 months later dressing change every 2 - 3 days
- From beginning of August the dressing was changed every 4 - 5 days

CONCLUSION

Considering the high risk of maceration of the skin we have decided to apply a combination of Sorbsan® Plus and Askina® Transorbent® with the following benefits:

- The dressing does not leak
- There are no dressing residues in the wound
- The dressing can be worn for a long time due to optimal exudate management
- High gas permeability and less odour
- High flexibility
- Dressing can be easily cut to size, easy application and removal



Photo 3 : Application of Sorbsan Plus® - cut to size



Photo 4 : Askina® Transorbent® in combination with Sorbsan Plus®

- Softening of necrosis with hydrogel in combination with a hydrocolloid dressing (Askina® Biofilm® S)
- Debridement of necrosis (photo 2)
- Twice daily change of dressing: Loose filling of wound cavities using Sorbsan® Packing and filling of the defect with Sorbsan® Plus cut to size, covering of the wound with Askina® Transorbent® - (see photos 3,4)
- Application of PEG (Percutaneous Endoscopic Gastrostomy)
- On 02.06.97: Formation of fresh granulation tissue (photo 5)
- On 06.08.97: Healing in progress (photo 6)
- On 11.9.1997: The wound was closed and healed almost completely (photo 7)
- PEG was removed in September because with the nursing staff's help the patient's oral nutritional intake was sufficient; for further replacement the patient was given Nutricomp® several times daily.

- Padding protecting wound from mechanical impact
- Fits and adheres well
- No maceration of the skin due to high absorption capacity

Crucial factors for a successful pressure ulcer therapy are the use of appropriate dressings for local wound management, systematic relieving of pressure, consideration of the nutritional condition as well as teamwork of physicians and nursing staff.



Photo 5 : Granulation tissue - 02.06.97 -



Photo 6 : Healing in progress - 06.08.97 -



Photo 7 : Closed wound - 11.09.97 -