Why combine a foam dressing with ibuprofen for wound pain and moist wound healing?

Six out of ten patients with chronic wounds suffer from persistent wound pain (1). A novel dressing combination has been formulated to provide pain relief and moisture balance at the local wound site (ibuprofen-foam, Biatain-Ibu foam dressing, Coloplast A/S). Foam dressings with polyurethane cells have been known to absorb moisture and provide moisture balance. These second generation foams have the ability to partially retain some fluids and to exchange other fluid, providing moisture balance to the wound surface. This type of foam is less likely to cause maceration of the periwound skin (2).

Healing wounds requires five initial important components: debridement, prevention of bacterial damage, pain and prolonged inflammation and maintaining moisture balance.

Painful wounds take longer time to heal, and some patients cannot tolerate the treatment of wounds and some can become immobile, which in turn can lead to social isolation, depression and feelings of hopelessness (3). Non steroidal anti-inflammatory drugs (NSAIDs) are excellent pain-reducing agents, but when administered systemically in the elderly patients, they may cause side effects such as gastrointestinal bleeding, decreased renal function and even deaths.

To overcome the safety concern, very small doses of ibuprofen can have an excellent local effect on the superficial wound compartment, without detectable systemic levels.

The equivalent of a quarter tablet (50 mg, 10- × 10-cm dressing) of ibuprofen can exert adequate anti-inflammatory and pain-reducing effects up to 7 days.

Conceptually, we have a safe combination of moisture-balancing foams with continuous-release, low-dose ibuprofen to exert a local pain-reducing effect.

ADVANTAGES OF LOCAL TREATMENT WITH IBUPROFEN

The ibuprofen-foam provides moist wound healing, as well as reduces persistent wound pain and temporary wound pain (3–6). The product is easy to use and ensures constant low-dose release of ibuprofen. This is important in a population where adherence to oral medication pain therapy is often problematic. Reduction of persistent wound pain has in several studies been shown to increase sleeping pattern, mobility and mood (3). This ensures that nursing time on dressing changes can be focused on increasing the self-care capabilities of the patient.

The studies on the ibuprofen-foam show positive healing rates in chronic wounds (3–6). After local treatment with the ibuprofen-foam, therapeutic concentrations of ibuprofen are

Patricia Price, BA (Hons) PhD AFBPsS CHPsychol, Wound Healing Research Unit, Cardiff University, Heath Park, Cardiff, UK; Karsten Fogh, MD DMSci, Department of Dermatology, Aarhus University Hospital, Aarhus, Denmark; Chris Glynn, FRCA, Pain Relief Unit, Churchill Hospital, Headington, Oxford, UK; Diane L Krasner, PhD RN CWCN CWS FAAN, Wound & Skin Care Consultant, 212 East Market Street, York, PA, USA; Jürgen Osterbrink, PhD RN RNA, Jürgen Osterbrink, School of Nursing, Hospital of Nuremberg, Heimerichstrasse 58, Nuremberg, Germany; R Gary Sibbald, MD FRCPC MEd, Department of Medicine, University of Toronto, Canada, Toronto, Canada.

Key Points

- non steroidal anti-inflammatory drugs (NSAIDs) are excellent pain-reducing agents, but when administered systemically in elderly patients, may cause side effects
- to overcome the safety concern, very small doses of ibuprofen can have an excellent local effect on the superficial wound compartment, without detectable systemic levels
- the ibuprofen-foam provides moist wound healing and reduces persistent wound pain and temporary wound pain
- reduction of persistent wound pain increases sleeping pattern, mobility and mood which ensures that nursing time can be focused on increasing the self care capabilities of the patient
- some patients cannot tolerate compression because of the associated pain
- the ibuprofen-foam can have a special benefit for this group allowing them to tolerate compression therapy
- the study in this supplement illustrates the therapeutic effectiveness and the safety of the ibuprofen-foam
- the data from the clinical studies on the ibuprofen-foam have also failed to demonstrate any patient with contact allergic reaction to the ibuprofen-foam

obtained in the wound exudate but have been undetectable in the bloodstream. Local administration of ibuprofen has a pronounced local effect, with very little drug diffusing any significant distance from the application site (4). Reduction of pain with local administration requires smaller doses than oral systemic use (4,7). As ibuprofen could not be detected systemically, the risk of side effects by local application of ibuprofen seems very low and therefore it is much safer than oral administration (7).

Patients with venous and arterial leg ulcers often have different localised vascular defects that are further complicated by the associated oedema and scar tissue. This category of patients often can have a reduced local effect from oral pain medication. The use of a moist wound-healing dressing releasing a low dose of ibuprofen can be an advantage in the group of patients with poor local perfusion from the systemic circulation.

IBUPROFEN AND WOUND HEALING

As ibuprofen has an anti-inflammatory effect and there is some speculation in the literature as to whether ibuprofen will impair wound healing, this research has been performed on acute wounds (8–11). Wound healing in acute wounds is very different from that in chronic wounds as indicated in Table 1.

Data from the clinical study on the ibuprofen-foam treatment of 122 patients suffering from painful venous leg ulcers showed similar wound healing properties as the comparator (6). This was similar to the healing rates reported in other studies on the ibuprofen-foam (3–5).

Reducing pain may have a general positive effect on wound healing. In the case of venous leg ulcers, compression bandaging is required for healing. Some patients cannot tolerate compression because of the associated pain. The ibuprofen-foam can have a special benefit for this group of patients, allowing them to tolerate compression therapy.

The study in this supplement illustrates the therapeutic effectiveness and the safety of the ibuprofen-foam.

Table 1 Difference between chronic and acute wounds

Acute wounds	Chronic wounds
Normal blood circulation system	Blood circulation is compromised and often insufficient blood reaches the wound area
Inflammation is a normal process in healing a wound	Chronic harmful inflammatory status, with active macrophages, and leucocytes, keeping the wound in a painful non healing state (17)

ARE TOPICAL NSAIDS CUTANEOUS ALLERGENS?

Some NSAIDs may, in some studies, be associated with local contact allergic reactions. Propionic acid derivatives (e.g. ibuprofen) are the group of NSAIDs that is most frequently associated with allergic, photoallergic and phototoxic contact dermatitis.

The occurrence of contact allergy to NSAIDs was studied in a Munich Dermatology Department. In 371 consecutive patients presenting for diagnosis of presumed contact allergy, standard series patch tests were performed. In addition, a series of NSAIDs were also patch tested including acetylsalicylic acid, bufexamac, diclofenac, etofenamate, felbinac, flufenamic acid, ibuprofen, indomethacin and piroxicam. Seventeen individuals (4.6%) exhibited delayed hypersensitivity to one of the NSAID preparations, and 12 patients (3.2%) had positive patch test reactions to bufexamac, two (0.5%) to etofenamate, two (0.5%) to indomethacin, and one patient (0.3%) to flufenamic acid (12). There were no cases of positive patch tests for contact allergy to ibuprofen proven in this study.

The use of topical ibuprofen has not demonstrated any additional adverse reactions, including allergies, compared to placebo applications (7).

The data from the clinical studies on the ibuprofen-foam including more than 354 patients (3–5,13,14) have failed to demonstrate any patient with a contact allergic reaction to the ibuprofen-foam. One patient demonstrated a positive usage test to the ibuprofen-foam product. Delayed patch testing for polyurethane and ibuprofen was negative. It was, therefore, concluded that it was contact irritant reaction rather than an allergic event. At the present time, we have no proof of allergic sensitisation from the subjects in the reported studies.

Other NSAIDs such as ketoprofen and piroxicam are more likely to be cutaneous photosensitisers compared with ibuprofen

(15,16). In addition, during standard usage of the ibuprofen-foam, the foam dressing will cover the wound area. Therefore, the released ibuprofen will be protected from sunlight. Consequently, the likelihood of causing any photosensitive effect under a dressing is low.

SAFETY OF TOPICAL APPLICATION

Local application of ibuprofen with the ibuprofen-foam is not very likely to induce systemic side effects, as it has not been possible to detect blood concentrations of ibuprofen when using the ibuprofen-foam (4) with existing laboratory test methods. This is an advantage when used on elderly, intensively medicated patients.

With short-term use of the ibuprofen-foam, adverse effects are uncommon. The likelihood of adverse events following long-term use of the ibuprofen-foam is unknown, but considering the small quantities that are locally released, the likelihood is low.

In summary, we have a new therapeutic class of local pain-relieving and anti-inflammatory dressings combined with moisture-balance properties for optimal moist wound healing.

Patricia Price
Karsten Fogh
Chris Glynn
Diane L Krasner
Jürgen Osterbrink
R Gary Sibbald

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Key Points

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