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Assessment of a sequential therapy in different types of lesion

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Introduction: Moist therapy has been shown to be effective in wound healing processes in different lesions. In the case of infected wounds, we are presented with a new challenge when it comes to using them.

Aim: To evaluate patient and lesion in a comprehensive manner, so that this evaluation will allow us to choose a healing protocol appropriate to each lesion. Making use of a number of criteria, such as: the presence or absence of infection, the amount of exudate, the type of tissue present in the lesion, etc.

Methods: With the different lesions two factors have to be considered initially in order to determine the appropriate treatments:

- Presence of infection
- Level of exudate

Those lesions that exhibited infection were managed with an antimicrobial dressing (Aquacel™ Ag), while those that did not were treated with a Hydrofiber™ dressing (Aquacel™). In those lesions exhibiting large amounts of exudate, a secondary dressing (Versiva®) was used. Finally, an extra-thin hydrocolloid dressing (Varihesive® Extra Thin) was used as a protector for frail tissues. To illustrate the regime, 3 clinical cases are displayed:

- A non-infected pressure ulcer on the heel
- An infected traumatic wound in the hand.
- An injury in the 3rd finger of the infected left hand.

Conclusions: A precise diagnosis of the lesion should be carried out, an appropriate protocol chosen, and follow-up maintained for long enough to be able to observe results. Of the 3 cases mentioned it was observed that the wound-healing guidelines proposed obtained good results with regard to healing of the different wounds, ease of use and improvement in the patient's quality of life.

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Methods: In a small case study were included patients with venous leg ulcers where conventional therapy was not successful. Acute wound infection and ABPI < 0,8 were exclusion criterias. We measurement the area of ulcers using hand-handling planimeter. Eighty milliliters of human blood were taken and separated by using the GPS™ System*. The obtained platelet gel was put on venous leg ulcers and covered with antibiotic and collagen dressings. Compression therapy was performed using long-stretch bandages. Dressings were changed after 2–3 days. The platelet gel was applied on the ulcers until they healed, every 7–12 days.

Results: In comparison with ulcers treated only by conventional therapy, ulcers treated with the addition of the platelet gel healed faster.

Conclusions: Our results show that the use of autologous platelet releasate, applied topically on venous leg ulcers, may be an useful improvement in the therapy of this common disorder. However, larger controlled studies are needed to evaluate the effectiveness of this new method, as well as the cost-effectiveness. *GPS™ System (Biomet, Inc. Warsaw, Indiana USA)

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A dressing which relieves pain?

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Pain associated with leg ulcers is now well recognised and there is a large literature on the subject. The problem of pain at dressing changes has been addressed in the EWMA position document and in WUWHS Principles of Best Practice consensus Document. There are many dressing on the market designed to minimise pain at dressing changes. However, management of chronic leg ulcer pain is a problem that has not yet been resolved. Effective analgesia is not always possible in patients reluctant to take medication, and unpleasant side effects of oral analgesia are common. AIM to assess the pain relieving properties of a new hydrogel sheet:

Methods: Patients with painful leg ulcers were offered the dressing irrespective of aetiology and pain levels were recorded. Photographs and tracings were taken and patient comments were recorded.

Results: 1. Arterial leg ulcer: Pain from the ulcer was immediately relieved (level 9 to 2) undisturbed sleep. Granulation tissue became apparent. 2. Venous leg ulcer: Pain levels remained unchanged., dressing discontinued (patient suffered from allodynia rather than pain at wound site. Subsequently relieved by anti-epileptic medication. 3. Venous leg ulcer: Pain levels immediately reduced previously unable to tolerate compression.. Compression bandaging well tolerated and ulcer healing well. 4. Venous leg ulcer: Initial pain relief but pain returned after a few hours. 6. Pressure ulcer on heel: Previously found hydrocolloid and foam dressings painful. Pain level 8–9 reduced to 0 on application of hydrogel sheet and thereafter. Ulcer healed rapidly.

Discussion: A dressing which relieves wound pain will have an enormous impact on patient's quality of life, reducing the need for systemic analgesia and breaking the cycle of pain stress non-

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Stimulation of venous ulcus cruris with thrombocytic growth factors: a case study

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Introduction: Wound healing studies (clinical and experimental) show that topical application of an autologous platelet releasate stimulate wound healing, because it contains various growth factors (PDGF, EGF, TGFβ).

healing pain. It is unclear what the mechanisms are by which this dressing relieves pain, but it would appear to be effective in the right patient group. Careful and ongoing assessment of patients' pain and the wound is essential in selecting the appropriate dressing.

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Ultrasound, a new method for assessment of pressure ulcers and prediction of risk

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Introduction: The echographic structure of skin subjected to pressure was hitherto not studied. With high-frequency (20 MHz) ultrasound subtle details of the dermis and the subcutaneous space can be imaged (1). In venous leg ulcer a subepidermal echolucent band corresponding to the superficial vascular plexus is identified as predictor of tissue necrosis (2). We studied pressure ulcers with the aim to characterise the echographic structure of pressure ulcers.

Methods: A 20 MHz B-mode scanner (Cortex Technology, Denmark) especially developed for dermatological application was used. An 78-years old man with paraplegia with multiple pressure ulcers in the lumbo-sacral, trochanter region and in both feet was studied. Ulcer depths ranged from stage I-III. Additionally, the redness of ulcers was measured using a DermoSpectrometer (Cortex Technology, Denmark).

Results: Characteristic changes were found in the dermis. A prominent sub-epidermal echolucent band was observed over stage I ulcers and in the perilesional skin of manifest ulcers. The band became wider and more distinct in more advanced ulcer grades and in the ulcer margin. The reticular dermis was less affected. The subcutaneous space showed minor and insignificant change. Over stage I ulcers and around manifest ulcers the erythema index was markedly increased.

Discussion: Prominent ultrasonic alterations corresponding to the superficial vascular plexus was the key finding. Alterations of this high-metabolic compartment of the skin are likely to be important for tissue survival, and this depends on the well-functioning of the dermis-epidermis vascular and diffusional supplies. Also the erythema index of affected skin was markedly increased. Thus, it is likely that echographic changes and changes of erythema index are important risk predictors of pressure ulcer in the clinic. Further studies are in progress.

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A prospective cohort study of lower extremity pressure ulcer risk among bedfast elderly in Japan

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Introduction: Recently the development of heel pressure ulcers in the elderly population has become an important issue in Japan. We have previously reported concerning the existence of pressure ulcer in the lower extremities region of Japanese bedfast elderly suffering from severe ischemia, contracture, diabetes, respiratory disease, arteriosclerosis obliterans and male. The purpose of this study was to estimate the incidence of lower extremity pressure ulcers in bedfast elderly individuals and to identify risk factors in Japan prospectively.

Methods: A prospective cohort study was performed in 500-bed long-term care hospital. After explaining the purpose of the study, 259 subjects without lower extremity pressure ulcers recruited. The incidence rate was defined as the number of new cases of pressure ulcer that arose during a specific time period divided by the total amount of person-time observed among individual at risk. The hypothesized risk factors measured included interface pressure on heel, ankle brachial pressure index (ABPI), and contracture. Each subject's medical diagnoses, blood test results, age, gender, period of bedfastness and Braden Scale scores were examined from their medical records. These data were analyzed using Cox regression analysis. The study was conducted from September 2002 to October 2003.

Results: The incidence of lower extremity pressure ulcers was 0.0459 (n = 33), the most commonly affected lesions were heels and toes. Cox regression analysis revealed that low ABPI value, long period of bedfastness and male gender predicted lower extremity pressure ulcer development. The area under the receiver operating characteristics curve was 0.760 (95 % confidence interval 0.675 to 0.844) for ABPI. A cutoff level of 0.8, a sensitivity of 0.70 and a specificity of 0.69 produced a likelihood ratio of 2.27.

Discussion: The pressure ulcer incidence rate in this institution was higher than that in other acute care settings in Japan. These specific risk factors are associated with disuse syndrome. The present results indicate the need to identify high-risk patients by measuring their ABPI and providing appropriate nursing intervention to prevent lower extremity pressure ulcers in Japanese bedfast elderly.

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Clinical evaluation of 3M™ Tegisorb™ hydrocolloid dressing sacral shape in the management of sacral pressure ulcers

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Introduction: Pressure sores cause increased disability and prolonged hospital stay. Their management puts great demands on the health care resources. As one of the most common wound sites, the sacral-coccyx area presents special challenges for health care professionals and caregivers. Incontinence, wound drainage, patient movement and the difficult body contours of the sacral area combine to shorten wear time and the cost effectiveness of wound dressings. Many adhesive dressings are not easily applied with one hand or when wearing gloves.

Objective: To evaluate the dressing performance 3M™ Tegisorb™ Hydrocolloid Dressing - Sacral Shape, in elderly patients with sacral pressure ulcers, which are traditionally treated with a hydrocolloid dressing.

Methods: In an open, non-randomised case study design, 7 patients, exhibiting sacral pressure ulcers, which are traditionally treated with a hydrocolloid dressing, were included. Patients were treated for three weeks or until the sacral ulcer healed, whichever came first.

Results: The Tegisorb sacral dressing proved to be effective in all case studies where it was evaluated. The condition of all the wounds improved over time. The most frequent reason for dressing change was wound inspection (60 %). The longest dressing wear time was 8 days and the overall average wear time was almost 3 days. In addition, patients found this dressing to be comfortable during application, wear and removal. The evaluation by the nursing staff revealed that the dressing was easy to apply and conformed well to the patients' sacral area.

Conclusions: The Tegisorb sacral dressing represents a valuable addition to the range of dressings available for use in these types of pressure ulcers being easy to handle and shaped to work well on this difficult to dress pressure sore area.

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Clinical test of silver-polyurethane foam dressings in problematic venous leg ulcers

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The aim of study was to test a new silver-polyurethane foam dressing in the treatment of problematic venous leg ulcers. The clinical test was planned together with Coloplast, the manufacturer of the dressing. The information was gathered from patient's medical and wound history, previous treatment as well as symptoms of the wound. Four tissue viability nurses in different

care units in Finland selected one venous leg ulcer patient with prolonged healing of wound or high risk of infection for the clinical testing of dressing. The selected patients (N = 4) were female, 61–89 years old. They had long history of venous leg ulcers and several other diseases, like COPD, osteoporosis, rheumatoid arthritis that delayed the wound healing. All patients had oedema in their legs and three of the patients had compression therapy. The assessment of wound was done once or twice a week for 8 weeks period. The size of wound, amount and smell of exudation, tissue type in wound and patients experience of pain (numeric scale 0–10) were assessed by using structured observation chart. The wound was also photographed. In the 8 weeks care period three of the leg ulcers showed promotion in healing; the size of wound was diminished 18–61 %, the amount of fibrin tissue was diminished from 95 % to 10 %, from 50 % to 10 % and from 70 % to 20 %. Two of the wounds had necrotic tissue 10–20 % and it was vanished after three weeks treatment. The amount of granulation tissue was increased in three cases from 50 % to 65 %, from 5 % to 50 % and from 10 % to 80 %. Two of the leg ulcers developed epithelial tissue. One of the wounds had high amount of exude, which also had bad smell. The amount of exude was reduced after three weeks treatment, but the smell still exist. The patients reported the dressing comfortable and three of the patients reported less pain after two weeks treatment. The pain level was at the beginning of the treatment 9–6 and after two weeks it was 4–0. Patient had no changes in their pain medication. The nurses reported the silver-polyurethane dressing easy to use. It does not stick to wound and it was absorbent and allowed longer time periods between dressing changes. The silver-polyurethane dressing is a good option for venous leg ulcers that have prolonged healing process or high risk of infection.

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Observational clinical evaluation of a new collagen/oxidized regenerated cellulose wound dressing in dutch healthcare institutions

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Aim: Clinical evaluation (post-marketing) of the formulary-positioning of a new dressing technology in the treatment of complicated wounds;

Methods: Nurses from Dutch Hospitals and Home Health Care Institutions were invited to join an expert-group for the clinical evaluation of a new protease-inhibiting collagen/ORC wound dressing. After obtaining written consent from the patients, a clinical evaluation-form was to be completed and color photographs taken for each enrolled individual. In a total of four meetings during 2004, the cases were discussed in a peer-to-peer fashion;

Results: Over 20 cases from different indications were discussed in the expert-group, using a standardized format (Power Point®). The healing trajectory was measured and recorded on the evaluation-forms. Wound surface area reduction was used

as the ideal endpoint of this work, but clinical findings during the treatment were critically assessed;

Discussion: The concept of peer-to-peer discussions led to a better understanding of the product technology and the clear setting of indications. Although the manufacturer had introduced the dressing for "hard-to-heal wounds", the experts came to the conclusion that the product could be utilized earlier in the wound-healing trajectory and also for a broader set of indications of complicated (both acute and chronic) wounds;

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Wound exudate management using foam dressings: clinical evidence on efficacy

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Aim: To review the published literature on clinical evaluation of foam wound dressings in order to comment on adverse event reports arising from exudate, i.e. maceration and wound breakdown. Most foams are indicated for use on low- to medium-exuding wounds such as venous leg ulcers(1). The management of wound exudate is a major clinical challenge. It is important to achieve and maintain an optimum moist wound environment (2). In the event of exudate, particularly from chronic wounds, escaping onto the peri-wound skin, maceration and wound enlargement becomes a major risk (3). The clinical performance of foam dressings in managing exudate is reported in numerous publications, however, not all give details on the incidence of maceration.

Methods: A literature search has been conducted (January 2005 repeated May 2005) using MEDLINE, EMBASE and CINAHL databases, and manufacturer's web sites. The search strategy designed to identify all published data on the clinical use of foams.

Results: A total of 159 citations were listed, however, after deleting those related to VAC, silastic and other cavity foams, there were 69 'hits' relating to orthodox foam dressings. Further scrutiny revealed very few references to any adverse events in clinical use – yet alone maceration. Adverse events are under-reported in clinical studies on medical devices. From the available data, the incidence of maceration in healthy volunteer tests varied from zero to 100 %, and in clinical trial reports from zero to 23 %. Investigators related this to the wicking and retention characteristics of the dressing, and to concomitant use of compression.

Discussion: Whilst the generic group of foam dressings is very widely used clinically, this confidence may not always be justified by performance features such as absorbency and fluid retention, maceration, skin stripping and allergy. Anecdotal reports of inadequate fluid handling under compression are not supported by the literature. Maceration can be a consequence of any dressing used on exuding wounds. Dressing selection and wear time should be adjusted according to exudate volume and viscosity. However, it appears that all dressings are not equivalent in their capacity to manage exudate under

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Comparison of the hemodynamics in the sacral region during 90° lateral position between a standard mattress and an air mattress

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Introduction: We experienced the patients with full-thickness pressure ulcers which started to heal after changing the standard mattress to an air mattress with a high degree of pressure relief even though the ulcers did not come in contact with the mattress. However, how the pressure distribution affects the local hemodynamics in the unloading area remains unclear. The purpose of this study was to investigate the difference of the sacral blood flow during 90° lateral position between a standard mattress (SM) and an air mattress (AM).

Methods: This research was an experimental cross over design. The participants were 18 healthy volunteer women (mean age; 32.8) who agreed to the contents of this study. We measured the total hemoglobin (THb) in the sacral region, interface pressure of the greater trochanter, and the contact area between the body and the mattress. These variables were then compared between a standard mattress which is broadly used in hospitals and an air mattress with air cell that are 15 centimeters thickness. The participants were placed in a sitting position on the target mattress for 10 minutes, and then they were placed on the mattress in a 90° left lateral position. The THb was measured at 1 minute intervals for 30 minutes and then the amount of change from the average of the initial 10 minutes to the average of the final 10 minutes was calculated.

Results: AM showed a significantly lower interface pressure than SM in the greater trochanter (32.6 mm Hg vs 88.6 mm Hg, $p = 0.00$). The mean contact area was 0.227 m² (SM) and 0.376 m² (AM) ($p = 0.00$). AM showed a significantly greater change in THb than SM in the sacral region (79.1 μ M vs 28.2 μ M, $p = 0.01$).

Conclusions: These results indicated that the hemodynamics at sacral region appear to be influenced by the pressure distribution of contact area. The air mattress can support the body with a broader contact area, which keeps the interface pressure below the pressure level for capillary occlusion and thereby leads to an increased blood volume. Further research is needed to elucidate the factors affecting the local hemodynamics.

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Actual treatment of pressure sores: plastic surgery and moist wound care

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Introduction: Pressure ulcers are a severe problem in elderly and after spinal cord injuries. With the improvement of medical treatment induce the prolongation of tetraplegic and paraplegic patients life. This imply more possibilities of pressure sores onset and an increasing rate of complex cases and recurrences. Attention must be reserved to prevention and dressing of pressure sores. But the role for plastic surgeon is to utilize in III. and IV. stage flaps and not to restrict the flap reconstruction in future.

Methods: In the past 5 years we operated 329 patients with pressure sores, 263 males, 66 female, mean age was 47,3 years, 230 were para or tetraplegics. Recurrences was 73 in 55 patients. Results and

Conclusions: In surgical treatment the following principles are valid:

1. Excision of the ulcer to the health tissue.
2. Removal of the bone prominences.
3. Filling the cavity with the muscle, if necessary.
4. Covering of the soft tissue lesions well vascularised flaps from defined donor sites.
5. Closure of secondary damage.

Most frequent utilised flaps were m. glutes maximus, m. tensor fasciae latae, m. biceps femoris in pelvic regions. In problematic cases, after necrectomy was very useful V.A.C. system therapy associate with advanced dressing. Treatment of pressure sores requires a holistic approach based on prevention and proper, effective treatment of the ulcers.

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Is silver sulphadiazine still active? Results of a bacteriological study and interest of the new lipidocolloid dressing Urgotul SSD®

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The antibacterial efficacy of silver sulphadiazine in preventing secondary infection of burns is beyond dispute. Since the first bacteriological studies have been carried out, multi-resistant strains to antibiotics have emerged and spread. Following the launch of the new wound dressing Urgotul®SSD a bacteriological study was carried out to investigate the sensitivity to silver sulfadiazine of hospital strains with well-characterized mechanisms of resistance. The minimal inhibitory concentration (MIC) of silver sulphadiazine was determined for 117 strains including *Pseudomonas aeruginosa* and *Staphylococcus aureus*, the bacteria most commonly responsible for secondary infection in

burns, and also enterobacteria, β -haemolytic streptococci and enterococci. The MIC value was 64 mg/l overall, which is much lower than the local concentration of silver sulphadiazine provided by Urgotul®SSD. The risk of selecting resistant mutants is therefore extremely low. The product is also bactericidal: minimal bactericidal concentration (MBC) values were very similar to those of MIC. It should be noted that these findings are comparable to results previously published in literature. The existence, within the bacteria, of one or more mechanisms of resistance to antibiotics does not compromise the efficacy of silver sulphadiazine. The MRSA strains and the sensitive strains showed the same sensitivity to silver sulphadiazine, so did the multi-resistant and the wild-type strains of *Pseudomonas aeruginosa*. The production of β -lactamase in the enterobacteria is not linked to an increase e MIC of silver sulphadiazine. This update study shows that the activity of silver sulphadiazine, the antimicrobial agent incorporated into Urgotul®SSD remains completely stable over the years. The different hospital strains involved in the secondary infection of burns are sensitive to this molecule, independently of their sensitivity to antibiotics. Thus, the new lipidocolloid dressing Urgotul®SSD is recommended to prevent secondary infection of wounds, especially in the burn unit.

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The introduction of a cohesive short stretch bandage system into a leg ulcer clinic

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Compression has long been acknowledged as the mainstay of management of venous leg ulcers. There are various systems of compression bandage: 4 layer, 2 layer, long stretch, short stretch. Different countries have their own preferences Holland Austria and Scandinavia predominantly using short stretch while UK has traditionally favoured long stretch and 4 layer systems. In our specialist leg ulcer clinic all bandage systems are used, but long stretch bandage and 4 layer bandage have predominated over short stretch. This has been partly due to the difficulties in educating nurses in the community (with whom we share patient care) in the use of an unfamiliar bandage system. Moreover, it is widely believed that short stretch bandaging is ineffective in the management of ulceration in an immobile patient. However, in our clinic it has been used effectively to reduce oedema in patients who are immobile.

Aim: The aim of this case study series (10 patients) is to evaluate, the effectiveness of, and patient satisfaction with cohesive short stretch bandaging with view to introducing the bandage system into our clinic.

Methods: 10 patients with venous / mixed aetiology ulceration referred from the community or previously attending clinic for compression bandaging were selected for short stretch cohesive bandaging. All patients' care was shared with the community and education was arranged in the bandage technique for nurses unfamiliar with the technique. Healing rates were monitored over a 16 week period and patients' comments were recorded. One immobile patient was recruited into the study.

Results: All patients' ulcers have reduced in size or healed. The bandage was well tolerated by patients; they found the bandage comfortable and liked its lack of bulk. One patient had been unable to tolerate other bandaging. All nurses found the bandage simple to apply and the bandage stayed in position well between dressing changes. The immobile patient's limb reduced in size and ulceration improved.

Discussion: Following these satisfactory evaluations we have adopted cohesive short stretch bandage as the first bandage of choice and is becoming widely used in the community. Compression has long been acknowledged as the mainstay of management of venous leg ulcers. There are various systems of compression bandage: 4 layer, 2 layer, long stretch, short stretch. Different countries have their own preferences Holland Austria and Scandinavia predominantly using short stretch while UK has traditionally favoured

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Preliminary results reporting a reduction in post operative blistering using a modified Molndal dressing technique in a Glasgow hospital

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Aim: Peri-wound blistering is often observed after orthopaedic surgery. The Molndal technique was developed in Sweden using a hydrofibre dressing with secondary transparent film dressing and has been shown to reduce the occurrence of post operative blistering (Folestad et al, 2002). The purpose of this study was to evaluate a modification of the dressing technique in our patient population.

Methods: All patients admitted for either knee or hip arthroplasty were included. Data were collected for over an 16 week period. During the first 8 weeks, our traditional post operative dressing which consisted of transparent film dressing with integral absorbent pad was used. Following intensive training for all the staff involved in the patient journey, the new dressing technique was introduced and data were collected for a further 8 weeks. The modified dressing consisted of: A 15 cm x 15 cm hydrofibre dressing (AQUACEL[®]), which was folded to form 3 layers and applied over the incision. The AQUACEL[®] dressing was secured using a hydrocolloid dressing (DuoDERM[®] Extra Thin), in place of transparent film dressing. Care was taken not to stretch the dressing during application and to reduce the amount of air under the dressing. In knee operations the DuoDERM[®] dressing was applied with the knee flexed or extended – at Consultant's discretion – followed by padding and compression. The main point of interest was: the presence or absence of blisters to the peri-wound skin post operatively

Results: Over the 16-week period 293 Arthroplasty procedures were carried out. 52.6 % knee and 47.4 % hip procedures. During the 8 weeks pre evaluation, of the new Molndal tech-

nique, using our traditional dressing method, 113 procedures were carried out, blistering occurred in 22(19.5 %) patients. In the

8-week period where modified the Molndal dressing technique was applied, 180 procedures were performed in which 7 (3.5 %) patients developed blistering post operatively.

Conclusions: These preliminary results indicate a reduction in postoperative blistering in our patient population using a modified Molndal technique. Longer-term studies, which will include patient comfort, ease of use of dressing and health economics, are currently being undertaken.

Reference:

Folestad A. (2002) The management of wounds following orthopaedic surgery: The Molndal Dressing. WGCP 220, June

P 175

A program to simplify the treatment of skin tears in long term care using a self-adhesive polyurethane thin foam dressing *

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Significant variations in the treatment of skin tears existed within our 558-bed LTC facility. A standardized protocol was developed and tested in order to standardize protocols and improve the quality of care in residents who suffered skin tears. Twenty residents over the age of 75 who had either upper or lower extremity skin tears categories I – III, not requiring sutures, were treated with a thin foam product. Persons who experienced oedema greater than 1+ on the injured lower extremity were excluded. Controls were matched for gender, age, location and severity of skin tear. The resulting impact of the intervention was then analyzed to evaluate the outcomes. Use of the thin foam product, when compared to control subjects, revealed:

- A decrease in mean time to close/heal of 5 days
- A reduction in dressing changes per skin tear from 12 to 4.6
- A reduction in nursing time to care for these wounds
- Absence of cellulitis and local wound infections

Standardized protocols using a single foam product for skin tears can have positive clinical and fiscal outcomes in LTC.

*ALLEVYN[®] Thin

^ Trademarks of Smith & Nephew

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The successful use of a hydrocellular polyurethane foam dressing*, in acute compartment syndrome, to avoid further amputation

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Swelling of the lower leg will press upon blood vessels and the nerve supply of the lower leg and foot. Acute compartment syndrome occurs following trauma to the lower leg and pressure in the compartment will rise and begin disrupting blood flow, leading to tissue death if not treated in a timely manner. Acute anterior compartment syndrome is a medical emergency. Surgery is performed to release the myofascia of the anterior compartment to allow normal blood circulation. The Patient was a 36-year-old male who had a previous medical history of asthma and renal failure but was transferred to the surgical ward with a crush injury and compartment syndrome at the left lower leg. The patient had fallen from a ladder and lay for some unspecified length of time on the injured leg causing irreversible ischemia. A fasciotomy was performed, however necrosis continued and a left below knee amputation was performed on 18.07.02. The Nursing challenge was:

- Treat the infection
- Reduce the level of exudates
- Promote healing
- Avoid any further amputation

The wound was treated with an iodine based cavity dressing and a non-adhesive hydrocellular polyurethane foam dressing* for absorbency and protection. Over the following 4 weeks, the wound showed healthier granulation, reduction to 10 % slough tissue, evidence of wound contraction, and reduction in exudate. The wound continued to contract with epithelialisation at the wound edges. Less bone was visible. Plans were made for discharge home to await total wound healing prior to refashioning of the stump.

* ALLEVYN™ Non-adhesive – Smith & Nephew Inc., Largo, FL. ^ Trademarks of Smith & Nephew

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Polyurethanes with soft silicone in treatment of partial thickness wounds

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Aim: Wounds and defects of mixed depth are very common in plastic surgery. Advanced wound care of partial thickness defects allows achieve spontaneous epithelization thus reducing the total defect and minimizing surgical procedure. Partial thickness wounds require gentle dressing technique and special type of

dressings capable to hold discharge, reduce pain and promote healing. Absorptive polyurethane foam dressings combined with soft silicones are the challenging alternative for treatment of partial thickness burns, donor wounds and second stage chronic ulcers.

Material and methods: A prospective pilot study started in October 2003. Fifteen volunteers suffering partial thickness wounds confirmed consent to use absorptive polyurethane foam dressings combined with soft silicones. Five had minor burns, five chronic ulcers and five required minor split thickness skin grafting due to traumatic defects. All wounds were investigated for bacterial contamination, and only patients with clean or low contaminated wounds were included. Fourteen patients were treated on out-patient basis. Visits to outpatient clinic were organized twice a week. Dressings on the time of visit by the decision of surgeon were changed or left intact. Additional therapy for chronic ulcers was administered according to the local protocol (pentoxiphylline, flavanoids and compression socks). No local or systemic antibacteric therapies were used.

Results: The average age of patients with chronic ulcers was 55.8 years, for burns – 34.2 years, for donor wounds – 35.6 years. The average duration of treatment for chronic ulcers was 36.2 days, for burns - 13.4 days, for donor wounds 15 days. The end of the treatment was the complete coverage of the wound when no dressings were required.

Discussion: Polyurethane foam dressings complemented by a wound contact layer of soft silicone stipulate gentle dressing change and reduce the pain during the procedure. Modified dressings are challenging alternative for treatment of partial thickness traumatic and chronic wounds.

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Conservative management of a large loss of tissue in a newborn baby with dorsal myelomeningocele and complex cerebral malformations

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Introduction: Myelomeningocele, a form of spina bifida associated with severe neurological impairment, is identified at birth by a posterior midline mass covered by a membrane that may or may not incorporate nervous tissue and leak cerebrospinal fluid. Vertebral anomalies are always present together with malformations of the cerebrum and cerebellum. Many of these patients (up to 75% according to several series reported) develop hydrocephalus.

Aim: This paper describes a case of a newborn baby with severe cerebrospinal malformations, who one month after neurosurgical procedure developed a wide area of skin necrosis, involving subcutaneous tissues with leakage of cerebrospinal fluid

and subsequent high risk of local and systemic infection. Material and methods: The wound extended over two thirds of the spinal cord. Exudate was scant. Swabs were positive for *Klebsiella oxytoca*. Due to the critical condition of the patient, no surgical management of the defect was attempted. Antibiotic therapy was administered. Local management of the defect included the application of ACTICOAT[†] and ACTICOAT[†] 7. ACTICOAT is a nanocrystalline silver[†] coated dressing, indicated as an antimicrobial barrier that remains effective for a minimum of three days, ACTICOAT 7 remains effective for a minimum of seven days. Dressing changes were carried out once every 3 days with ACTICOAT for the first week and every 7 days with ACTICOAT 7 for the remainder of the treatment.

Results: The closure of the wound was achieved per secundam in 30 days, with no clinical signs or symptoms of local infection. The baby was discharged from hospital at the age of 3 months in good clinical condition, despite her severe neurological status.

Conclusions: Severe congenital malformations may be associated with high risk of infection. ACTICOAT was effective in the prevention of infection and in the healing of a wound caused by severe congenital malformation.

[†] TM Smith & Nephew

[†]Nanocrystalline silver is a patented technology of NUCRYST Pharmaceuticals Corp., under license.

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Silver dressings. A systematic review

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Introduction: Silver dressings are an interesting alternative to manage wounds with a high degree of bacterial load or with signs of local infection. Nowadays in Spain we can find different kinds of silver containing dressings in a variety of presentations and utilities. Normally, the information about these dressings is handed by their commercialization departments and there is a certain lack of knowledge amongst professionals of the basic aspects that operate within these dressings and their activity. Then, our objective is to synthesize the information obtained from these silver dressings and offer enough evidence to make decision taking easier.

Methods: Systematic review of two data sources: technical information from laboratories and research on data bases (MEDLINE, CINAHL, CUIDEN, COCHRANE). Information is collected regarding: type of silver, function, silver amount, antimicrobial effectiveness according to in vitro and in vivo analysis, effectiveness according to clinical studies and manufacture's instructions.

Results: Out of 46 articles 26 were included in this review (17 laboratory studies and 9 clinical studies). There is significant heterogeneousness on the methods used for the studies. Sample sizes are small and different measures were used to evaluate results, thus the difficulty to establish comparisons.

Conclusions: starting off from technical information handed by laboratories the main characteristics of each dressing can be known. Activity time and effect on micro organisms are similar, not being this the case of the functioning mechanism and the amount of silver contained (maybe a marketing effect). Most of the studies come from laboratories, in vitro or with animals. There are scarce quality clinical studies. We may conclude that there is evidence of an effective antimicrobial activity according to laboratory studies, but more studies are needed clinically wise.

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Safety and efficacy in long term use of a sustained silver-releasing foam dressing: a randomised, controlled trial on venous leg ulcers

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Introduction: It has previously been shown that a sustained silver-releasing foam dressing⁺, is safe and effective for the treatment of leg ulcers and diabetic foot ulcers with reductions in relative wound areas of 45–56 % within 4 weeks^{1,2,3,4}. In the pre-

sent study, we investigated the safety and performance of this silver foam on leg ulcers with delayed healing 5-8 weeks after initiation of the treatment and compared it with a non-silver foam dressing.

Methods: 45 patients with a chronic venous or mixed venous/arterial leg ulcer had been subjected to 4 weeks treatment with the silver foam². For the present study they were re-randomised to receive treatment with either the silver foam (25) or the non-silver foam (20) for 4 additional weeks. All adverse events were recorded. Ulcer area and healing were assessed weekly. Odour, leakage and maceration were evaluated at dressing changes.

Results: The reduction in absolute ulcer area was significantly greater in the silver foam group than in the non-silver group ($p < 0.05$). The mean relative reduction in ulcer area over 4 weeks was 26.2 % in the silver foam group and 9.5 % in the comparator group. Two ulcers healed in the silver foam group and one ulcer healed in the comparator group. Higher incidences of leakage and odour were reported in the non-silver group compared to the silver foam group, although this was not statistically significant. The incidence of maceration was low in both groups. No device-related adverse events were recorded in the silver foam group while 2 skin reactions were observed in the non-silver foam group. No serious device-related adverse events were observed in any group. Reversible silver staining was observed in 2 patients at some dressing changes in the silver foam group.

Conclusions: The study demonstrated that the silver foam can be used for at least 8 weeks with no safety concerns. There were occasional minor side effects in both treatment groups, but no device-related adverse events were observed in the silver foam group. The reduction in ulcer area was greater with the silver foam compared to the non-silver foam. The dressings performed similarly for all other rated parameters.

References:

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+Contreet® Foam, Coloplast®Allevyn® Hydrocellular, Smith & Nephew