Silflex® soft silicone wound contact dressing

It is hard to believe that it has taken so long for the message to get through, that dressings and dressing removal should not cause additional pain or trauma to the patient. However, the field of wound-related pain, its assessment and management has now been recognised (European Wound Management Association [EWMA], 2002; World Union of Wound Healing societies [WUWHS], 2004, 2007). This collection of case reports will demonstrate the importance of using non-adherent wound contact layers to minimise trauma to the wound bed and/or the surrounding skin.

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KEY WORDS
Silflex® soft silicone wound contact dressing (formerly known as Siltex®)
Atraumatic
Pain
Trauma

It is a reasonable assumption that many of the patients we treat who have wounds will be experiencing a degree of pain (Hollinworth, 2005). This pain might take the form of continuous background pain or pain related to nursing procedures. While it may not be feasible to completely eliminate the pain, there are a number of ways in which it can be significantly reduced, and hopefully this will result in an improvement in quality of life for the patient and their relatives. Many patients also experience transient wound-related pain when the wound dressing is applied and/or removed. Furthermore, pain may be long term and further exacerbated by procedural pain (King, 2003) .

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Potential causes of wound pain

Wound pain is mostly described as either nociceptive or neuropathic pain (Johnson, 2008). Nociceptive pain is experienced as a result of the body's response to injury, and can also be caused during traumatic dressing removal (World Union of Wound Healing Societies [WUWHS], 2004, 2007). Neuropathic pain occurs when nerve endings are damaged and continue to cause pain over long periods of time. Such pain may be related to wound aetiology, ischaemia, venous disease, vasculitis, hypersensitivity, infection and dermatitis (Hollinworth, 2005).

Different types of pain are outlined in the WUWHS document, 'Minimising pain at wound dressing-related procedures' (2004), namely:

- Background pain: this is the pain which a patient feels at rest, when there is no interference with the wound. It is related to the underlying cause of the wound and related wound pathologies such as arthritis vascular disease or diabetes
- Incident pain: this is the pain which the patient experiences when carrying out day-to-day activities, mobilising, coughing or driving
- Procedural pain: this results from the removal of dressings, cleansing or dressing application
- Operative pain: this is associated with specialist intervention such as debridement or application of topical negative pressure (TNP).

Psychological/social and environmental factors such as fear of pain, previous experiences, gender, socioeconomic factors and the patient's attitude to pain will also have an impact on the level and intensity of the pain felt (WUWHS, 2004).

Pain initiated by wound-related procedures

Dressing removal can cause pain and/or skin trauma or stripping for a number of reasons:

- Many dressings contain adhesives as retention is an important feature to reduce the need for dressing renewal. However, some products contain aggressive adhesives which strip skin cells when they are removed from the wound, leading to trauma (Rippon et al, 2007)
- The application of highly absorbent dressings to dry or low exuding wounds may lead to adherence within the wound bed. An example would be the application of an alginate dressing to a donor site, as such wounds bleed excessively initially but do not produce a large volume of exudate
- Failure to moisten wound adhesives prior to removal of the dressings
- During sharp debridement of the wound bed
- The use of dressings which cause a 'drawing' effect.

Assessing pain

Regular, structured assessment of wound pain is a necessary part of overall wound management (WUWHS, 2004, 2007).

The WUWHS has designed a tool which can be used for wound assessment in any environment and can be adapted to suit the needs of the care setting. By using an assessment tool, the patient's experience of pain can be monitored effectively, producing good baseline data from which to measure success or failure of pain management strategies.

It is also important for clinicians to understand pain from the perspective of the patient (McCaffery, 1983). By empathising with the patient it becomes easier to employ therapies that will not only benefit the wound and assist healing, but will also reduce the pain associated with wound dressing-related procedures (King, 2003). By reducing pain and reassessing the degree of pain experienced by the patient, there should be an accompanying improvement in quality of life, a reduction in anxiety which, in some cases, may lead to an improvement in wound healing (Holden-Lund, 1987).

Assessment should include the use of either a visual analogue, numerical or verbal scale which can be used before and after analgesia is given. More in-depth information can be collected if the patient can complete a pain diary, which can be used as a guide as to when provide analgesia at the times when the patient requires it most.

Managing wound pain

Management of wound pain should consider all aspects, including local and systemic factors. Local factors may include dressing choice, skin irritation and excess exudate levels.

Pharmacological treatment should be considered for both background pain and in anticipation of dressing changes. Combinations of analgesics may be necessary to help maintain the analgesic effect throughout the day. Treatment may include adjunctive therapy with antidepressants and anticonvulsants to help reduce neuropathic pain.

Analgesia should be given 30 minutes before dressing changes to ensure maximum benefit during painful procedures.

Removal of the dressing is possibly the most painful part of the procedure. The patient will require a full explanation of the procedure and what you are doing, as good communication can help to lessen pain by reducing fear and anxiety (Holden-Lund 1987). Using products which do not adhere to the wound bed or strip the surrounding skin is essential. If the product appears to be adhering, warm water can help to break down the adhesive in the dressing and moisten any remaining dressing in the wound (Hollinworth, 2003). If dressing removal is proving too painful, time out can help the patient relax before beginning the procedure again.

Dressing selection

Dressing choice should be based on the wound type, tissue type, level of exudate, presence or absence of infection, and the presence of pain in the wound. There may be situations when the patient will not tolerate the dressing which is regarded as the optimum choice for wound healing, however, this must be weighed against the needs of the patient.

It is vital to ensure that the dressings used are absorbent enough to handle exudate from the wound and minimise the risk of maceration and skin irritation. The surrounding skin should also be protected using a barrier film which will help to minimise trauma during dressing removal or due to exudate.

If dressings used are causing trauma, pain and/or bleeding from the wound, the clinician should reconsider the choice of dressing.

Atraumatic dressings will help to reduce the adherence of the product both to the wound bed and the surrounding skin.

Silflex® soft silicone wound contact dressing

Silflex® soft silicone dressing (formerly known as Siltex®) from Advancis Medical is a silicone mesh dressing which is designed to be used as a non-adherent wound contact layer, which allows secondary dressings to be removed without causing trauma to the wound bed.

The dressing consists of a polyester mesh which is coated with Silfix soft silicone which gently contours to the wound bed and allows the passage of exudate into the secondary wound dressing.

Silflex soft silicone contact dressing is indicated for use on:

- Skin tears
- Skin abrasions
- Surgical wounds
- Second-degree burns
- Lacerations
- Leg and pressure ulcers.

The case reports which follow were carried out in a number of clinical centres and demonstrate the effectiveness of Silflex soft silicone wound contact dressing.

Case report 1

First review and treatment

A 57-year-old lady with a complex past medical history was referred to the department of tissue viability after several operations. Her initial surgery was a popliteal bypass grafting to her right leg (27 March, 2009). This failed and she had to have a below-knee amputation (31 March, 2009). She was experiencing lower abdominal pain (1 April, 2009) and, as she had a history of ulcerative colitis, her medication was being reviewed at this time. Unfortunately she needed surgery (16 April, 2009) as she had a perforated colon and required a sub-total colectomy, ileostomy and mucous fistula.

Post-surgery the surgeon left the wound open as she also suffered from peripheral vascular disease and type II diabetes. Her condition at this time was poor. She was ventilated and there were signs of peripheral shutdown of her circulatory system. She was to be commenced on total parental nutritional therapy (TPN). The tissue viability nurse reviewed her wound with the consultant on 20 April, 2009 (*Figure 1*). The sub-mucous fistula was in the base of her wound. Due to the complexity of her condition, dressing options were discussed and it was decided to use topical negative pressure (TNP) therapy with Silflex to occlude the sub-mucous fistula at the wound base. The wound measured 23.4x4x2.5cm. The wound bed had a dark blue colouring with a fibrinous covering. The Talley Venturi™ pump system was

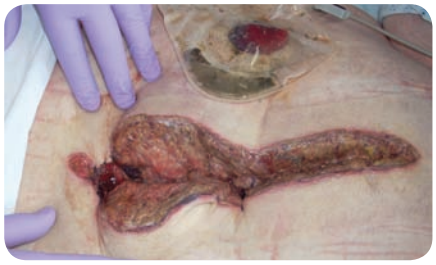

Figure 1. First assessment post-surgery by tissue viability. Topical negative therapy was started with Silflex soft silicone dressing covering the sub-mucous fistula at the base of the wound.

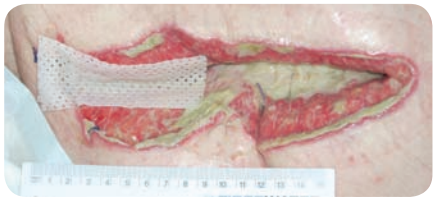

Figure 2. Silflex soft silicone dressing at base of wound.

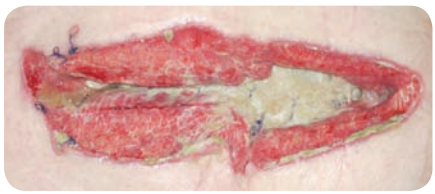

Figure 3. Final review of Silflex soft silicone dressing. The mucous fistula discharge can be seen on the surface to the left of this image.

used at a setting of 80mmHg continuous therapy. Dressings were changed every three days.

Second review

At second review (13 May, 2009) the wound measured 19x6.5x5cm. The wound bed consisted of 40% slough and 60% granulation tissue. Exudate levels were medium volume with medium viscosity and there was no odour coming from the wound bed. The Silflex dressing was halved, then halved again to ensure occlusion of the fistula. In *Figure 2* the dressing has opened up, whereas it should be folded in half to only cover the base of the wound. The patient remained intubated and on TPN feeding. Her extremities were oedematous and she remained in the intensive care unit. She was now alert and aware of being in hospital. There had been a significant improvement in her wound and general condition. Wound therapy continued as before.

The Silflex dressing was effective in occluding the sub-mucous fistula and the staff found it easy to apply. Review was scheduled again for one week's time.

Final review

At the final review the wound measured 23.5x7x3.5cm (*Figure 3*). The wound bed consisted of 30% slough and 70% granulation tissue. Exudate levels were medium volume low viscosity and there was no odour from the wound. As before, the Silflex dressing had proved a good dressing for occluding the sub-mucous fistula without effecting the promotion of granulation tissue to the wound bed. The wound had continued to progress with the topical negative therapy. There was a plug of tenacious slough that was slightly slow at debriding (top of wound near sternum; *Figure 3*). Larval therapy may be an option at the next review to remove this. The patient was now breathing independently with limited ventilation assistance and was tolerating small amounts of diet with enteral supplements.

Conclusion

The purpose of Silflex soft silicone wound contact dressing was to occlude the sub-mucosal fistula without causing any trauma to the surrounding tissues. The dressing was easy to use and performed the task required of it in this complex wound.

Case report 2

A 65-year-old man presented with a surgical excision to his left neck/cheek area following successful bone graft of fibula to his mandible. In preparation for a flap, the wound required debridement and development of granulation tissue.

Figure 4 shows that the wound cavity has been debrided using surgical debridement and larval therapy to reveal bone, tendon and granulation tissue. At the upper part of the wound there exists sinus into the oral cavity and an exposed bone graft. The decision was taken to start negative pressure wound therapy (NPWT) to aid the development of granulation tissue. However, it was also recognised that the exposed bone needed to be protected and so a Silflex soft silicone dressing was applied (*Figure 5*). To maintain the seal the sinus between the

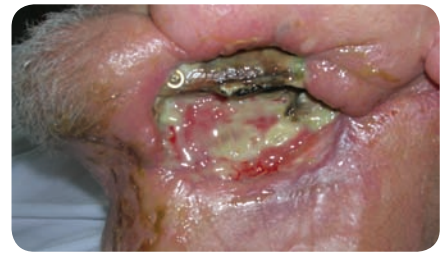

Figure 4. The wound post-debridement using a mixture of larval therapy and sharp debridement.

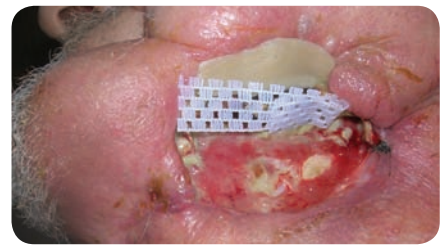

Figure 5. Stomahesive paste and Silflex silicone dressing in place before fitting the V.A.C. dressing (black foam).

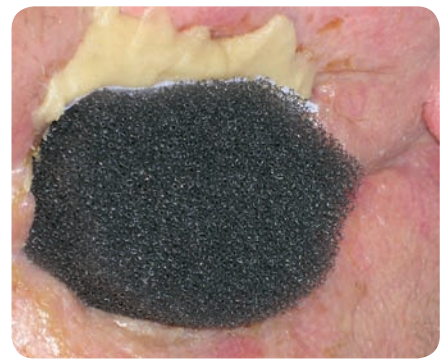

Figure 6. Black foam placed over the Silflex soft silicone dressing.

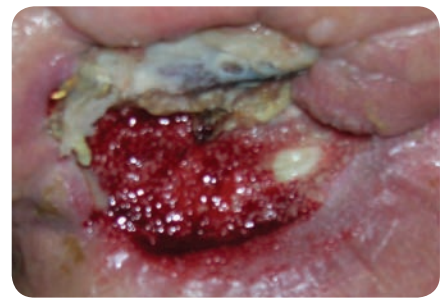

Figure 7. The final assessment with granulation forming successfully across the wound bed and no damage to the bone graft. Dressing removal was atraumatic and pain free.

oral cavity was closed using Stomahesive paste (ConvaTec) (*Figure 5*).

The wound had previously been surgically debrided and had become infected and further necrotic tissue had

developed. Larval therapy and surgical debridement were used to clear the area and systemic antibiotics were used.

Negative pressure wound therapy was delivered with the V.A.C.® Freedom® system (KCI Medical) using black foam and the dressing was changed every 48 hours. At each dressing change Silflex was used to cover the exposed bone graft (*Figures 5* and *6*).

Initial review

At first review the wound dimensions measured 5x4x1cm with evidence of granulation growth in the wound bed (*Figure 5*). There was no evidence of wound infection and the bone graft remained undamaged (*Figure 7*).

Second review

At the second review one week later, the wound bed was seen to be granulating well with some minor bleeding associated with foam dressing removal which resolved in minutes. The Silflex dressing had offered protection to the bone graft and the Stomahesive paste while the V.A.C. Freedom system was *in situ*. At this review the wound dimensions had remained static, with the exception of the wound depth which had reduced to 0cm.

Conclusion

Following the treatment regime combining Stomahesive, Silflex silicone wound contact dressing and the V.A.C. Freedom system, the patient underwent a successful pectoral flap to cover the defect.

Case report 3

An 89-year-old lady with a history of dementia suffered a fracture to the right neck of her femur. The fracture was resolved by an open reduction and internal fixation with a hip screw. She sustained a trauma wound to the outer aspect of her left, lower limb due to the fall (*Figure 8*). The department of tissue viability was asked to review this wound six days postoperatively. This wound had been dressed with Mepilex® (Mölnlycke Healthcare) and Allevyn® (Smith and Nephew) borderless dressings secured with orthopaedic bandages and yellow line Comfifast™ tubular bandage (Synergy Health) before the review (*Figure 9*).

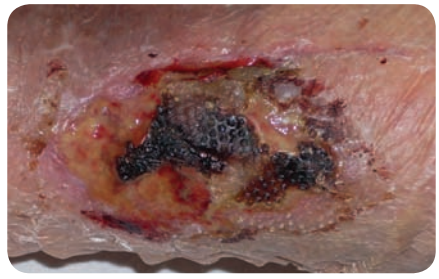

Figure 8. The wound bed was cleaned before the first dressing application.

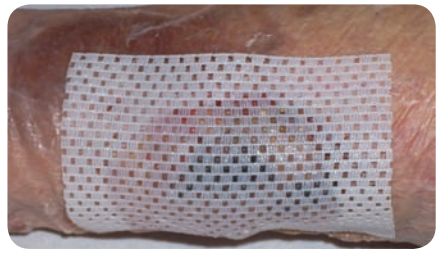

Figure 9. Application of hydrogel and Silflex soft silicone dressing.

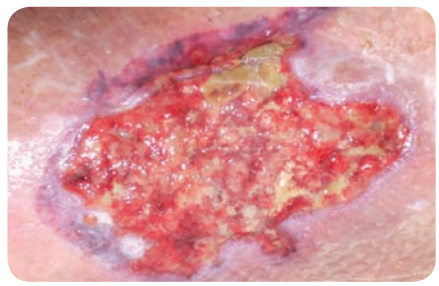

Figure 10. Review of wound before discharge home (four days and two dressing changes since the initial review).

Initial review

On initial assessment all dead and dry tissue was removed. The surrounding tissue was paper thin and there were signs of old scars from previous accidents. There were no signs of periwound trauma. The wound bed characteristics were 50% necrotic, 25% sloughy and 25% granulation tissue, with a low volume of exudate and low viscosity levels. The patient was on a normal diet with no nutritional supplements. She was prescribed medication for pain.

Due to low exudate levels, Intrasite™ Gel (Smith and Nephew) was applied to the wound bed. This was secured in place using Silflex soft silicone dressing 10x10cm, borderless Allevyn and secured with toe-to-knee orthopaedic bandaging and Comfifast tubular bandages. The dressing was changed every 48 hours.

Second and final review prior to discharge home

Two weeks later at the second and final review, there was no pain at dressing removal and the surrounding skin was showing signs of tissue regeneration. A large plug of dead tissue was cut and removed from the wound bed. The wound bed consisted of 30% sloughy, 65% granulation and 5% epithelial tissue. There was still a small plug of slough at the top of this wound (at 12 o'clock) (*Figure 10*). As this wound was healing the patient was discharged home where treatment was to be continued.

Conclusion

Silflex soft silicone wound contact dressing was an effective non-adhesive dressing, as there was no trauma or pain on removal and it successfully contained the Intrasite gel within the wound bed.

Case report 4

This 91-year-old lady was referred due to a longstanding leg ulcer which had had a skin graft six months before referral. The skin graft had not been successful and the donor site had failed to heal completely.

In *Figure 11* it can be seen that the donor site has partially healed leaving an area of 6x6cm of hypergranulation. This area had been treated using Acticoat™ (Smith and Nephew) for four weeks before review. The wound was painful and bled when touched. At this point the decision was taken to treat the hypergranulation while protecting the fragile new epithelium which covered the remainder of the donor site

The hypergranulation was treated daily for seven days with Terracortil ointment (Pfizer) and the wound was covered with Silflex. As the ointment needed to be applied daily, a silicone dressing was required to prevent damage to the fragile tissue. An absorbent dressing was used to cover this and secured using yellow line Comfifast.

Following three days of treatment the wound was reviewed to establish if the daily dressings were causing trauma to the periwound area or the wound bed. On inspection (*Figure 12*), it was seen that the hypergranulation was beginning to resolve and the periwound area was in good

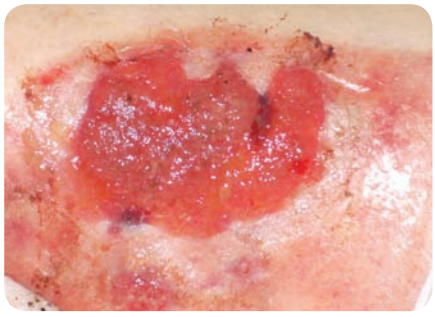

Figure 11. The donor site has partially healed but hypergranulation can be seen centrally.

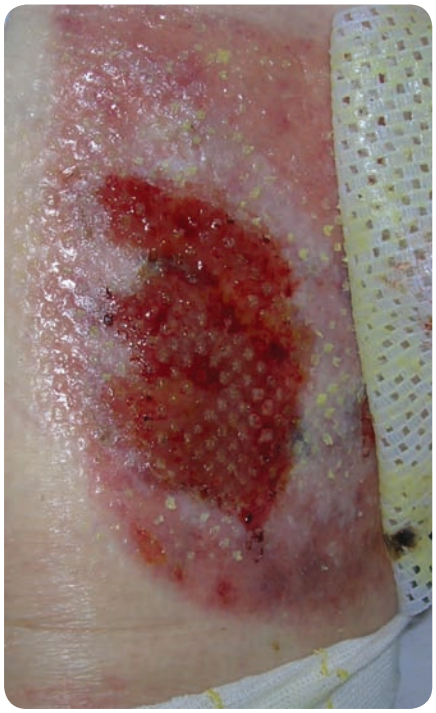

Figure 12. The wound following three days of treatment with Terracortil and Silflex soft silicone wound contact dressing.

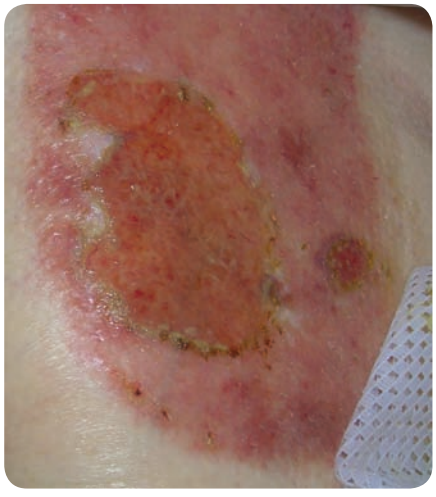

Figure 13. The wound at final assessment (day 11); the hypergranulation has resolved and the wound is ready to progress.

health with no evidence of skin stripping or trauma. At this point the wound was still 6x6cm. The patient reported no pain or trauma at dressing changes.

Conclusion

After eight days and eight dressing changes the hypergranulation had resolved and the periwound area remained intact (*Figure 13*). The patient had not found the dressing changes painful.

Summary

Advances in wound dressing have undoubtedly improved the standard of wound treatments over the past decade. Many of the advances address issues such as absorbency of exudate, protease modulation, or involve the use of growth factors. Despite this, one of the most fundamental questions has remained relatively low on the agenda, i.e. how can we reduce wound-related pain, particularly at dressing change? Silicone-based treatments have enabled clinicians to apply effective therapies to patients' wounds without causing excessive trauma to the wound bed or to the surrounding skin. This helps improve the patient's quality of life, reduces anxiety and may even improve concordance with treatment.

As can be seen from the cases reported above, Silflex soft silicone wound contact dressing has been used in a number of wound types and has been shown to improve outcomes, both in terms of healing and in the prevention of wound-related complications. WUK

Key points

- Dressing removal can cause pain and/or skin trauma or stripping for a number of reasons.
- By reducing pain and reassessing the degree of pain experienced by the patient, there should be an accompanying improvement in quality of life, a reduction in anxiety which, in some cases, may lead to an improvement in wound healing (Holden-Lund, 1987).
- Atraumatic dressings will help to reduce the adherence of the product both to the wound bed and the surrounding skin.
- Silflex® soft silicone dressing from Advancis Medical is a silicone mesh dressing which is designed to be used as a non-adherent wound contact layer, which allows secondary dressings to be removed without causing trauma to the wound bed.
- Silicone-based treatments have enabled clinicians to apply effective therapies to patients' wounds without causing excessive trauma to the wound bed or to the surrounding skin.

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