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CASE SERIES: MEPILEX DRESSING IN TREATMENT OF EXUDING DIABETIC FOOT ULCERS

Plastic Surgery

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ABSTRACT

Introduction: According to estimates, 10% of diabetics will get a diabetic foot ulcer at some point in their lives. NICE reports that more than 80% of diabetic people who have their feet amputated have foot ulcers. Up to 70% of amputees pass away within five years following amputation, and almost 50% do so within five years of commencement[1]. DFUS frequently become infected once the wound is established, causing discomfort, delayed wound healing, an increased likelihood of lower-limb amputation, and eventually decreased patient outcomes, indeed though the infection is rarely a risk factor for DFU development[2]. **Aims And Objectives:** The aims and objectives of this study were to analyze the characteristics and clinical outcomes of mepilex border dressing in exuding diabetic foot ulcers. **Materials And Methods:** Our study included, four OPD and IPD patients who were receiving treatment with mepilex border dressing for exuding diabetic foot ulcers patients in the plastic surgery department of S.M.S. Medical College and Hospital, Jaipur. **Results:** Within two weeks, all four of the wounds in our study shrank in size and looked better. By creating a seal between the dressing and the undamaged skin, Mepilex border dressing also offers a mild adherence, guaranteeing the retention of wound exudate and preventing periwound skin maceration. The purpose of Mepilex border dressings is to reduce the eventuality for discomfort and trauma. **Conclusion:** Effective exudate management and dressing adhesion can reduce the number of dressing changes needed and thus reduce the eventuality for wound disturbance.

KEYWORDS

Diabetic foot ulcers, Mepilex, Dressings

INTRODUCTION

It is estimated that 10% of people with diabetes will develop a foot ulcer at some point in their lives, with DFUs preceding more than 80% of amputations in people with diabetes. For the patient, the impact of a DFU can include symptoms such as pain, restricted mobility, pruritus, sleep disturbances, exudate leakage and malodour. DFUs can significantly impact morbidity and mortality and can have physical and psychological consequences, as well as substantial financial costs.

Given the complex nature of DFUs, a systematic and multidisciplinary approach to the management of these wounds requires understanding of its multiple confounding factors and etiologies, and a holistic approach should incorporate appropriate DFU assessment, examination and therapeutic modalities with focus placed not only on evaluating and managing the wound, but also on the diagnosis and treatment of the underlying disease. Patient focused and personalized wound care helps to identify issues that may significantly impact the patient and allows the patient's fears and concerns to be addressed(1).

Diabetic foot ulcers (DFUs) are difficult to heal and foot ulceration is a common risk factor for lower extremity amputation, with the risk of amputation increasing in line with wound chronicity. While infection is rarely a predisposing factor for DFU development, DFUs commonly become infected once the wound is established, resulting in pain, delayed wound healing, an increased risk of lower-limb amputation and ultimately, reduced patient quality of life.

DFU management should include a thorough wound assessment and monitoring for the prevention of foot complications, pressure relief, wound bed preparation, exudate management, and careful management of infection and pain(2).

Mepilex Border Comfort

Mepilex Border Comfort is an all in one self-adherent soft silicone coated foam dressing. This dressing is designed for use on a wide range of exuding wounds, such as pressure ulcers, leg and diabetic foot ulcers, traumatic wounds and surgical wounds. It can also be used on necrotic wounds in combination with gels. It comprises:

- A wound contact layer consisting of soft silicone adhesive and a film carrier.
- A flexible absorbent pad consisting of three layers: an absorbent foam, a non- woven spreading layer and a retention layer with superabsorbent fibers.
- An outer film that is breathable but impermeable to water, providing a barrier to external contaminants.

Dressings containing wound contact layers readily adhere to intact dry skin and will remain in situ on the surface of a moist wound or damaged surrounding skin without adhering to these fragile tissues. Such dressings can be applied and reapplied without causing damage to the wound or stripping the epidermis in the periwound region. They also minimize pain during dressing removal. The gentle but effective seal that forms between the intact skin and a dressing with saftec inhibits the movement of exudate from the wound onto the surrounding skin, thereby helping prevent maceration of the periwound region.

Minimizing Wound Disturbance

Although dressings form an essential element of wound management, dressing-associated complications may hinder wound-healing progression and cause unnecessary distress to patients. Potential disturbances to wounds can result from suboptimal dressing choice. There are multiple ways in which a wound dressing that is in close contact with the wound bed and surrounding skin can disturb or damage the wound. These include:

- Sub-optimal temperature
- Chemical imbalances
- Chemical stress
- Sub-optimal moisture balance
- Adherence
- Mechanical stress
- The presence of foreign bodies.

In recent years, the literature has focused on trauma and pain caused by the repeated application and removal of dressings that adhere to the wound bed, as this damages the fragile wound or periwound skin and can result in considerable suffering for patients. Ultimately, such trauma can lead to an increase in wound size, exacerbate pain and delay wound healing (World Union of Wound Healing.

Although optimal dressing choice is important in achieving good healing progression, it also has a role in minimizing the frequency of dressing changes, so allowing healing to progress uninterrupted. The frequent removal and reapplication of dressings can delay healing via mechanical disturbance of the wound healing process, temperature loss at the wound site (affecting the cellular healing process) and a potential increase in the influx of harmful bacteria to the wound site. Wound healing may be hindered further due to psychological stress and pain during dressing changes. In addition to optimizing the

frequency of dressing changes, dressings should be selected that manage the volume of exudate present, conform well to the wound, are comfortable to wear, are easy to use, minimize unnecessary wound disturbance and are cost-effective.

Exudate Management

A dressing's ability to absorb and retain wound exudate is a key factor influencing wear time. Although exudate formation is a normal part of the wound-healing process and an essential component of healing, excessive exudate that is not managed effectively can have a negative impact on the patient.

Exudate is associated with a number of complications, including:

- Leakage
- Consequent maceration
- Malodour
- Pain and discomfort
- Psychological and psychosocial problems.

Figure 1 : Mepilex Border Comfort dressing

All of these complications can be detrimental to a patient's quality of life. Chronic wounds, such as DFUs, may produce high levels of exudate as a result of a prolonged inflammatory response preventing progression to the next phase of the healing trajectory. The ideal wound dressing should have optimal fluid handling ability (absorption and retention of exudate and its components, even under pressure); limit leakage; limit the spread of exudate to the periwound area (thus reducing the risk of maceration) and act as a barrier to prevent bacterial ingress.

Aims And Objectives

The aims and objectives of this study were to analyze the characteristics and clinical outcomes of mepilex border dressing in exuding diabetic foot ulcers.

Materials And Methods

Our study included four OPD and IPD patients who were receiving treatment with mepilex border dressing for exuding diabetic foot ulcers patients in the plastic surgery department of S.M.S. Medical College and Hospital, Jaipur.

Inclusion Criteria

1. All OPD and IPD patients included.
2. Who were receiving treatment with mepilex border dressing in an exuding diabetic foot ulcer.
3. Assessed over a treatment period of up to 2 weeks.

Assessments were made at baseline and each follow up clinic visit. Wound size and progression to healing were assessed at each clinic visit. The wound and periwound status variables that were assessed after cleansing and/or debridement. All wounds had sharp debridement and cleansing with saline if required. Digital photographs of the wound were taken at each clinic visit for each participant, to monitor wound progression throughout the course of the evaluation.

RESULT

Case Study 1

A 38 year old male with type 2 diabetes presented with one ulcer, above the left medial malleolus, measuring 11mm x 7mm with a depth of 15 mm. Based on the date of initial diagnosis of the wound, the wound had been present for 1 week and was being treated with an adhesive foam. Wounds were being treated with antibiotics.

The patient attended two follow up visits during the evaluation period, after which the patient was lost to follow up. At the second follow up visit after 2 weeks. The wound above left medial malleolus consisted of 80% granulation tissue, the periwound skin was healthy with mild amount of clear/serous discharge. There were no clinical signs of infection. No pain was reported at dressing change.

At the final follow up visit (day 14), the wound measured 9mm X 6 mm with a depth of 7mm and was composed of 80% granulation.

Case study 1 (Wound at base line day 1) (First application of mepilex dressing) Wound at final follow up (after 14 days)

Case study 2

A 60 year old female with type 2 diabetes presented with one ulcer, at planter aspect of right great toe, measuring 25mm x 21mm with a depth of 3 mm. Based on the date of initial diagnosis of the wound, the wound had been present for 3 weeks and was being treated with an adhesive foam. Wounds were being treated with antibiotics.

The patient attended two follow-up visits during the evaluation period, after which patient was lost to follow-up. At the second follow-up visit after 2 weeks. The wound to planter aspect of right great toe consisted of 40% granulation tissue, the periwound skin was healthy with mild amount of clear/serous discharge. There were no clinical signs of infection. No pain was reported at dressing change.

At the final follow up visit (day 14), the wound measured 20mm X 19 mm with a depth of 1mm and was composed of 40% granulation.

Case study 1 (Wound at base line day 1) (First application of mepilex dressing) Wound at final follow up (after 14 days)

Case Study 3

A 51 year old female with type 2 diabetes presented with one ulcer, at left planter metatarsal area, measuring 10mm x 9mm with a depth of 1 mm. Based on the date of initial diagnosis of the wound, the wound had been present for 21 day and was being treated with an adhesive foam. Wounds were being treated with antibiotics.

The patient attended two follow-up visits during the evaluation period, after which patient was lost to follow-up. At the second follow-up visit after 2 weeks. The wound to left planter metatarsal area consisted of 100% granulation tissue, the periwound skin was healthy with mild amount of clear/serous discharge. There were no clinical signs of infection. No pain was reported at dressing change.

At the final follow up visit (day 14), the wound measured 6mm X 7 mm with a depth of 1mm and was composed of 100% granulation.

Case study 4

A 70 year old male with type 2 diabetes presented with one ulcer, at right planter 5th metatarsal head, measuring 12mm x 10mm with a depth of 7 mm. Based on the date of initial diagnosis of the wound, the wound had been present for 3 week and was being treated with an adhesive foam. Wounds were being treated with antibiotics.

The patient attended two follow-up visits during the evaluation period, after which patient was lost to follow-up. At the second follow-up visit after 2 weeks. The wound to right planter 5th metatarsal head consisted of 90% granulation tissue, the periwound skin was healthy with mild amount of clear/serous discharge. There were no clinical signs of infection. No pain was reported at dressing change. At the final follow up visit (day 14), the wound measured 10mm X 10 mm with a depth of 5mm and was composed of 90% granulation.

Table 1: Wound description pre and post Mepilex dressing

Case No.	Age, Gender	Anatomical Location	Ongoing Medication	Comorbidities	Visit	Wound Size(length	Exudate Amount/	Wound Tissue	Pain at	Clinical Sign of	Condition of

						x width x depth) mm	Quality	Appearance	Dressing Change	Infection	Surrounding Skin
1.	38 year old male	Above left medial malleolus	Antibiotic-amoxiclave	Type 2 diabetes	Baseline	11 x 7 x 15	Mild –exudate	80% slough	No	Erythema, warm	Healthy, Intact
					Follow up (14 day)	9 x 6 x 7	Mild – clear, serous	80% granulation	No	No	Healthy, intact
2.	60 year old female	Planter aspect of right great toe	Antibiotic-Piptaz & amikacin	Type 2 diabetes	Baseline	25 x 21 x 3	Mild – exudate	60% slough	No	Erythema, warm	Erythema,macerated
					Follow up (14 day)	20 x 19 x 1	Mild-clear, serous	40% granulation	No	No	Healthy, intact
3.	51 year old female	Left planter metatarsal area	Antibiotic-Meropenem & linezolid	Type 2 diabetes	Baseline	10 x 9 x 1	Moderate-serous	20% slough	No	No	Healthy, intact
					Follow up (14 day)	6 x 7 x 1	Mild-serous	100 % granulation	No	No	Healthy, intact
4.	70 year male	Right planter 5th metatarsal head	Antibiotic-amoxiclave	Type 2 diabetes	Baseline	12 x 10 x 7	Moderate-serous	20% slough	No	No	Healthy, intact
					Follow up(14 day)	10 x 10 x 5	Mild-serous	90% granulation	No	No	Healthy, intact

DISCUSSION

The findings of the present study suggest that Mepilex border dressing can effectively manage the signs and symptoms of poor periwound status. The advantages of an atraumatic dressing in the optimization of wound healing have been frequently reported, particularly in the treatment of those patients with fragile, friable skin. In our study, all four wound reduced size and improved in appearance within 2 weeks. Mepilex border dressing also provides a gentle adhesion, ensuring the retention of wound exudate and prevention of periwound skin maceration by forming seal between the dressing and the intact skin. Mepilex border dressings are designed to minimize the pain and trauma that can be associated with dressing removal. In conjunction with the improvements noted in periwound condition, there was a trend for wound size reduction throughout the study in all participants.

CONCLUSION

Effective exudate management and dressing adhesion can reduce the number of dressing changes required and therefore reduce the potential for wound disturbance. The performance of Mepilex border dressing allowed the TCCs to be left in situ for the desired length of time (up to 7 days), thus promoting patient compliance with treatment and facilitating undisturbed wound healing.

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