Wound management with the Biatain® Silicone foam dressing: A multicentre product evaluation

Exudate management is one of the key challenges for those involved in wound care. Matching dressing properties to wound requirements is a fundamental aspect of any protocol of care. This article reports the findings of an international multicentre product evaluation of the new Biatain® Silicone dressing for the treatment of acute and chronic exuding wounds of various aetiologies. The dressing was rated highly for all evaluated parameters and in 90% of evaluations, the healthcare professional indicated they would use it again.

Exudate in the early stages of wound healing has an important role in creating a moist wound environment. This fluid prevents tissue dehydration and cell death, promotes the breakdown of dead tissue, and potentiates the interaction between growth factors and their target cells. Exudate levels are highest during the inflammatory phase of wound healing. In acute wounds, providing the underlying causes of the wound are addressed and the dressing is appropriate, the amount of exudate produced usually decreases, and the wound will heal within 1-2 weeks.

Although necessary for optimal healing, the high levels of exudate during the inflammatory phase need to be controlled by absorbent dressings supporting a moist wound healing environment. If a wound dressing does not absorb and retain relevant amounts of exudate, the wound bed will become wet and exudate may leak under the dressing to the peri-ulcer skin. This will cause maceration, resulting in delayed healing, increased risk of infection, increased friction risk, and ultimately wound enlargement.

Underlying conditions (e.g. cardiovascular, immunological) or infection can impair the normal wound healing processes and lead to chronicity. A prolonged inflammatory response is seen in chronic wounds with increased levels of pro-inflammatory cytokines and copious amounts of exudate. Exudate from chronic wounds has an increased protease level, which may inhibit healing by damaging the wound bed and surrounding skin.

Achieving and maintaining good moisture balance involves addressing any underlying conditions that contribute to abnormal exudate levels. At the wound level, exudate needs to be absorbed and managed to support the healing process. Dressings are the main option for managing exudate and should be selected according to their ability to handle volume and type of exudate.

Other key performance characteristics that a dressing should possess include the ability to be applied and removed easily, patient comfort, and efficiency when used under compression. Biatain® Silicone dressing is a foam dressing used for a wide range of exuding wounds. The recently redesigned Biatain Silicone (Coloplast A/S, Humlebaek, Denmark) is a flexible, multi-layered foam dressing with a gentle silicone adhesive layer. It is...

Figure 1. Composition of Biatain® Silicone dressing

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designed to conform closely to the wound bed to optimise absorption of exudate.

Here, we report the findings of an international multicentre product evaluation of the new Biatain Silicone dressing for the treatment of acute and chronic exuding wounds of various aetiologies.

**Methods**

This product evaluation was carried out by means of a questionnaire given to approximately 830 healthcare professionals across seven countries (Canada, Denmark, France, Germany, Italy, Switzerland and United Kingdom), accompanied by five samples per patient of the Biatain Silicone dressing.

The healthcare professionals were instructed to use the dressings on patients with relevant wounds (i.e. exuding and non-infected) and then complete the survey after five dressing changes. The questionnaire assessed the healthcare professionals' experience of using the dressing and questions relating to ease of application, ability to absorb exudate, conformability and flexibility, and ease of removal were answered on five-point rating scales (e.g. very good – good – average – poor – very poor).

The questionnaire also included questions about which dressing was currently used, wound diagnosis (venous ulcer, arterial ulcer, mixed venous and arterial ulcer, diabetic foot ulcer, skin abrasion, traumatic wound, post-operative wound, or ‘other’), peri-ulcer skin condition (normal, fragile, macerated, skin irritation, or ‘other’), and exudate level (low, medium, or high) at inclusion.

Post-hoc subgroup analyses were carried out using the German and French datasets, corresponding to two thirds of the full dataset. Three parameters were analysed in relation to exudate level:

- Peri-ulcer skin condition at study inclusion
- Rating of Biatain Silicone dressing absorption capability
- Rating of Biatain Silicone dressing absorption capability compared with previously used foam dressings

**Results**

Overall, 958 patients with a wide variety of wound aetiologies [Figure 2] were included in this product evaluation. The most common wound types were venous ulcers (27%), traumatic wounds (15%) and post-operative wounds (13%). For the majority (58%) of these patients the exudate level was rated as medium [Figure 3].

**Experience with Biatain Silicone dressing**

**Ease of use**

Response to the questions relating to ease of use showed that in 97% of cases the healthcare professionals rated the dressing ‘very easy’ or ‘easy’ to apply [Figure 4a] and in 98% of cases it was rated as ‘very easy’ or ‘easy’ to remove [Figure 4b].

**Absorption capability**

In 96% of cases, the dressing’s absorption capability was rated as ‘very good’ or ‘good’ [Figure 5a]. The dressing was rated as ‘better’ or ‘much better’ than previously used foam dressings in terms of exudate absorption in 74% of cases [Figure 5b], while 23% rated it as ‘same’.

**Conformability and flexibility**

Conformability and flexibility of the dressing was considered ‘very good’ or ‘good’ in 97% of the evaluations [Figure 6].

**Overall ratings**

In 81% of the evaluations, healthcare professionals rated the Biatain Silicone dressing overall as ‘much better’ or ‘better’ than previously used dressings.
questionnaires had missing data for one or more analysed parameters and were consequently not included in those analyses.

Peri-ulcer skin condition
A total of 627 evaluations were included in this sub-analysis of peri-ulcer skin condition according to exudate level. Unhealthy or problematic skin conditions (fragile, macerated, irritated and/or other) were seen among 76% of patients with high-, 67% with medium- and 60% with low-exuding wounds [Figure 9].

Subgroup analyses
The French and the German datasets were the largest and were therefore best suited for subgroup analyses. A total of 651 evaluations from Germany (n=235) and France (n=416), corresponding to 68% of the full dataset were included in the subgroup analyses. Some

used foam dressings [Figure 7]. In 90% of cases the healthcare professional stated that they would (or most likely would) use this dressing in the future [Figure 8].

**Figure 4a. Ease of application of the dressing**

**Figure 4b. Ease of removal of the dressing**

**Figure 5a. Dressing’s capability to absorb exudate**

**Figure 5b. Dressing’s absorption capability compared to current foam dressing**

**Figure 6. Dressing’s ability to be conformable and flexible**

**Figure 7. Overall rating of the dressing compared to current foam dressing**
Overall, 67% patients exhibited one or more unhealthy or problematic skin condition, and skin condition (normal versus unhealthy/problematic) was shown to be significantly associated (using Chi-squared testing) with exudate level ($p<0.01$).

**Exudate absorption**

A total of 628 evaluations were included in this sub-analysis of rating of dressing's ability to absorb according to the rated exudate level. At all exudate levels, the dressing's absorption capability was rated 'very good' or 'good' in 94–96% of evaluations [Figure 10]. The rating of 'very good' was significantly associated with high exudate levels ($p<0.01$). When the Biatain Silicone dressing's absorption capacity was compared with that of previously used foam dressings (585 evaluations), it was rated as 'better' or 'much better' in 80% of those with high, 70% with medium- and 55% with low-exuding wounds [Figure 11]. Ratings were significantly associated with exudate level ($p<0.01$).

**Discussion**

In this product evaluation, a total of 958 patients with a variety of exuding, non-infected wounds were treated with the Biatain Silicone dressing for up to five dressing changes. The healthcare professionals caring for these patients assessed this product's performance in terms of absorption, ease of use and conformability and flexibility. On all accounts, the healthcare professionals viewed the product in high regards, with 96–98% giving one of the two highest ratings for all parameters. When compared with previously used foam dressings, Biatain Silicone was rated as superior in 81% of the evaluations. These results support the findings of a recent case series in which healthcare professionals' and patients' experience with the Biatain Silicone dressing was evaluated.

In the case series, healthcare professionals' assessment of the product showed similar results to that of the present study. In 92% of cases, ease of application was rated as very easy or easy; in 90% of cases absorption was rated as very good or good; in 92% of cases the dressing's conformability to the wound bed was rated as very good or good; and the dressing's ability to stay in place was rated as very good or good in 87% of cases. In the case series, all healthcare professionals responded that they would use Biatain Silicone in the future. In 90% of the evaluations in the present study, the healthcare professionals stated that they would, or most likely would, use Biatain Silicone again.

In the subgroup analysis, unhealthy or problematic (e.g. macerated, irritated, fragile) skin was exhibited in 67% of analysed patients, with an association with higher exudate levels. This significant association between exudate level and unhealthy or problematic skin may be of clinical interest with regard to wound assessment.

Analysis of ratings of absorption capacity revealed an association between a rating of 'very good' and higher exudate levels. A similar relationship is seen when comparing absorption of the Biatain Silicone dressing with that of previously used foam dressings. As it is a subjective assessment, this interesting observation may indicate that those who issued a rating of 'very good' at a high exudate level felt that Biatain Silicone exceeded their expectations for this type of dressing. Considering that the frequency of skin problems was significantly related to higher exudate levels, this high rating of Biatain Silicone may imply that the dressing is well suited for use on all exuding wounds.
also wounds surrounded by unhealthy or problematic skin. Of note, a rating of ‘very good’ or ‘good’ absorption was given for 94–96% (and in 74% of the evaluations the product was considered to have superior absorption than previous foam dressing) across exudate levels, thus confirming that this product can be considered efficient at all exudate levels and not just for high-exuding wounds.

Summary
In conclusion, Biatain Silicone was rated highly across varying non-infected acute and chronic wound types and among all levels of exudate. The dressing was rated highly for all evaluated parameters and in 81% of evaluations it was deemed better than the previously used dressings. In 90% of evaluations, the healthcare professional stated that they would (or most likely would) use Biatain Silicone again. These findings are in line with results obtained in a previous case series involving Biatain Silicone. Taken together the results support the use of Biatain Silicone in patients with acute and chronic exuding wounds.

Acknowledgement
This article and evaluation have been supported by Colopast A/S, Denmark.

References
Enjoy the freedom of superior absorption

The new Biatain Silicone and Biatain Silicone Lite combine superior absorption and a secure fit

- With the new design we introduce a perforated, soft silicone adhesive wound contact layer, which delivers a secure fit without compromising superior absorption.
- The unique Biatain foam still conforms closely to wound bed ensuring superior absorption and an optimal moist wound healing environment.
- Safe and easy application due to 3-piece non-touch opening.
- Biatain Silicone and Biatain Silicone Lite are foam dressings that can be used on a wide range of exuding wounds.

Biatain Silicone
– superior absorption with soft adhesion for general purposes

Biatain Silicone Lite
– superior absorption with soft adhesion for increased mobility