

An evaluation of non-adherent wound-contact layers for acute traumatic and surgical wounds

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The lack of comparative studies into the effectiveness of non-adherent dressings means selection is often based on individual preference. This small non-randomised evaluation of five such dressings set out to gather some preliminary evidence

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A traumatic or non-adherent wound contact dressings are most often used at the proliferative stage of healing to promote granulation and epithelialisation.¹ However, there is limited evidence of their efficacy and cost-effectiveness. Consequently, deciding which product to use is often confusing and based on personal preference, which can result in inconsistencies.

The accident and emergency departments and outpatient clinics at University Hospitals Coventry and Warwickshire NHS Trust were using a variety of products for the management of acute traumatic and surgical wounds. This was causing confusion among staff and patients and unnecessary painful dressing changes, and was delaying healing.

This study set out to evaluate the effectiveness and acceptability of five low-adherent dressings in clinical practice. Healing rates were not formally compared, although anecdotal observations were noted. A unit-cost comparison was also done to facilitate future procurement.

Materials and method

This was a non-randomised prospective evaluation conducted over approximately 10 weeks in one casting department/trauma orthopaedic outpatients clinic. All patients recruited into the study were adults with acute traumatic or surgical wounds of different aetiologies.

Written consent was not obtained, although all patients were informed about the evaluation and invited to participate in the study.

I coordinated the evaluation with the department manager, and clinic staff completed an evaluation form at each dressing change.

The clinic purchased all of the dressing materials independently, so there was no company financial support.

Dressing materials categorised as a non-adherent wound-contact layer were investigated. These were:

- Mepitel (Mölnlycke)
- NA Ultra (Johnson & Johnson)
- Urgotul (Parema)
- Atrauman (Paul Hartmann)
- Tegapore (3M).

All consenting patients attending the clinic who presented with a wound that was superficial, granulating or epithelialising and did not have deep slough or necrosis were invited to participate. An additional criteria was that part of or the entire wound was healing by secondary intention.

This was therefore a purposive and convenience sample. I analysed the results manually and no statistical tests were performed.

Treatment and follow up

The five dressings were given to patients in consecutive two-week periods (that is, patients presenting at the clinic in the first two weeks of the 10-week study received one of the five non-adherent dressings, and patients presenting in the third and fourth weeks received another of the five dressings, and so on). Each patient only evaluated one type of non-adherent dressing unless they experienced an allergic reaction or pain during the two-week period. When this occurred the next non-adherent layer that was to be evaluated was used and the patient experience was documented twice. If the patient was comfortable and their wound was healing at the end of the study period, then they continued using the allocated non-adherent layer.

Wounds were cleansed with normal saline if necessary and the dressing was applied. A secondary dressing was used, generally a sterile gauze pad. The nurses determined the dressing-change frequency, based on clinical need.

Clinical evaluation was undertaken at each dressing change, and included:

- Ease of application and removal
- Comfort while the dressing was in place
- Patient comfort on dressing removal

Table 1. Patient and staff acceptability

Dressing	Atrauman	Mepitel	NA Ultra	Tegapore	Urgotul
No. of patients	7	13	8	9	15
No. of dressing of changes	31	23	19	41	25
Ease of application:					
• Easy	22 (71%)	14 (61%)	11 (58%)	26 (63%)	15 (60%)
• Average	9 (29%)	9 (29%)	7 (37%)	13 (32%)	10 (40%)
• Difficult	0 (0%)	0 (0%)	1 (5%)	2 (5%)	0 (0%)
Patient comfort while dressing is in place:					
• Comfortable	24 (77.5%)	23 (100%)	19 (100%)	18 (44%)	25 (100%)
• Average	7 (22.5%)			23 (56%)	
• Uncomfortable					
Ease of removal:					
• Easy	18 (58%)	20 (87%)	16 (84%)	27 (66%)	24 (96%)
• Average	8 (26%)	3 (13%)	3 (16%)	5 (12%)	1 (4%)
• Difficult	5 (16%)			9 (22%)	
Patient comfort on removal:					
• Comfortable	19 (61%)	21 (92%)	15 (79%)	30 (73%)	25 (100%)
• Average	8 (26%)	2 (8%)	4 (21%)	11 (27%)	
• Uncomfortable	4 (13%)				
Cost of one dressing*	7.5x10cm 17p	7.5x10cm £3.20	9.5x9.5cm 38p	7.5x10cm £1.97	10x10cm £2.97

*April 2003 NHS logistics

- How well the dressing stayed in place
- Frequency of dressing changes.

Local adverse events were monitored at each dressing change, and any additional comments were documented.

I provided education on all aspects of the study, including dressing application and wound assessment, to ensure standardisation of assessment and reliability of results.

Results

Fifty-two patients participated in the study, all for at least two weeks. Wound aetiologies included:

- Digit amputation (Fig 1)
- Digit crush injury
- Toenail avulsion
- Skin tear
- Laceration (Fig 2)
- Postsurgical cellulitis (Fig 3)
- Postsurgical incision
- Pretibial laceration.

Baseline data

The initial wound size was not reliably recorded, so is not reported. Forty-six patients (88.4%) healed or were healing at the end of the evaluation period,

7.6% (n=4) were documented to have remained the same and 3.8% (n=2) deteriorated.

Dressing-change frequency

The wound condition and level of exudate determined the dressing-change frequency. The non-adherent layer was changed if it came away from the wound as the secondary dressing was removed or if it appeared to be adhering to the wound bed and had become uncomfortable.

Dressing acceptability

A total of 139 wound assessments were documented (Table 1).

• **Ease of application** Most applications were deemed easy. However, Mepitel and Urgotul were difficult to apply with dry gloves, while NA Ultra and Tegapore did not conform well around digits and were difficult to keep in place.

• **Patient comfort while the dressing was in place** Mepitel, NA Ultra and Urgotul were very comfortable while in place. Unexpectedly, Atrauman often dried and adhered to the wound bed, causing patients discomfort. Twenty-three patients (56%) complained of discomfort with Tegapore, which was apparently because the dressing moved against

References

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Fig 1. Traumatic digit amputation



Fig 2. Traumatic laceration



Fig 3. Cellulitic surgical wound

or adhered to the wound bed or there was a sensation of moisture or 'sweat' being trapped against the surrounding skin.

- **Ease of removal** On average, Mepitel, NA Ultra and Urgotul performed well, although on a few occasions they adhered to the wound bed due to blood clotting. However, Atrauman in five cases (16%) and Tegapore in nine cases (22%) dried out and adhered to the wound bed, making removal difficult. This was particularly the case when the exudate level reduced while the dressing was in place, an occurrence that was not observed with the other three dressing materials. In addition, Tegapore fell off the wound as the secondary dressing was removed when the exudate level was minimal (six cases, 14%). Adherence appeared to be associated with the amount of exudate in the wound bed and surrounding skin.

- **Patient comfort on removal** Patients found Urgotul, Mepitel and NA Ultra most comfortable on removal, with Urgotul receiving the most favourable comments. Removal was less comfortable when coagulated blood caused dressings to adhere. Tegapore and Atrauman performed less favourably be-

cause they had a tendency to dry and adhere to wounds with low amounts of exudate.

Other observations

Two cases of what appeared to be mild allergic reactions or irritations were reported with Mepitel. Both presented with erythema and itchiness of the periwound skin but this subsided when a different dressing was used.

Tegapore caused maceration and irritation to the wound margins in eight cases. This was most often observed when exudate levels were high.

Urgotul appeared to facilitate rapid autolytic debridement of superficial slough and necrosis, and improve expected healing rates. In particular, staff reported accelerated healing in patients who had undergone toenail avulsions.

Results of the unit-cost comparison are given in Table 1.

Discussion

The efficacy of non-adherent dressings has been evaluated in a number of non-comparative studies or compared with paraffin gauze.¹⁻⁶ This evaluation has compared the acceptability of five non-adherent dressings on traumatic and surgical wounds. Results show a number of benefits and disadvantages.

The study is limited by its small sample size, the lack of reliable data on wound sizes and the subjective nature of the assessment tool. Larger evaluations and case study research studies need to be conducted to improve the reliability of the findings.

Conclusion

The results of this small non-randomised evaluation indicate that, of the dressings investigated, Urgotul achieved the most favourable results on wounds in areas that are more sensitive, difficult to dress, had changing levels of exudate and had superficial slough and necrosis that required debridement. NA Ultra (Johnson & Johnson) was found to be a more cost-effective alternative for wounds that are easier to dress, such as those on flat surfaces of the leg or arm, and/or are less painful. ■

Box 1. Summary of the main findings

This small non-randomised prospective study evaluated the effectiveness of five low-adherent dressings: Mepitel, NA Ultra, Urgotul, Atrauman and Tegapore

Subjects were attending a casting department/trauma orthopaedic outpatients clinic. The five dressings were given to patients in consecutive two-week periods. Patients only evaluated one type of dressing, unless they experienced pain or an allergic reaction to it

Evaluations took place at dressing changes, and included ease of application and removal, comfort, ease of use and frequency of dressing changes

Mepitel and Urgotul performed well in terms of the key parameters used, although Urgotul had the best results for areas that are sensitive, difficult to dress, had changing levels of exudate and superficial slough and necrosis that required debridement

NA Ultra was the most cost-effective dressing for wounds that are easier to dress