Use of Light Switchable Adhesive Film Dressings to Avoid Irritation in Patients with Adhesive Related Irritation or Dermatitis

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ABSTRACT

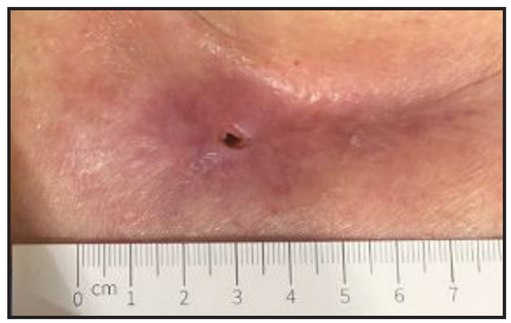
Wound care clinicians must balance dressing securement with the risk of medical adhesive related skin injury (MARSI) when applying dressings. Lack of dressing securement can impede wound healing, leading most adhesives to be aggressive or require reinforcement with medical tape, both of which increase MARSI risk. A recent meta-analysis found a 16% MARSI prevalence and a treatment cost of $88.50 per injury[1]. This figure does not include the cost of pain management. Recently, a light-switchable polyurethane adhesive was introduced for clinical use. Initial studies on human skin showed that the adhesive had strength comparable to other medical adhesives when unswitched, but detached more gently than silicone adhesives in the switched state[2,3]. Simulated use studies in healthy humans found an incisional negative pressure wound therapy system using this adhesive resulted in less skin irritation than alternatives, with similar dressing survivability[4]. This case series details the use of light-switchable film dressings (LFD)* on dressings for patients with adhesive sensitivity or dermatitis.

METHOD

Four patients had dressings secured with LFD. Of these cases, three used LFD to maintain dressing position under compression therapy—two with venous leg ulcers and one with a lymphedema-related ulcer. Two patients had dermatitis. The fourth, with cutaneous T cell lymphoma, had a 15-month chest wall wound from surgical debridement of septic arthritis, complicated by adhesive dermatitis.

Case 1: 57yoM PMHx septic arthritis s/p debridement, CTCL, AML planning for bone marrow transplant. Recurrent dermatitis due with surgical tapes and silicone border dressings. LFD was used with a foam dressing. The patient had improvement in dermatitis and associated pruritis.

A: Chest wall wound prior to LFD use

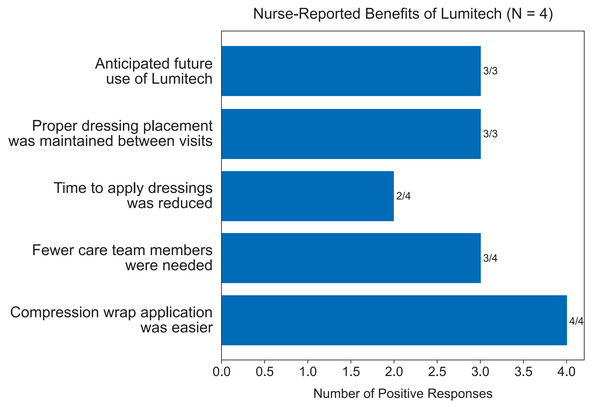


B: Chest wall 1 week after LFD use

Case 2: 51yoM PMHx lymphedema, venous insufficiency and recurrent venous leg ulcers. Recurrent dermatitis with medical adhesives. Occasional dressing migration documented during treatment course. LFD held wound dressings in place and prevented dermatitis.

A: Dressing application with LFD

B: 4 days later without dermatitis



WOCN Feedback:

- Using LFD keep dressings in place while applying compression wraps making process quicker, easier, and requires less assistance. Easy to remove with light and no skin irritation.
- Patients tolerate LFD well and the nurse did not recall anyone adversely reacting to it. Application is easy and really beneficial for wounds that are challenging, like the sacrum. Beneficial for our paraplegic patients because it helps keep the dressings in place. Heavy exudating wounds made it more difficult to use as it did not adhere well.
- Easy to use.

*Light-switchable film dressing = Lumitech Securement Strips by DeRoyal Industries.

RESULTS

LFD maintained dressing position in all four cases; dermatitis improved or resolved in three. One patient's wound healed, and the other three improved. For the lymphedema patient, dressing changes, previously requiring two clinicians, could be done by one clinician with LFD. Patients reported less pain and itching compared to previous securement methods. Nurses expressed easier dressing removal with less concern for skin damage with the LFD.

Feedback elicited from the nursing staff was generally positive. They felt the LFD held dressings in place well, did not cause skin irritation, and simplified compression wrap application. They generally planned to use it again in the future.

DISCUSSION

LFD effectively secured dressings and reduced dermatitis when removed in the switched state, eliminating the need for skin protectant and adhesive remover. The LFD improved clinician workflow and patient experience. These findings demonstrate that the light switchable adhesive may lower MARSI risk without sacrificing dressing integrity as well as reduce workload on clinicians and improve clinical efficiency.

REFERENCES

1. Ping Wang, et al, Journal of Tissue Viability, Volume 33, Issue 4, 2024,
2. Cayce et al. ABA 2025
3. Cayce et al. SAWC Spring 2025
4. Stocks et al. SAWC Fall 2024

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