

# A Comparison of 3M™ Cavilon™ No Sting Barrier Film and Sorbolene for Radiotherapy Skin Protection



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## Introduction

Approximately 80% of patients undergoing radiotherapy experience some degree of skin reaction. In some treatment situations, such as head and neck (Fig 1) or post-mastectomy (Fig 2), rates of grade 3 to 4 dermatitis (moist desquamation) exceed 30 to 40%. This is painful, requires dressings and may interrupt radiation treatment. Interruptions may reduce the likelihood of cancer control.



Fig 1. Confluent moist desquamation Grade 3-4 in head and neck radiation treatment.

Prophylactic use of various creams or gels is common in an effort to reduce the degree of radiation dermatitis. Agents proven of no value in randomised trials include aloe gel and ascorbic acid. Hyaluronic acid was superior to placebo in one study, but radiation dosimetry was not controlled. Small studies in heterogenous radiotherapy populations have suggested cortisone cream or sucralfate creams are better than placebo. Calendula has been shown to be better than Trolamine, but again there was variation in radiation dosimetry and the use of chemotherapy, which can sensitise for radiation reactions. The most common prophylactic skin care cream in use in Australia is generically known as sorbolene, an oil-water mix, typically with 10% glycerine, with or without other ingredients.



Fig 2. Post mastectomy grade 4 skin reaction.

We hypothesised that efforts to reduce the normal wear on the skin surface undergoing radiotherapy may help reduce the manifestation of radiation injury. 3M™ Cavilon™ No Sting Barrier Film was identified as a superior product for this purpose and therefore selected for comparison in a study versus our previous standard of sorbolene.

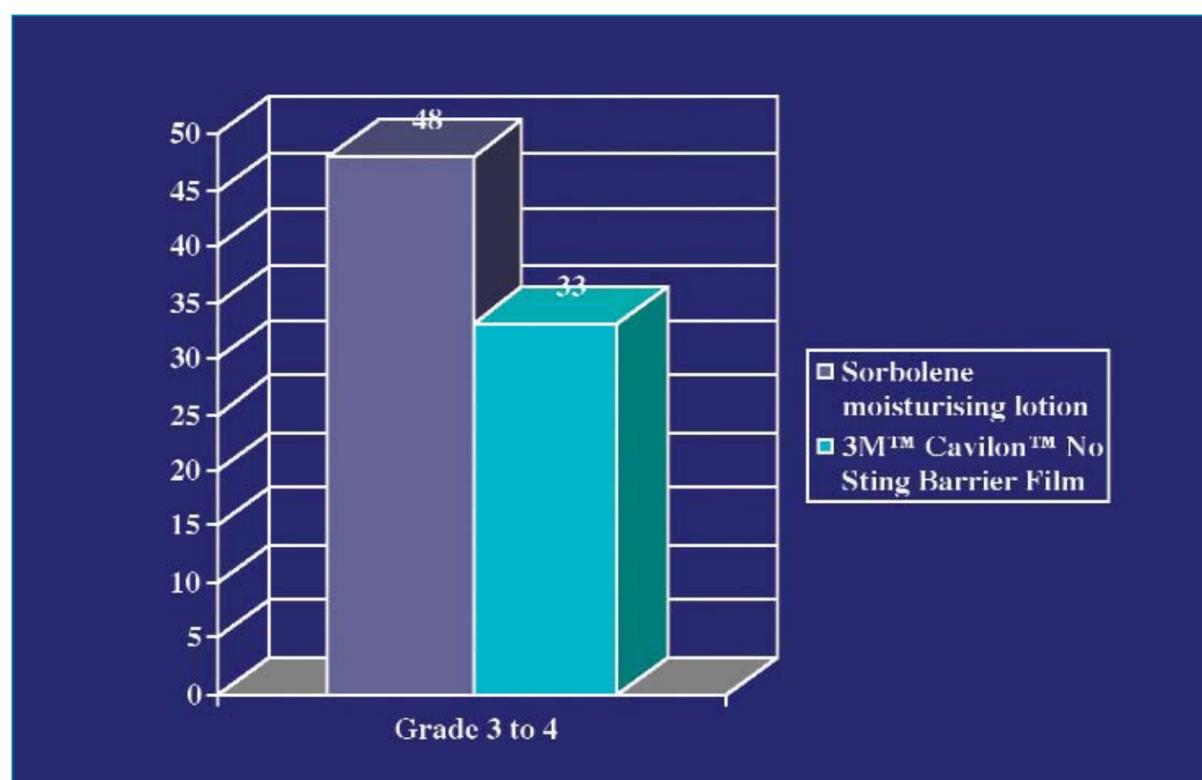
## Methods

The study design was a randomised paired comparison in the setting of post mastectomy chest wall irradiation. This was an elegant and efficient method compared to previous studies. The post-mastectomy chest wall is a relatively

uniform surface to minimise dosimetry variation. The paired (intra-patient) comparison increased statistical efficiency and eliminated confounding variables such as skin type, use or scheduling or type of chemotherapy. Randomisation of skin care application to medial or lateral compartments of the chest wall skin controlled for any potential systematic differences in skin reaction due to factors other than the skin care product. In addition, thermoluminescent dosimeter and GAF chromic film radiation dose measurements were performed at 1cm intervals across the chest wall. No previous studies measured skin doses, but relied on descriptions of the prescribed radiation dose. The skin dose can diverge substantially and unpredictably from the dose prescribed to the tumour depending on the technique and morphology of the body part.

## Results

The primary endpoint was the rates of moist desquamation. This was reduced from 48% in the sorbolene treated areas to 33% in the 3M™ Cavilon™ No Sting Barrier Film treated areas ( $p=0.049$ ).



The secondary endpoints included a measure of the total degree and duration of the skin reaction known as the area under the curve (AUC) and pruritis and pain levels. The AUC was significantly reduced by 3M™ Cavilon™ No Sting Barrier Film ( $p=0.002$ ). The frequency of pruritis scores greater than 2 were reduced from 40% for sorbolene to 21% for 3M™ Cavilon™ No Sting Barrier Film ( $p=0.012$ ). Pain levels were generally low, and were not statistically significantly different between the treatment groups but were scored as  $>1$  in 43% of the sorbolene treated areas and 34% of the 3M™ Cavilon™ No Sting Barrier Film treated areas ( $p=0.27$ ).



Measurements of skin dose confirmed that the dose across the chest wall was even, and did not account for the difference in outcomes by the skin care used.

## Cost Effectiveness

A cost effectiveness analysis was also performed. Although the unit cost of 3M™ Cavilon™ No Sting Barrier Film is greater than sorbolene, overall it was a more cost effective skin care strategy because of the substantial reduction in the requirement for dressings and management of moist desquamation.

For every 100 patients treated, the use of 3M™ Cavilon™ No Sting Barrier Film would result in 9 weeks fewer dressings from 74 weeks to 65 weeks. Apart from the monetary cost, this represents a significant improvement in patient comfort and convenience and a reduction in nursing time.



Fig 4. Worse reaction in lateral (sorbolene treated area). Note 3M™ Cavilon™ No Sting Barrier Film still present in medial compartment.

## Conclusion

Use of 3M™ Cavilon™ No Sting Barrier Film for radiotherapy skin protection results in:

- Less radiation skin reaction than sorbolene.
- Less pruritus than sorbolene.
- More cost-effective skin care strategy than sorbolene.

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