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# A retrospective comparison of 3M™ Micropore™ with other common dressings in cosmetic breast surgery



Pennylouise Hever<sup>a,\*</sup>, Naveen Cavale<sup>b</sup>, Terouz Pasha<sup>c</sup>

<sup>a</sup> Core Surgical Trainee, United Kingdom

<sup>b</sup> Consultant Plastic and Reconstructive Surgeon, United Kingdom

<sup>c</sup> Faculty of Life Sciences and Medicine, Kings College London, 120 Sloane Street SW1 × 9BW, United Kingdom

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## KEYWORDS

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**Summary Background:** Surgical site infection has considerable cost implications for health-care providers. Evidence suggests that the use of Micropore™ tape as a dressing for surgical incisions may be associated with reduced/comparable rates of infection in surgical wounds. 3M™ Micropore™ tape is significantly cheaper than conventional wound dressings. The purpose of this study was to compare differences in the rate of wound healing problems including superficial incisional surgical site infection (SSI) and wound healing problems following cosmetic breast procedures between Micropore™ tape and other common wound dressings.

**Methods:** A clinical database was utilised to identify all patients undergoing elective breast surgery at a UK private cosmetic surgery group between May and November 2017. The patients were divided into 2 groups: those whose wounds were dressed with 3M™ Micropore™ tape post-operatively and those dressed with other common wound dressings. Data was analysed to assess the prevalence of post-operative wound healing problems (superficial incisional surgical site infection and delayed wound healing) in each group.

**Results:** 1216 patients were identified in our database, 659 patients receiving Micropore™ and 557 patients receiving conventional wound dressings. The overall prevalence of wound healing problems in the Micropore™ tape and conventional wound dressing group were 12% and 10% respectively, with no statistical difference ( $p = 0.3913$ ). There was no statistical significance between the use of antibiotics and prevalence of wound healing problems in either group.

**Conclusion:** The results of our study suggest that there is no difference between the use of Micropore™ tape and other conventional wound dressings in the prevalence of post-operative wound healing problems in cosmetic breast surgery. Our findings support the routine use of

\* Corresponding author. Flat 16 Admirals Court, 14 Clarence Parade, Southsea PO5 3NR, United Kingdom.  
E-mail address: [phever@nhs.net](mailto:phever@nhs.net) (P. Hever).

Micropore™ tape in post-operative dressing for clean, non-contaminated, directly closed, elective surgical wounds. We suggest a larger scale, prospective, randomized study should be conducted to confirm these initial findings.

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## Introduction

Surgical site infection (SSI) is a type of healthcare-associated infection (HAI) in which a wound becomes infected after a surgical procedure. It accounts for about 16% of all HAI in England, and causes significant morbidity and mortality if left untreated. In the UK, it has been estimated that the cost to the NHS of SSI is around £700m a year.<sup>1</sup> Evidence suggests that the use of Micropore™ tape as a dressing for surgical incisions may be associated with reduced/comparable rates of infection in surgical wounds.<sup>2</sup> A clinical trial comparing the use of interrupted sutures versus a combination of subcuticular suture and sterile Micropore™ tape found that this combination gave a better cosmetic result, with good tolerability from patients.<sup>3</sup> There have been no clinical trials performed yet to specifically investigate the rate of SSI and wound healing problems with the use of micropore dressings.

3M™ Micropore™ tape is significantly cheaper than conventional wound dressings, with a cost to the NHS of approximately 29p per 9.1m roll (which can theoretically service up to 20 patients, if cleanliness is strictly maintained). This is in comparison to the 10p to £1 cost per conventional wound dressing (varying according to brand - Mepore® cheapest, 3M™ Tegaderm™ the most expensive - and size of dressing required), with 3M™ Steri-Strips™ costing up to £3.99 per pack, with on average at least one pack being used per patient. The introduction of the use of Micropore™ tape for dressing of surgical wounds may therefore have significant cost implications for the NHS, both in terms of reducing the costs associated with the dressing of surgical wounds, and costs associated with managing infective complications.

In this study, we performed a retrospective analysis of the prevalence of wound healing problems including superficial incisional SSI and delayed wound healing in cosmetic breast surgery patients at a UK private cosmetic surgery group when comparing 3M™ Micropore™ tape to other, more conventional wound dressings. NICE guidelines regarding CDC definition of superficial incisional SSI were used for reference.<sup>4</sup> Our aim was to compare differences in the rate of wound healing problems following cosmetic breast procedures between Micropore™ tape and conventional wound dressings.

## Methods

We utilised a clinical database to retrospectively review all data for patients undergoing cosmetic breast surgery at a UK private cosmetic surgery group between May and November 2017. Details extracted included type of procedure, type of post-operative dressing, use of prophylactic antibiotics, and

**Table 1** Comparison of the prevalence of SSI and delayed wound healing between the 2 groups (%). *Statistical analysis by Fisher's exact test, NSS = not statistically significant.*

	Micropore™ tape	Other conventional wound dressing	
SSI	4.1	6.3	NSS
Delayed wound healing	8.0	3.8	NSS

any evidence of post-operative superficial incisional surgical site infection (coded according to CDC criteria) or delayed wound healing (defined as a wound failing to heal with standard therapy in a timely manner). Surgeons selected wound dressing according to personal preference. All patients were routinely seen by a clinical nurse one-week post-operatively for wound checks, and then weekly or twice weekly as required for dressing changes until dressings were no longer required. Fisher's exact test was used for statistical analysis of results.

## Results

Our sample size was 1216 patients, of which 659 patients received Micropore™ and 557 patients received conventional wound dressings. Index procedures included breast augmentation, breast reduction, change of implants, and gynaecomastia treatment. Patients were divided into 2 groups: those whose wounds were dressed with 3M™ Micropore™ tape post-operatively and those dressed with conventional wound dressings. Conventional wound dressing included all types of dressing other than 3M™ Micropore™ tape (e.g. Mepore®, 3M™ Tegaderm™, OPSITE, 3M™ Steri-Strips™). In the Micropore™ group there was 27 cases of superficial incisional surgical site infection reported (4.1% of cases), and 53 cases of delayed wound healing (8% cases). In the conventional wound dressing group there was 35 cases of superficial incisional surgical site infection reported (6.3% of cases), and 21 cases of delayed wound healing (3.8% cases) [Table 1]. This translates to a total prevalence of wound healing problems of 12% in the Micropore™ group and 10% in the conventional wound dressing group ( $p=0.3913$ ), indicating that the association between wound dressing type and prevalence of wound healing problems was not statistically significant. Superficial incisional SSI and delayed wound healing rates when antibiotics were used prophylactically either on induction or post-operatively were 6% and 4% respectively in the Micropore™ tape group, compared to 4% and 8% where no antibiotics were used ( $p=0.3913$ ). These rates in the conventional wound dressing group were 7% and

**Table 2** Comparison of prevalence of SSI and delayed wound healing between the 2 groups (%) with/without the routine use of antibiotics. *Statistical analysis by Fisher's exact test, NSS = not statistically significant.*

	Micropore™ tape		Other conventional wound dressing		
	Antibiotics used	Antibiotics not used	Antibiotics used	Antibiotics not used	
SSI	6.0	4.0	7.0	10.0	NSS
Delayed wound healing	4.0	8.0	6.0	4.0	NSS

6% where antibiotics were used, and 10% and 4% where no antibiotic were used ( $p = 0.4401$ ) [Table 2]. Neither of these findings were statistically significant.

## Conclusion

The results of our study suggest that there is no difference between the type of post-operative wound dressing used in cosmetic breast surgery and the prevalence of post-operative wound healing problems. There was also no association between the use of antibiotics and wound healing problems. In light of these findings, we suggest that Micropore™ tape should be used routinely as a standard post-operative dressing for clean, non-contaminated, directly closed, elective surgical wounds due to reduced costs. We propose that the accepted, routine use of Micropore™ tape as a post-operative dressing in such cases may provide a cost-effective alternative to conventional wound dressings.

Our study is limited by its retrospective design and observational nature. It is also worth noting that the reporting of superficial incisional surgical site infection is likely to be disproportionately high in our study when compared to other studies. This is because post-operative wound checks within the cosmetic surgery group are designed to detect wound issues with a very low threshold. It is therefore reasonable to assume that a proportion of the post-operative follow-ups coded with 'superficial incisional SSI' may also include non-infective wound issues such as non-specific wound

inflammation, suture reaction etc. We therefore propose a large-scale, randomized control trial to compare the use of Micropore™ tape versus conventional wound dressings for the routine dressing of surgical wounds in elective surgery.

## Conflict of interest

The authors have no disclosure or conflict of interest. None of the authors have any financial interest in any of the products mentioned in this manuscript.

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