Abstract

Pre-operative skin preparations disinfect the superficial layer of the skin. Some residual bacteria may persist and skin flora can re-colonize during surgery. Surgeons commonly choose antimicrobial surgical incise drapes in clean and clean-contaminated surgeries as an added protection to lower the potential risk of infection. It is desirable to demonstrate the efficacy of a clinical treatment with a randomized prospective controlled clinical study. However, such a study can be both prohibitively large and costly. In vitro time-kill studies are commonly used to assess the effectiveness of an antimicrobial drape. In this study, the antimicrobial activity of 3M™ Ioban™ Antimicrobial Incise Drape was compared with ACTI-Gard® Antimicrobial Incise Drape and ISO-Drape™ Incise Drape featuring Microban® Antimicrobial Protection using an in vitro time-kill study based on ASTM E2315-03. Each drape was tested against 12 microorganisms commonly associated with post-operative infections. This study showed that Ioban™ reduced all 12 microorganisms better than both Microban® Drape and ACTI-Gard® drape after an exposure time of 90 minutes.

Materials and Methods

An independent test laboratory (MICROBIOTEST) conducted the study based on ASTM E2315-03. A suspension of each microorganism with known density was inoculated onto the adhesive side of the sample. The initial inoculum counts ranged from 9.60 – 7.66 logs. At 30, 60 and 90 minutes, the samples were added to a neutralizing broth to stop the antimicrobial activity. The surviving microorganisms were assayed. All incise drapes tested are commercially available.

Six (6) replicates of each drape were tested against the following twelve (12) microorganisms. All isolates were American Type Culture Collection samples. No clinical isolates were used.


In vitro Time-Kill Study to Compare the Antimicrobial Activity of Three Antimicrobial Surgical Incise Drapes

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Introduction

The objective of this study was to measure the antimicrobial activity of three different antimicrobial incise drapes: 3M™ Ioban™ Antimicrobial Incise Drape, ACTI-Gard® Antimicrobial Incise Drape, ISO-Drape™ Incise Drape featuring Microban® Antimicrobial Protection, using an in vitro time-kill method. 3M™ Steri-Drape™, an incise drape with no antimicrobial was used as a control.

Results

The log reduction on Ioban™ was compared against Microban® Drape and ACTI-Gard® drape after an exposure time of 90 minutes.

Discussion

Randomized prospective studies, while desirable, require prohibitively large sample sizes if infection rates are low. In lieu of a clinical trial, an in vitro method was used to measure the relative efficacy of three antimicrobial incise drapes. As with any in vitro study, the clinical relevance of the results is not fully understood. Efficacy was measured based on the reduction of viable organisms expressed logarithmically (ie, log kill) over timeframes representative of current surgical practice, ie, 30, 60 and 90 minutes.

References

1. 3M Study 05-010730 (2008), 3M Health Care.
4. 3M Study 05-010730 (2008), 3M Health Care.