



Infection/Inflammation

Maxorb Extra Ag

Yang Q, Kerekes DT, Schultz GS, Gibson DJ. Antibacterial and Flow Rate Assessment of a Nonadherent Layer Interface on a Silver Alginate Dressing. *Wounds*. 2015; 27(1):1-4. Open access; full article publically available online: <http://www.woundsresearch.com/article/antibacterial-and-flow-rate-assessment-nonadherent-layer-interface-silver-alginate-dressing>

Purpose: The purpose of this study was to assess the potential differences in antibacterial activity and fluid flow rates of Maxorb Extra Ag+, an alginate-only dressing, to SilverCel, an alginate dressing with a non-adherent contact layer using a zone of inhibition (ZOI) assay and pig explant model and a flow rate assay.

Conclusion: The addition of the non-adherent layer led to statistically significant reduced ZOI antibacterial performance against *Staphylococcus aureus* ($P = 0.02$) and decreased ZOI performance against *Pseudomonas aeruginosa* ($P = 0.06$), and on the pig explant model, no statistically significant differences were observed though SilverCel had slightly more bacteria persisting on the skin. It also led to the lowest rate of fluid flow through the dressing.

Aegis

Chakravarthy D. *In vitro* assessment of fluid handling properties of chlorhexidine gluconate containing dressings for the protection of periwound skin in puncture wounds. A version of this was presented at the Symposium on Advanced Wound Care, Spring; Denver, CO; May 2013. (Ask your Medline representative for a copy of this poster, LIT723)

A number of proactive steps can be taken to decrease nosocomial clinical problems, one of which is the use of protective dressings that absorb exudate and reduce and inhibit microbial colonization on the dressing, chlorhexidine gluconate (CHG). This study compares the antibacterial performance *in vitro* of a new dressing with CHG in a polyurethane foam base, waterproof backing and an absorbent contact layer (Aegis) to a previous CHG product (Biopatch). The microorganisms used were *Staphylococcus aureus* (MRSA), *Escherichia coli*, *Pseudomonas aeruginosa*, *Enterococcus faecalis* (VRE), and *Staphylococcus aureus*. The results demonstrated that the *in vitro* antibacterial efficacies of the two products were comparable.

Opticell Ag+

Wahab N. Use of a Chitosan Based Gel Forming Silver Wound Dressing for the Management of Chronic Diabetic Wounds. Presented at the Symposium on Advanced Wound Care, Fall; Las Vegas, NV; October 2014. (Ask your Medline representative for a copy of this poster, LIT017WC)

A non-woven fabric chitosan based dressing (Opticell Ag+) is composed of marine sourced polysaccharide polymers and contains ionic silver to help manage bioburden. It absorbs fluids and forms a soft, translucent gel that holds its structure even when wet and it is conformable to the wound bed, providing intimate contact. To study the clinical efficacy of a chitosan based silver wound dressing, 9 patients with 13 diabetic wounds, which were contaminated but not infected, were selected. All but one wound belonging to a patient who was later



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hospitalized, decreased in size. The chitosan based silver dressing was conformable, maintained its original size, and had a high integrity.

Vorbeck E. A Marine Polysaccharide Based Gel-Forming Dressing Manages Leg Wounds without Shrinkage of Dressing and Dressing Disintegration. Presented at the Symposium on Advanced Wound Care, Fall; Las Vegas, NV; September 2013. (Ask your Medline representative for a copy of this poster, LIT1036R)

The purpose of the study was to comparatively evaluate a marine polysaccharide dressing (MPS, Opticell Ag) to a carboxymethylcellulose dressing (CMC, Aquacel Ag, Convatec) to determine retention of dressing properties and absorption of exudates. In a convenience sample of 10 patients with bilateral lower extremity venous ulcers, each patient received one of the two dressings per limb. Wound size, periwound skin quality, and dressing integrity during removal were evaluated. A visual assessment of dressing shrinkage was performed. Wound size was reduced by an average of 23 cm² with MPS dressing compared to an average reduction of 16 cm² with the CMC dressing, $p=0.06$). The weekly average Peri-ulcer skin quality score was reduced most when using the MPS product compared to the CMC dressing (33% average reduction from week before versus 23%; $p=0.048$). The MPS dressing did not appear to shrink and left lower amounts of residue, while the CMC dressing shrunk in size.

Optifoam Gentle Ag+

Chakravarthy D. Intimate Contact Antibacterial Barrier Performance of Silver Polyurethane Foam Dressing in Comparison to Silver Nonwoven Dressing in an *in vitro* Model. Presented at the Symposium on Advanced Wound Care, Spring; Denver, CO; May 2013. (Ask your Medline representative for a copy of this poster, LIT722)

In an *in vitro* model, intimate contact was required for the elicitation of antibacterial activity on selected germs. In this study, the test methodology for contact with an inoculated indented agar surface done by Jones et al in 2005 was used to test if it is essential for a dressing to be a gel-forming dressing to achieve intimate contact for optimal barrier behavior. The dressing tested included a gelling fiber (Aquacel Ag, Convatec), a silver polyurethane foam with a silicone adhesive around the border (Optifoam Gentle Ag), and a silver polyurethane foam with an acrylic adhesive around the border (Optifoam Ag). There was no quantitative difference in the antibacterial activity among the dressings. For the foam dressings, the adhesive borders may reduce curvature or distortion of the dressing. For the gelling dressing, the dressing "shrinkage" means that the dressing size choice should be taken into account because a dressing close to the wound size may not cover the wound. The intimate and physical contact of the dressing with the surface containing bacteria may contribute to the antibacterial performance, but the difference between the dressing designs did not impact the results.

Optifoam Ag+ Post-Op Strip

Forkan-Kelly S, Bennet C, Hartwig C, Keller J, Magnuson R, Rzepka P, Quiglet J. Implementation of a Program to Eliminate Incidence of Post Procedure Cesarean Section Surgical Site Infections. Internal Advocate Lutheran General Hospital; 2014.



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The aim of this study was to eliminate post cesarean surgical site infections at Advocate Lutheran General Hospital, which typically performs approximately 1500 cesarean sections per year.

Retrospective data showed that the predominance of infections were caused by skin flora, within 15 days of the procedure, when the skin was closed by staples that were removed post op day 3. Using the Plan-Do-Study-Act performance improvement methodology, engaging physician and nursing leaders, consulting with comparable institutions and pertinent shareholders and the use of Optifoam Ag+ has decreased infection rates. Jan 1st 2013 to Dec 31st 2013 mean rate of post procedure cesarean section infections including all risk indices was 0.68 infections per 100 procedures. Jan 1st 2014 to July 31st 2014 mean rate is 0.48 per 100 procedures.

Lingle M. Peri-operative Process Change to Reduce the Risk of Post-Operative Infection Following Orthopedic Procedures. Presented at the 60th Annual Congress of the AORN & the Symposium on Advanced Wound Care, Fall; San Diego, CA & Baltimore, MD; March 2013 & September 2012. (Ask your Medline representative for a copy of this poster, LIT214)

The rate of post-operative surgical site infections (SSI) is 1% to 2.4% for hip and knee arthroplasty procedures and cost \$60,000 to \$100,000. The purpose of this study was to evaluate the use of pre-operative chlorhexidine cleansing in combination with post-operative silver-impregnated dressings (Optifoam Ag+ Post-Op Strip) to manage orthopedic surgical sites by monitoring post-operative surgical site infection rate (SSI). In 2011, there were 21 infections out of 855 procedures, including knee, hip, and shoulder arthroplasty surgeries, laminectomy, and discectomy procedures. In 2012, surgical sites were cleansed daily for three days with 2% chlorhexidine wipes prior to and day of surgery and then dressed with a silver-impregnated absorbent dressing for 10 days post-operatively. There were only 5 infection events out of 861 orthopedic procedures, but the post-operative silver-impregnated absorbent dressing protocol was not used in four infection occurrences. The study concluded that hospital's experience over the last 12 months was consistent with clinical literature in that the use of the peri-operative process and silver impregnated dressings were successful for the management of surgical sites.

SilvaSorb

Chakravarthy D, Falconio-West M, Roman M. Comparative Time-Kill Kinetics of Two Silver-based Antimicrobial Gel Products against *Pseudomonas aeruginosa* and *Staphylococcus aureus*. Presented at the Clinical Symposium on Advances in Skin & Wound Care. Las Vegas, NV; September 2014. (Ask your Medline representative for a copy of this poster, LIT006WC)

Vigilant care can be an important clinical goal for preventing or eradicating wound infection because microbial colonization can slow wound healing. This study compares two different Ag-based, commercially-available, antimicrobial topical gel products, including Product 1 (SilvrStat) and Product 2 (SilvaSorb) in head-to-head *in vitro* time-kill assays. Both products reduced the *Pseudomonas aeruginosa* and *Staphylococcus aureus* populations by > 99% after each bacterial species was exposed to each of these products for 24-hours. For each bacterial species, these effects were sustained for up to 72-hours.



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These publications were presented at various wound care conferences to share research and clinical results within a scientific community. The information is intended for healthcare professionals in the US only. It is provided for informational purposes and is not intended to replace a discussion with a healthcare provider. All decisions regarding patient care must be made with a healthcare provider and consider the unique characteristics of each patient.

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