

The Impact of a Novel Microbicidal Elastomeric Liquid Polymer (Preventogen) on Surgical Site Infections in Patient Undergoing Surgery

Principal Investigator: Samir S. Awad

BACKGROUND:

Surgical site infections (SSI) are the most common hospital acquired infection (HAI) accounting for 20% with increase in morbidity, mortality and cost. In vitro, Preventogen, a novel elastomeric microbicidal liquid polymer has been shown to actively kill pathogens such as MDRO and Non-MDRO gram positive & negative bacteria, and various fungi on contact through cell lysis, drying within 30 seconds to create a flexible see through film barrier that continues to protect the surgical site for 5-7 days. Previous reports have demonstrated a significant decrease in external fixator pin site infections [Pema, doi:10.15761/CMID.1000177].

HYPOTHESIS:

Our objective was to evaluate the impact of Preventogen on SSI rates in patients undergoing general and surgical oncologic procedures. We hypothesized that Preventogen would decrease the risk of SSIs.

METHODS:

A retrospective review of a prospective data base of patients undergoing elective surgery at a tertiary academic hospital was performed from 7-1-2022 to 10-1-2024. Age, gender, comorbidities (HTN, CHF, COPD, DM, Tobacco, AKI, Ascites, sepsis, functional status, cancer), demographics and procedure CPT codes were collected. Cases were stratified for clean and clean contaminated (CC). For each patient the expected SSI risk was calculated using the validated ACS NSQIP risk calculator (<https://riskcalculator.facs.org/RiskCalculator/index.jsp>). All patients underwent preoperative decontamination with Chlorhexidine wipes day prior and on day of surgery; all had surgery site appropriate prophylactic antibiotics prior to incision; and all had chloraprep as the skin prep. Preventogen was applied as the dressing after skin closure. SSIs at 30 days were collected and the Observed to Expected (O/E) ratio was calculated. Statistical analysis was performed using Chi square with $p < 0.05$ as significant.

RESULTS:

A total of 76 cases were evaluated, 51% (39) clean, 49%(37) CC. Overall, the mean age was 61 ± 2 years, and BMI 30.4 ± 0.65 . 61% male, 40% DM, 12% smokers and 10% AKI. Overall the ACS NSQIP calculated SSI risk was 4.13% with no observed 30-day surgical site infections [Expected=4.13, Observed=0, O/E ratio=0, 95%CI(0,0.73), $p=0.032$].

TABLE 1	
Total cases: 76 51% (39) Clean, 49%(37) CC	Demographics: Mean age: 61 ± 2 years BMI 30.4 ± 0.65 61% male 40% DM 12% smokers 10% AKI
Calculated / expected SSI risk: 4.13%	
Days observed: 30	
SSIs observed: 0	
SSI rate: 0%	

CONCLUSIONS:

The use of Preventogen in patients undergoing surgery resulted in a significant reduction of SSI rates with no observed 30-day SSI in a patient cohort expected to have a 4% SSI rate. Preventogen liquid Polymer can be safely used as elastomeric see-through dressing in clean and clean contaminated surgical cases to significantly reduce SSI rates.

AUTHORS:

Samir S. Awad, Sawad@bcm.edu

Hachem Bey, Baylor College of Medicine, Hachem.bey@bcm.edu

Raymond Lopez, Baylor College of Medicine, Raymond.lopez@bcm.edu

Christy Chai, Baylor College of Medicine, Christy.chai@bcm.edu