

AQUACEL® Ag Surgical Reduces Incidence of Deep Sternal Wound Infection Post-Cardiac Surgery



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Introduction

Deep sternal wound infection (DSWI) is a devastating post-operative complication in cardiac surgery. The incidence of DSWI has been reported to range from 1 and 5%¹ with an associated mortality ranging from 10 and 47%.^{1,2} Evidence suggests that the type of dressing used following surgery may impact the rate of post-operative infection.³

At Winthrop-University Hospital deep sternal wound infection rates approached 3.5%. The average cost of readmission for a deep sternal wound complication was calculated to be \$60,000.

In an effort to reduce the incidence of sternal wound infection, a program was begun utilizing silver impregnated wound dressings (AQUACEL® Ag Surgical). A retrospective, non-parallel study was initiated comparing the rates of DSWI and superficial sternal wound infections (SSWI) between patients who had been treated with standard dry sterile dressing and AQUACEL® Ag Surgical dressing (ConvaTec) following cardiac surgery.

Methods

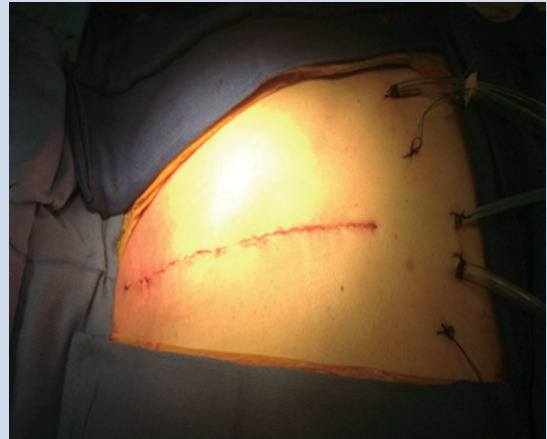
Data were reviewed from consecutive patients aged between 19 and 89 years who were admitted for cardiac surgery between August 2009 and June 2013. During this period, there was a change in practice at the hospital from use of dry sterile dressings to AQUACEL® Ag Surgical dressings. All other procedures remained constant throughout the evaluation period.

A retrospective consecutive cohort of 504 patients underwent cardiac surgery via median sternotomy from August, 2009 through May, 2011. Their sternotomy incision was covered with dry, sterile 4X4 dressings and tape and changed daily after POD #1.

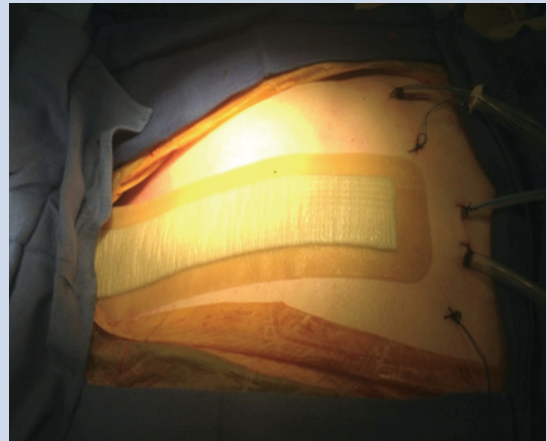
They were compared with a consecutive cohort of 208 patients who underwent cardiac surgery via median sternotomy from May, 2011 through June, 2013. These patients had their sternotomy incision covered with AQUACEL® Ag Surgical dressing placed intra-operatively that was worn for 5-7 days. The dressing was changed utilizing sterile technique if it became soiled.

The 208 patients were followed for 30 days post-discharge from the hospital for development of either deep or superficial sternal wound infection.

The two groups were compared by demographic and clinical characteristics to confirm group comparability (Table 1, Fig. 1 and 2).



Sternal wound in OR after closure and prior to dressing application



AQUACEL® Ag Surgical dressing applied



Representation of Mediastinitis and Sternal Dehiscence

Patient Characteristics

Table. 1

	DSD	AG
Mean Age (yrs)	68.55	69.9
Gender (M/F)	292/212	109/99
Mean Perfusion Time (min)	103.11	107.28
Mean Length of Stay Admit to Surgery (days)	3.83	3.75
Mean Length of Stay Surgery to Discharge (days)	8.68	8.32

DSD = Dry Sterile Dressing; AG = AQUACEL® Ag Surgical Dressing

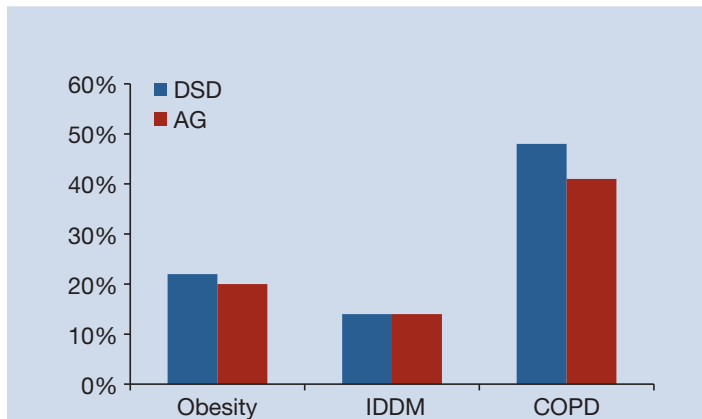


Figure 1. Risk Factors

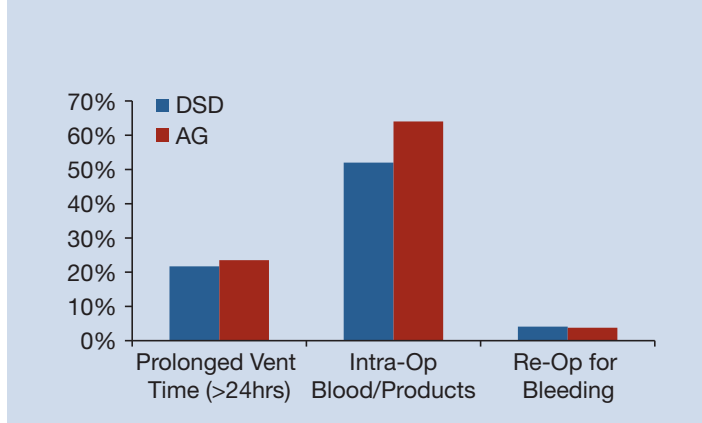
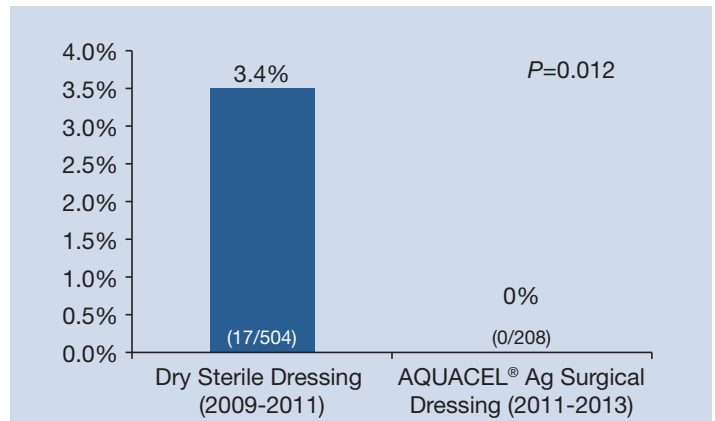


Figure 2. Post-Operative Risk Factors

Results

In total, 17 (3.4%) patients treated with the dry sterile dressing and 0 patients treated with AQUACEL® Ag Surgical were reported to have had DSWI. This difference was statistically significant by Fisher's exact test ($P=0.012$). The number of patients who had SSWIs was also lower following treatment with AQUACEL® Ag Surgical (15 [3.0%] in DSD group versus 4 [1.9%] in AG group); however, this difference did not achieve statistical significance.



Deep Sternal Wound Infection Rate at Winthrop-University Hospital

Conclusions

A significant reduction in the rate of DSWI was reported in cardiac patients managed with AQUACEL® Ag Surgical dressing compared to the standard dry sterile dressing. By helping to reduce DSWI, AQUACEL® Ag Surgical may result in lower healthcare costs and patient morbidity associated with this type of surgery.

References

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