

Efficacy of Antimicrobial Silver-Coated Dressings and Usual Care in Preventing LVAD Driveline Infections

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Background and Study Objective

- The HeartMate 3 (HM3) left ventricular assist device (LVAD) notably improved survival rates in patients suffering from end-stage heart failure
- However, driveline infections (DLIs) remain a serious complication affecting clinical outcomes
- Objective:** To evaluate the efficacy of a silver-coated antimicrobial dressing with broad-spectrum and biofilm-disrupting activity (Silverlon, Bravida Medical), as an adjunct to usual wound care for DLI prevention
- Secondary outcomes:** To assess freedom of DLI-related hospital readmission, freedom of vacuum assisted closure (VAC) therapy, and temporal changes in DESTINE wound staging

Methods

- Retrospective, single-center cohort study of adult HM3 patients implanted between 2022 and 2025 (n= 34). Data included demographics, laboratory markers, changes in DESTINE wound stages, freedom of hospital readmission and VAC therapy.
- Starting with the first follow-up visit (FFUV) after hospital discharge, 23 patients received usual wound care, while 11 patients received standard wound care supplemented with Silverlon. Data was collected at the FFUV, 1,3 and 6 months post FFUV.
- DLI free data as well as secondary outcomes were visually presented using Kaplan-Meier curves. The Log-Rank test was used to compare these two groups and determine a significant difference.

Results

- Overall, 34 patients were analyzed (6% female; median (IQR) age 61.5 (58; 65) yrs; BMI 28.3 (19.4; 37.2) kg/m² (Table 1).
- Baseline characteristics were comparable between the two cohorts (p>0.459) particularly regarding risk factors associated with delayed wound healing and infection.
-  The Silverlon group demonstrated a **significantly greater freedom from DLI (100%) vs. the usual care group (65.2%; p=0.03; Figure 1).**
- For secondary endpoints, the Silverlon group showed 100% freedom from DLI-related readmission and VAC therapy versus 95.7% in the usual care group.
- DESTINE wound stages 0-1 predominated in the Silverlon group, while occasional severe stage 2-4 wounds occurred in the usual care group.

Variable n(%), mean±SD or median (IQR)	Silverlon (n = 11)	Control (n = 23)	p - value
Patient Characteristics			
Age	65.0 (58.0; 71.0)	58.0 (47.0; 62.0)	0.04
Gender, female	0 (0%)	2 (8.7%)	1.0
BMI at Implantation	27.06 ± 4.32	27.82 ± 5.52	0.69
INTERMACS Level			0.50
1	1 (9.1%)	5 (21.7%)	
2	4 (36.4%)	10 (43.5%)	
3	4 (36.4%)	3 (13.0%)	
4	2 (18.2%)	5 (21.7%)	
Preoperative Comorbidities			
Diabetes mellitus	2 (18.2%)	6 (26.1%)	1.0
Smoking history	6 (54.5%)	16 (69.6%)	0.46
Alcohol abuse	1 (9.1%)	4 (17.4%)	1.0
Intraoperative Variables			
Indication			0.44
DT	5 (50%)	5 (21.7%)	
BTC	4 (40%)	14 (60.9%)	
BTT	1 (10%)	3 (13.0%)	
BTR	0	1 (4.3%)	
Minimal invasive implant	4 (36.4%)	7 (30.4%)	1.0
Distal Anastomosis			0.24
Aorta asc.	9 (81.8%)	22 (95.7%)	
A. subcl. sin.	2 (18.2%)	1 (4.3%)	
DL double tunneling technique	11 (100%)	21 (91.3%)	1.0
Postoperative Variables			
Velour exposure FFUV	0 (0%)	1 (6.7%)	1.0

Table 1: Baseline demographics

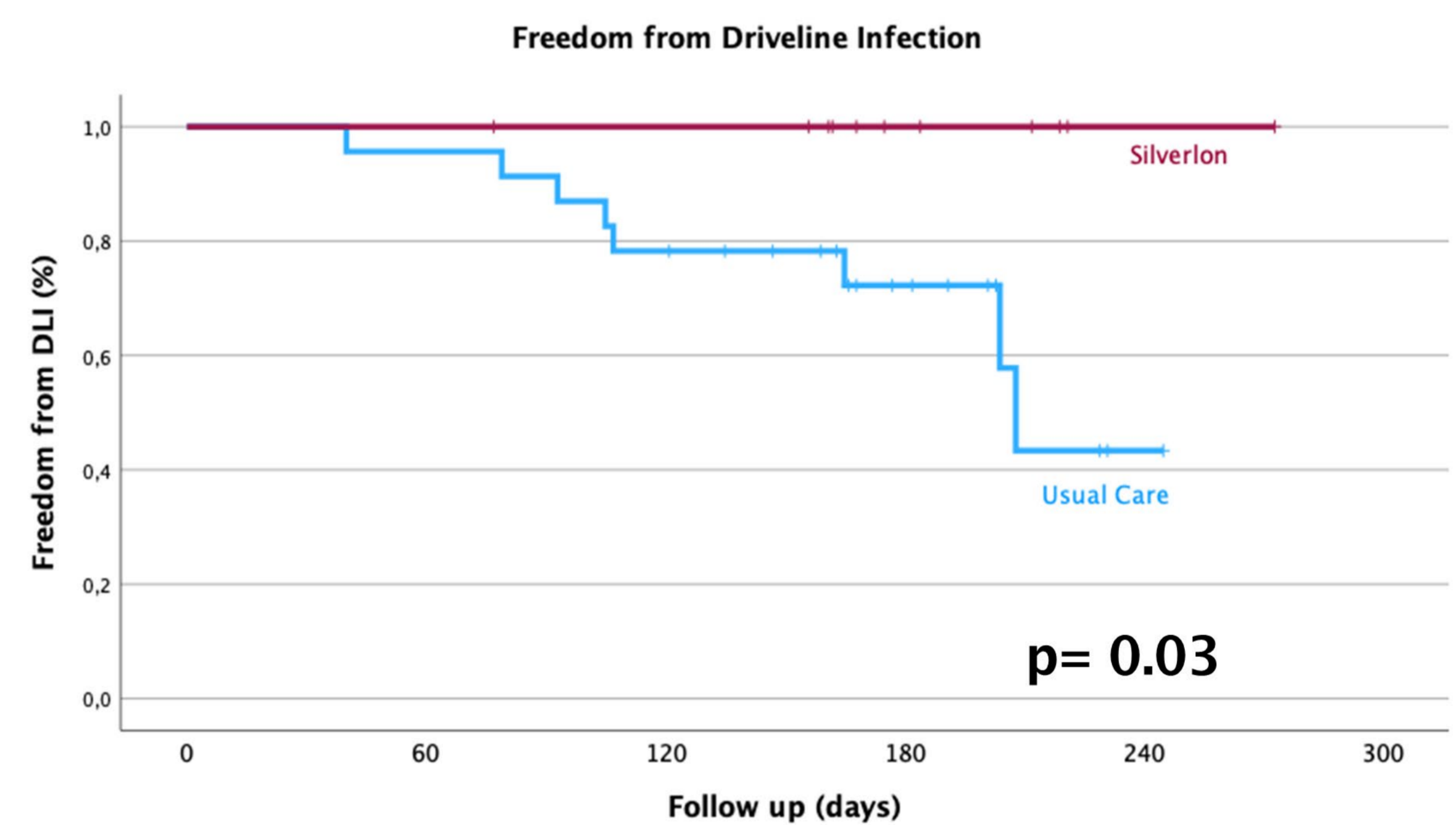


Figure 1: Freedom from DLI stratified by group (Silverlon 100% vs. Usual Care 65.2%)

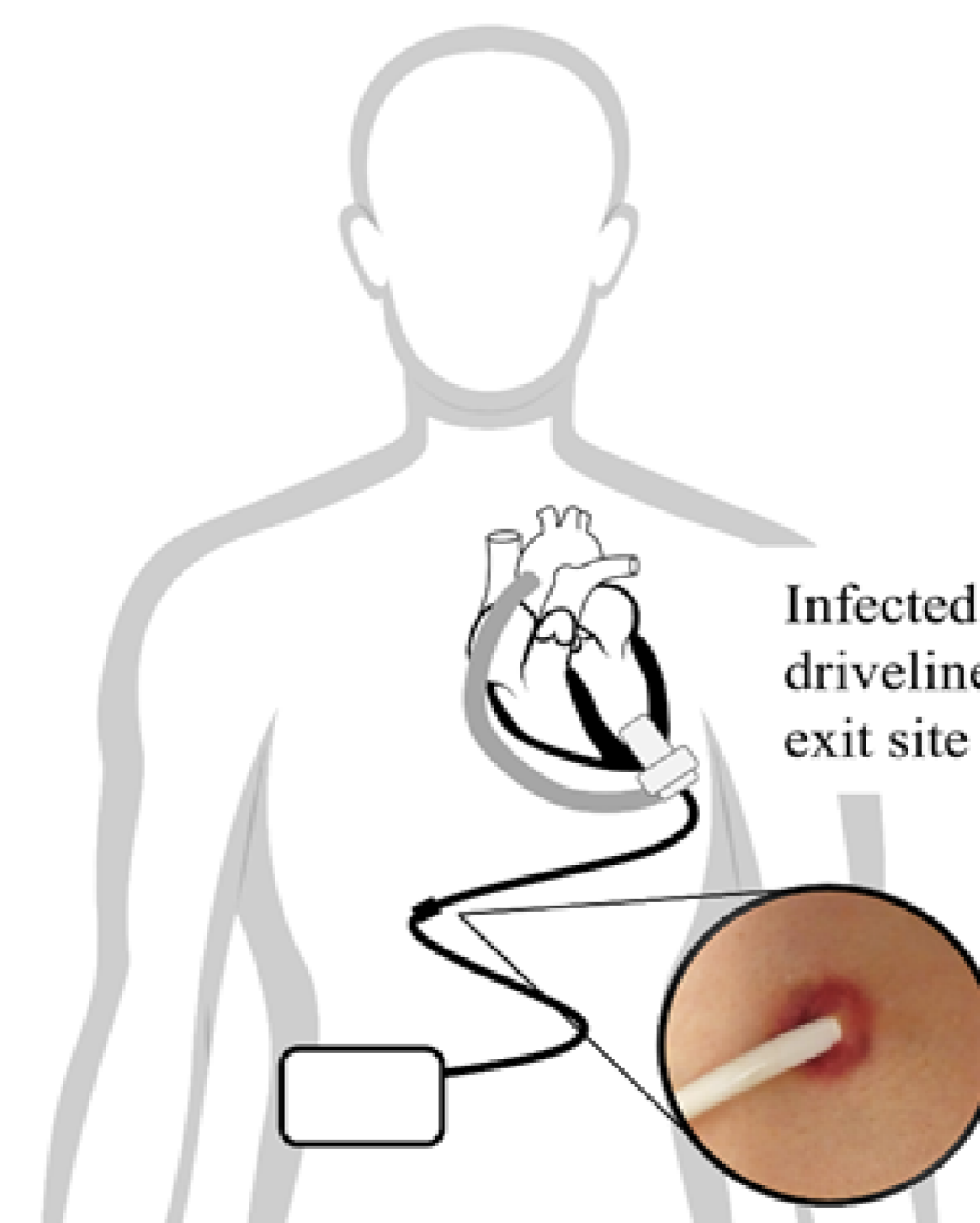


Figure 2: Driveline Infection



Figure 3: Wound care

Conclusion

Given the substantial burden of DLI, integrating silver-based dressings into standard LVAD wound care protocols appears to be a safe and effective strategy, associated with enhanced wound healing and a significant reduction in DLI incidence.

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