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Peer-Reviewed Case Report

Cutting the Cord: A Case of Late Presenting Driveline Infection

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Abstract

Ventricular assist device (VAD) related infection, specifically driveline infection, is a common complication after VAD implantation. A 45-year old patient with a delayed skin infection at the site of the original driveline nearly one year after VAD inactivation and surgical driveline burial was treated with antibiotics and surgical debridement for approximately six months. Continued discharge at driveline site and growth of methicillin susceptible *Staphylococcus aureus* resulted in the recommendation of explantation of the VAD. Post-VAD explantation, the patient remains symptom free and without infection 21 months following explant.

Keywords: LVAD, HeartMate II, driveline infection, driveline burial, VAD deactivation



Case Report

Device-related infections, specifically driveline infections, are a common complication after ventricular assist device (VAD) implantation. Reported infections have been in patients with functional pumps and percutaneous drivelines. We present a case of a patient with delayed skin infection at the site of the original driveline nearly one year after VAD inactivation and surgical driveline burial.

A 45-year-old man with ischemic cardiomyopathy underwent HeartMate II (Abbott) implantation as bridge-to-transplant intervention. His post-VAD course was complicated by recurrent gastrointestinal bleeding. He was noncompliant, desired non-traditional therapies and ultimately elected to discontinue anticoagulation, resulting in pump thrombosis. Echocardiogram revealed minimal myocardial recovery with persistent severe left ventricular dysfunction (ejection fraction ~ 10%). He was considered too high risk for VAD explantation. The VAD was inactivated, and inflow cannula and outflow grafts were left in situ. The driveline was severed and surgically buried. The incision was closed and healed completely. After 11 months, he presented with 3 weeks of local irritation and drainage at the old driveline exit site, which was exacerbated by his persistent digital manipulation of the area. Oral antibiotic therapy was initiated; however, the infection persisted. Local debridement revealed a wire from the driveline in the wound bed (Figure 1).



Figure 1. Evolution of the wound is displayed. (a) Initial encounter after driveline burial with scant purulent drainage is seen. (b) Purulent exit site infection approximately 11 months later. (c) Driveline remnant from wound. (d) Recurrent purulent infection just prior to VAD explant at 17 months post-implant.



Operative wound cultures grew methicillin susceptible *Staphylococcus aureus* (MSSA). The patient was admitted twice in the subsequent six months for intravenous antibiotics and surgical debridement. Wound cultures repeatedly demonstrated MSSA. He declined palliative care and withdrawal of medical care; thus, due to persistent infection despite aggressive treatment, we recommended device removal for source control (Figure 2).

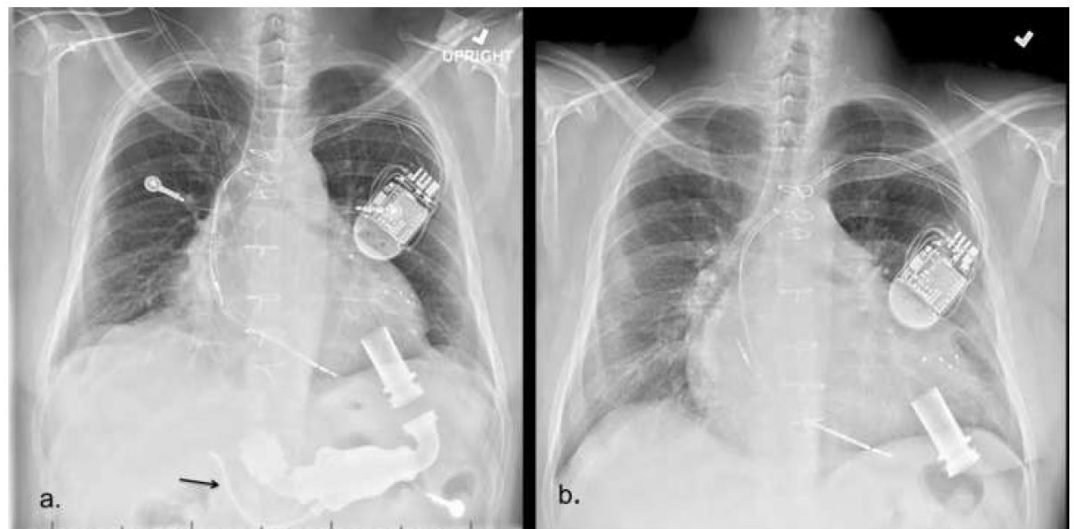


Figure 2. (a) Chest x-ray with Heartmate II driveline remnant (arrow). (b) Chest x-ray after Heartmate II explant.

During the procedure, the driveline exit site wound was found to be communicating with the VAD pocket. Copious amounts of purulent material was encountered in the VAD pocket and on the inflow and outflow grafts. Blood cultures were negative; and MSSA grew from intraoperative tissue and the explanted VAD. The patient is currently infection free, New York Heart Association Class III, 21 months post-VAD explant.

Discussion

Ventricular assist devices prolong survival for patients with end-stage heart failure; however, complications associated with infection have presented major challenges (1). Current VAD technology requires a percutaneous driveline power supply, which may serve as a port of entry for infectious organisms. Infection is noted as the fourth most common cause of death in patients with mechanical circulatory support devices, accounting for 8.8% of deaths (2). In addition, driveline infections make up approximately 83% of infections directly related to device hardware (1,2). The International Society for Heart and Lung Transplantation issued a consensus statement with recommendations to guide management of infection in patients with



mechanical circulatory support devices (3). However, there is no consensus regarding management of the driveline after deactivation. This case represents the devastating consequences suffered as a result of a severe ascending driveline and pump infection and emphasizes the importance of continued patient education and monitoring in this unique scenario. In addition, this highlights the need to develop guidelines for the management of patients who develop VAD-related complications who are not candidates for VAD exchange or heart transplantation and fail to achieve myocardial recovery.

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