Clinical Medicine Insights: Case Reports

CASE REPORT

Conservative Management of Skin Fistula Occurring After Internal Cardioverter Defibrillator Replacement

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Abstract: Skin fistula occurring after cardiac electronic device implantation is frequently related to pocket infection and this condition typically requires removal of device and lead(s). We report on a case of skin fistula occurring 3 weeks after internal cardioverter defibrillator replacement. Conservative management consisted of local care along with oral antibiotics without removal of device; this strategy resulted in complete healing and closure of the fistula.

Keywords: hematoma, tension, fistula, infection, dressing, device

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Introduction

Cardiac implantable electronic device (CIED) replacement procedures are associated with higher complication rates compared to primo-implantation,[1] and dual and triple chamber CIED implantation are associated with higher complication rates compared to single chamber CIED.[1] Infection related with CIED implantation typically mandates removal of all foreign material. We present a case of skin fistula occurring after internal cardioverter defibrillator (ICD) replacement, where the fistula healed with conservative management and without device explantation.

Case Presentation

A 75-year-old patient with dilated ischemic cardiomyopathy had a single chamber ICD implanted for secondary prevention; he was admitted for device replacement because of battery depletion. Of note, the patient had 3 appropriate shocks for ventricular fibrillation during the last 6 months. The patient had no other significant co-morbidity conditions (ie, no diabetes, no renal failure).

The replacement procedure was achieved without any per-operative incident; of note, the inner layer of the device pocket was well demarcated, whitish, thick, resistant, brilliant and relatively impermeable to fluids. The wound was closed superficially with metallic stitches; According to our wound care protocol, we do not use skin adhesive nor absorbable intracutaneous suture. Aspirin was halted seven days before the procedure and was resumed after stitches removal.

The patient was discharged on the second post-operative day and wound dressing was clean. Antibioprophylaxis started pre-operatively was continued for seven days; also, the patient was requested to undertake wound dressing every day with a registered nurse until stitches removal. On post-operative day 10, stitches were removed, wound healing was normal, there was no signs of infection, only a "minimal" pocket hematoma was demonstrated by the "swinging sign" when compressing the pocket.

The patient presented on post-operative day 20 with a fistula located at the external edge of the wound that showed normal healing otherwise (Fig. 1). The patient was afebrile, there was no significant redness or swelling over the device; a thick reddish odorless fluid discharge from the fistula was taken for culture.

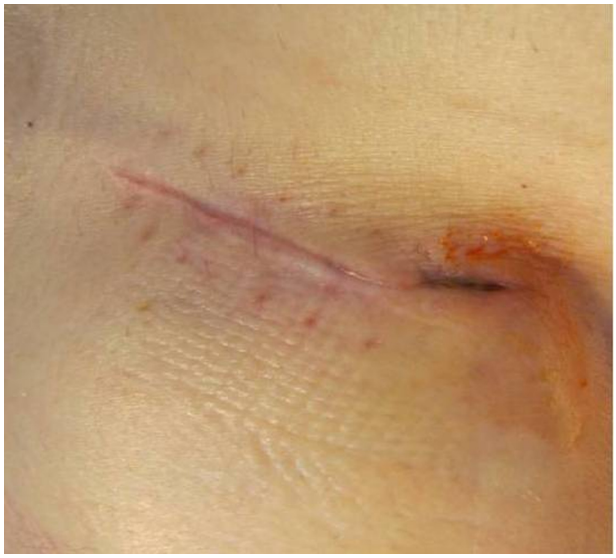

Figure 1. A fistula occurring 20 days after the procedure. Marks of the metallic stitches are still visible; also, the scar of the primo-implantation is visible.

Despite the initial hypothesis of pocket infection and given that the patient was relatively device "dependent," we decided to proceed with conservative therapy first: intensive local care and wound debridement along with oral antibiotics (cefuroxime, 500 mg tid) without removal of the device. We informed the patient that if the conservative strategy was not successful, a radical radical approach was to be implemented (with removal of all material). The culture came positive for Staphylococcus Aureus (sensitive to cefuroxime) 72 hours later; nevertheless, we continued the conservative treatment plan and there was a gradual improvement then "complete" healing and closure of the fistula within 15 days.

Discussion

In this presented case, we hypothesize that the initial mechanism causing the formation of the fistula was a tension hematoma that drained to the skin with subsequent superficial infection. The hematoma could not resolve or expand probably because of the "hermetic" and rigid characteristics of the remodeled inner layer of the pocket and finally it found an issue to the skin (fistula). In addition, despite the positive microbiological result, there was a favorable outcome with the conservative approach and we considered—a posteriori—that it was a superficial infection secondary to the fistula.

In case of deep pocket infection, symptoms would include draining pus with redness and inflammation all around the area of the wound, also irritation related to pathogens and related toxins would slow and impede the healing process and complete removal of foreign materials is classically the only way to cure pocket infection.

Strict peri-procedural protocol must be applied in order to decrease CIED related complications, especially in patients with high risk of infection and/or hematoma (anticoagulant therapy, elderly, diabetes, renal failure, replacement procedures…). In this perspective, peri-operative antibioprophylaxis,[2] anticoagulant therapy management,[3] implantation technique, wound dressing and patient education are of utmost importance. According to our institution policy, we do not use skin adhesives because we estimate they are not safe enough to achieve wound closure in the immediate post-operative period.[4]

Even though rare cases of pocket infection have been cured without removing the device,[5] the classical management strategy consists of removal of all foreign materials to cure infection. In this presented case, we conclude that the fistula was related to a tension hematoma with subsequent superficial infection; conservative management resulted in complete healing without removal of device.

Conclusion

Skin fistula occurring after CIED implantation can be managed in some cases without device explantation; in fact, not every fistula implies an underlying infection, it can simply be related to a tension hematoma. The occurrence of tension hematoma predisposes to fistula formation and the fistula also predisposes to secondary infection; accordingly, a case-by-case decision should be taken before explantation of device especially in dependent patient.

Support

We received no financial or any other support for this paper.

Consent

According to our institutional Ethics Committee, a written consent was obtained from the patient before proceeding with this paper.

Conflict of Interest

None to declare.

Disclosures

Author(s) have provided signed confirmations to the publisher of their compliance with all applicable legal and ethical obligations in respect to declaration of conflicts of interest, funding, authorship and contributorship, and compliance with ethical requirements in respect to treatment of human and animal test subjects. If this article contains identifiable human subject(s) author(s) were required to supply signed patient consent prior to publication. Author(s) have confirmed that the published article is unique and not under consideration nor published by any other publication and that they have consent to reproduce any copyrighted material. The peer reviewers declared no conflicts of interest.

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