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Computed tomography fistulography of the sternum. A case report on interprofessional collaboration between radiologist and surgeon



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ABSTRACT

INTRODUCTION: Trans sternal fistula can occur after sternotomy/heart surgery. Diagnosing this can be difficult.

PRESENTATION OF CASE: In this report, we present a unique case of a patient with infection of an ascending aortic prosthetic graft. This patient was oozing from the wound despite several revisions. Many fistulographies were performed before fistulography with surgeon and radiologist revealed a trans sternal fistula.

DISCUSSION: Infection with *Propionibacterium acnes* is often difficult to diagnose. This is in line with the present case, where a surgeon guided fistulography had to be performed followed by appropriate redo surgery with successful subsequent sternal wound healing.

CONCLUSION: Our case demonstrates the importance of performing a fistulography with the presence of a surgeon, to obtain the best possible result.

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1. Introduction

Infection of an ascending aortic prosthetic graft is a rare and dreaded complication occurring in 1–4% of patients undergoing replacement of the ascending aorta [1,2]. Microorganisms introduced to the graft during surgery or in the postoperative period can cause deep wound infections around the tube graft and form trans sternal fistula. Since antibiotics are often insufficient to treat an infected foreign body, it can be necessary to perform complex redo surgery with replacement of the tube graft to resolve the infection [3].

The present work has been reported in line with the SCARE criteria [4].

2. Presentation of case

A fifty two year old Caucasian male was operated for type A aortic dissection, using a tube graft and strips of felt to reinforce the proximal and distal anastomosis. Subsequently, the patient developed a subcutaneous abscess and a fistula in relation to the sternal bone. The infection was treated by surgical debridement, steel wire extraction, vacuum sponge therapy, antibiotics and several fistula resections. Meanwhile, wound healing with granulation tissue could not be obtained, and oozing of infected material con-

tinued. Therefore, a trans sternal fistula to the aortic tube graft was suspected.

Initial fistulography by computed tomography (CT) imaging with contrast injection showed no signs of infection in relation to the graft. Leukocyte scintigraphy was considered, but abandoned due to insufficient spatial resolution in terms of fistula diagnosis. CT fistulography was repeated five, ten and fifteen months postoperatively. The latter in collaboration between surgeon and radiologist to optimize image acquisition. The surgeon directed the contrast injection to the exact point in the sternal wound and this time a fistula between the sternum and tube graft was revealed, with contrast passage along the entire proximal felt ring (Fig. 1D). The patient was reoperated with replacement of the aortic tube graft and had an uneventful recovery without reinfection. The infection was caused by *Propionibacterium acnes*, a bacteria with low virulence, which explains the prolonged clinical course [5].

3. Discussion

Infection of the aortic prosthetic graft is a very rare and life-threatening complication. Most cases of graft infections are due to exposure in health care setting and occur late after surgery [1].

This type of Infection with *Propionibacterium acnes* is often diagnosed in the late period, which explains the difficulty of diagnosing this. One of the major challenges is the non-specific clinical symptoms and the prolonged incubation time of this microorganism [1].

Sohail et al. identified seventy cases of *Propionibacterium endocarditis*, where 36% of the cases were complicated by abscess

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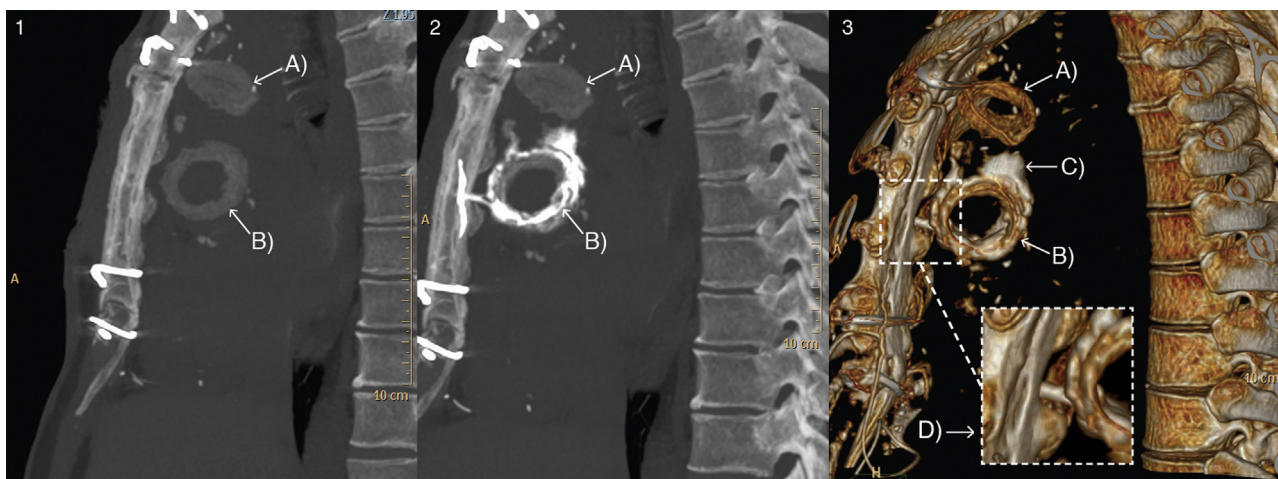


Fig 1. 1) Computed tomography; 2) Computed tomography with contrast; 3) Computed tomography reconstruction with contrast; A) Distal felt strip; B) Proximal felt strip; C) Contrast around the proximal felt strip. D) Trans sternal fistula.

formation. In the study, many of which appeared with delayed presentations [6].

This case supports the importance of correct imaging.

The present patient had to undergo three CT fistulographies before the connection between the prosthetic graft and the sternum was identified. Due to a fistulography performed without a surgeon's detailed anatomical knowledge around the infected field, the patient had to undergo several additional examinations, which necessitated several additional months of treatment at the hospital.

In this case, only after surgeon-guided fistulography was performed, the fistula was diagnosed and appropriate redo surgery was undertaken with subsequent successful sternal wound healing. Therefore, our case underlines the importance of good cooperation between a surgeon and a radiologist to avoid false negative imaging diagnostics.

4. Conclusion

The diagnosis of fistula communication between the sternum and the tube graft in the present case was revealed only after repeated fistulography. This case emphasizes the benefit of a close collaboration between radiologist and surgeon to optimize image acquisition during CT fistulography, to avoid false negative fistula diagnosis and delay of proper treatment in these complicated infection cases.

Conflict of interest

None.

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Ethical approval

In Denmark, the consent from patient or family is sufficient and ethical approval is not needed.

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Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images.

Author contribution

All authors have taken part in conception and interpretation of data, drafting and revising the manuscript critically, and final approval of the manuscript submitted.

Guarantor

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