Case Report

Usefulness of Infrared Thermal Imaging Camera for Screening of Postoperative Surgical Site Infection after the Nuss Procedure

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Introduction and Objective. The Nuss procedure is widely used in the treatment of pectus excavatum worldwide. Postoperative pectus bar infection is one of the most serious complications associated with this procedure. Therefore, early detection of signs of implant infection is very important. However, this is difficult, and effective methods have yet to be established.

Methods. We use a handheld infrared thermal imaging camera to screen patients for postoperative infection following the Nuss procedure. Here, we report a 28-year-old man with recurrent postoperative (Ravitch procedure) pectus excavatum.

Results. Infrared thermography camera clearly indicated slight cellulitis in the right chest.

Conclusion. Our technique may assist in preventing postoperative bar infection and removal caused by severe bar infection. Furthermore, this camera is potentially suitable for many situations in infection monitoring following subcutaneous implant surgery.

1. Introduction

The Nuss procedure is a well-established method for minimally invasive repair of pectus excavatum, which is both safe and shows good cosmetic results [1]. However, there have been reports of severe intraoperative and postoperative complications, among which postoperative pectus bar infection is one of the most serious complications. We use a handheld infrared thermal imaging camera (FLIR B60; FLIR Systems Inc., Wilsonville, OR, USA) to screen for postoperative infections in patients following the Nuss procedure.

2. Case Presentation

A 28-year-old man with recurrent pectus excavatum following the Ravitch procedure was treated with the Nuss procedure. Implantation of three bars was required to correct his chest deformity. At 5 weeks postoperatively, he complained of slight sluggishness. His serum C-reactive protein level was simultaneously elevated to 1.5 mg/L from 0.1 mg/L (3 weeks after operation), and the rate of neutrophilic leukocytes had increased from 54% to 78%. However, clinical infectious signs and symptoms were mostly absent, and we could not determine whether these observations were due to infection at the surgical site or another site, for example, upper respiratory inflammation (e.g., common cold). However, infrared thermal imaging clearly indicated a hot spot in the operated anterolateral chest wall (Figures 1(a) and 1(b)). The patient immediately received intravenous antibiotic therapy (meropenem) with hospitalization for 1 week, followed by oral administration of minocycline. His symptoms improved, and surgical debridement was not required.

3. Discussion

The Nuss procedure is a well-established method for minimally invasive repair of pectus excavatum, which is both safe and shows good cosmetic results [1]. However, there have been reports of some severe complications in both the intraoperative and postoperative periods, among which postoperative pectus bar infection is one of the most serious complications. Infections after the Nuss procedure were
to aid in detection of postoperative infection in the Nuss procedure. Furthermore, this camera may be suitable for infection monitoring following subcutaneous implant surgery, for example, mammary implants, reconstruction titanium plates, tissue expanders, pacemakers, defibrillator implants, and so forth.

**Conflict of Interests**

The authors declare no conflict of interests.

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**References**


