

Is it possible to predict the development of an incisional surgical site infection and its severity after biliary tract surgery for benign disease?

Takehiro Fujii · Hiroyuki Kato · Makoto Suzaki ·
Takashi Noguchi · Shuji Isaji

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Abstract

Background/purpose Wound infection; that is, incisional surgical site infection (ISSI), is a common complication after biliary tract surgery. The aim of the present study was to identify the various risk factors for wound infection and to establish a formula to predict the development and severity of wound infections.

Methods We analyzed the clinical data on 207 consecutive patients who underwent biliary surgery for benign diseases at our hospital. We identified the factors with the greatest influence on wound infection after biliary tract surgery, based on a statistical procedure. An original scoring system (ISSI predictive score) was proposed based on these risk factors.

Results The incidence of postoperative wound infection was 9.7% (20/207). The patient's performance status; bile culture; perioperative fasting period (days); and intraoperative bile spillage were the most influential risk factors for wound infection. The incidences of wound infection in patients with ISSI predictive scores of >2.7 points and those with scores of 0–2.7 points were 75.0% (12/16) and 4.2% (8/191), respectively. Our score also correlated significantly with the severity of wound infection ($r = 0.488$, $P < 0.001$) and the length of the postoperative hospital stay ($R = 0.508$, $P < 0.001$).

Conclusion Our original scoring system makes it possible to predict not only the development of a wound infection and its severity after biliary tract surgery, but also the length of the postoperative hospital stay.

Keywords Surgical site infection · Prediction of wound infection · Acute cholangitis · Acute cholecystitis · Bile culture

Introduction

Although wound infection; that is, incisional surgical site infection (ISSI), is a common complication after biliary tract surgery, this common complication has been largely overlooked because it has little influence on the postoperative course. However, once an infection develops, it prolongs the hospital stay and reduces the patients' quality of life, and it can lead to various subsequent complications, especially in elderly patients. According to several previous studies regarding wound infection after biliary tract surgery, patient age, comorbid diabetes, positive bile culture, open cholecystectomy, and choledochotomy have been commonly regarded as the factors associated with the greatest risk of developing an infection [1–3]. However, despite these known risk factors, wound infections after biliary tract surgery are still common, and their pathogenesis is still being debated.

It is well known that postoperative wound infection markedly prolongs the duration of hospitalization, and preventing wound infections would be beneficial to both patients and hospitals [4–6]. In particular, deep-seated infections are more likely to prolong the hospital stay than superficial incisional infections [4], and such infections promote the development of incisional hernias [7] and result in unsightly scars.

T. Fujii · H. Kato · M. Suzaki · T. Noguchi
Department of Surgery, Kinan Public Hospital,
4750 Atawa, Mihama 519-5293, Japan

T. Fujii (✉) · S. Isaji
Department of Hepatobiliary Pancreatic and Transplant Surgery,
Mie University Graduate School of Medicine,
2-174 Edobashi, Tsu 514-8507, Japan
e-mail: aitake1101@gmail.com