Intraoperative Bile Spillage as a Risk Factor for Surgical Site Infection - A Large NSQIP Database Analysis

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## Abstract

### Introduction

Laparoscopic cholecystectomy (LC) is one of the most commonly performed operations in the United States. Surgical site infection complicates 1-2% of these operations and can be associated with significant morbidity. Bile spillage (bile spillage) occurs in many of these operations. The associated risk of surgical site infection (SSI) is an ongoing area of research.

### Methods

NSQIP registries between 2005 and 2018 were queried using *Current Procedural Terminology* codes 47562 and 47563 to identify patients undergoing elective laparoscopic cholecystectomy. Patients were considered to have bile spillage if the wound classification was annotated 3 or 4. Acute cholecystitis was excluded by ICD code. Patients were propensity scored for bile spillage and matched for pre-operative risk factors. The rates of surgical site infections, morbidity, and mortality and length of stay were analyzed.

### Results

47,919 (31,946 with no spillage and 15,973 with spillage) patients were matched and included in the analysis. After matching, no significant difference was found in superficial or deep SSI regardless of bile spillage. An absolute increase in organ-space SSI of 0.32% was detected. The group with bile spillage had small increases in both minor (1.41% vs. 2.12%; *p* = <0.01) and major (0.67% vs. 1.01%; *p* = <0.01) complications. There was no difference in mortality.

### Conclusion

This retrospective database review demonstrates a very small association between BS and organ-space infections. It is unclear if routine antibiotic prophylaxis or post-exposure antibiotic treatment of bile spillage is necessary given the small clinical impact of BS.