

Prolonged post-operative stay following laparoscopic cholecystectomies and its contributing factors

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Introduction

Laparoscopic cholecystectomy (LC) is the treatment for symptomatic gallstone disease and LC are commonly performed as a day case with low risk of complications. Patients who undergo LC for gallstone disease are a heterogenous population with many variables involved in their management. The post-operative course, particularly the length of the post-operative stay is likely dependent on many pre- and peri-operative factors. Identification of these factors will help guide surgical decision making, aid operative planning (e.g decision for day surgery) and inform patient consent.

Objectives

Our aims were the following:
- to identify the proportion of patients who stay 3 days or longer post-operatively (prolonged post-operative stay)
- identify variables that most contribute to prolonged patient stay following LC.

Methods

We retrospectively collected data for all patients who underwent either an emergency or elective LC in a tertiary hospital from 2015 to 2020. Open cholecystectomies after conversion from laparoscopic cholecystectomy and unplanned bile duct explorations were included. Planned open cholecystectomy, bile duct exploration and cholecystectomy for malignant disease were excluded. Data was collected retrospectively from electronic records using data-linkage methodology.

The length of stay was recorded. Variables associated with prolonged post-operative stay were identified using multivariate logistic regression models. Variables included age (<40, 40-60, >60), male sex, ASA (1, 2, ≥3), cholecystitis (y/n), gallstone pancreatitis (y/n), choledocholithiasis (y/n), number of biliary-related admissions (1, 2, ≥3) pre-op ERCP, pre-op cholecystostomy, emergency versus elective LC, subtotal LC, conversion to open, drain insertion, intra-operative complications, post-operative complications (Clavien-Dindo ≥2) and significant post-operative pain. Insignificant variables were eliminated from the model using a top down approach. The model was created using the STATA/IC 16.1 statistical software.

Results

A total of 2768 patients were included (median age, 53 years (range 13-92); M:F, 1:2.7, median ASA, 2). Two-hundred and ninety-seven (10.7%) patients stayed at least 3 days following LC.

Of the patients with a prolonged post-operative stay (≥ 3 days), 51.5% had an emergency LC, 76.0% had previous cholecystitis, 12.1% had intra-operative complications, 37.4% had post-operative complications, 28.6% had a subtotal LC, 51.2% had intra-operative drains and 9.1% had conversion to open cholecystectomy.

Table 1. Multivariate logistic regression – factors associated with prolonged post-operative stay

Variable	Odds Ratio	Std. Err.	P-value	95% con. interval
ASA ≥3	5.4	1.5	<0.001	3.1-9.3
Male sex	1.6	0.4	0.045	1.0-2.6
Emergency LC	4.9	1.1	<0.001	3.1-7.7
Acute Cholecystitis	3.2	0.8	<0.001	2.0-5.0
Choledocholithiasis	1.9	0.6	0.022	1.1-3.4
Subtotal cholecystectomy	6.4	3.2	<0.001	2.4-17.0
Conversion to open	80.2	70.8	<0.001	14.2-452.1
Drains	14.5	4.9	<0.001	7.4-28.1
Intra-operative complication	4.7	2.6	0.006	1.6-13.9
Post-operative pain	24.3	6.3	<0.001	14.6-40.4
Post-operative complication	8.4	2.2	<0.001	5.0-14.0

Discussion

The rate of prolonged post-operative stay following laparoscopic cholecystectomy is significant at 10.7%. Although some of the inherent risks of a complicated cholecystectomy including subtotal cholecystectomies, drain insertion and intra-operative complication cannot be eliminated, strategies should be implemented to minimise them. Most important is patient information regarding the possibility of prolonged postoperative stay and need for further management, particularly for high-risk patients. This should be followed by the clinical aim to optimise pain relief to reduce postoperative stay and make the stay tolerable for patients who have had complicated cholecystectomies.

References

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