Pre-operative Predictive Risk Factors for Admission Following Elective Day Case Laparoscopic Cholecystectomy

R. Jaroenchasri, D. Warrell, M. Franke, H. Nageswaran

Introduction

Elective laparoscopic cholecystectomy (LC) is commonly performed as a day case surgery across the UK. Patients are found to have improved post-operative outcomes following elective day case LC with additional benefits of reducing inpatient burden on healthcare resources[1]. As a result, unanticipated overnight admission following day case LC leads to strain on healthcare resources and availability of inpatient beds. Patient selection for day case surgery can be difficult due to the heterogeneity of the patient group undergoing elective LC; with multiple factors contributing to their unsuitability for day case surgery[2]. This study aims to identify predictors that may indicate patients' reduced suitability for day surgery.

Methods

Data collected over an 18-month period covering 01/01/2022 and 31/07/2023, in Aneurin Bevan University Health Board, Wales, UK. Patient data were collected on all patients who underwent elective LC, including age, gender, ethnicity, BMI, preceding interventions, ASA and co-morbidities amongst others. Variables with $p < 0.05$ on univariable analysis were included in a multivariate regression analysis. A p value of <0.05 was also used to define statistical significance in the multivariable model.

Results

1,041 patients were included in this study, 22% male 78% female. Overall, 36.9% required admission. A higher proportional of male patients (44.6%) were observed to require overnight admission compared to female (34.8%).

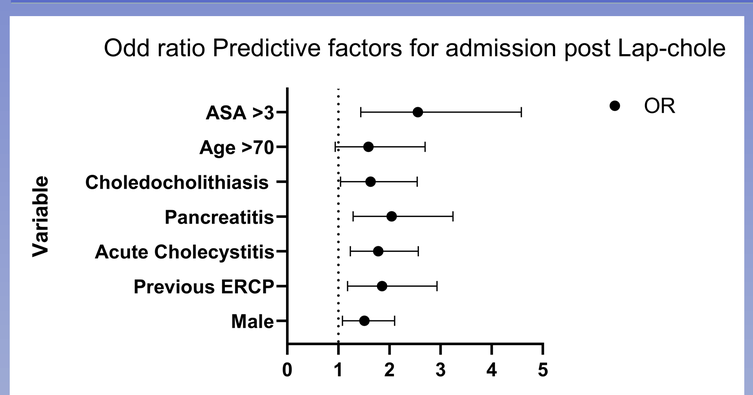
Comparing admitted patients to discharged Median age (years) was 58 vs 47 (p=<0.0001), BMI 32 vs 31 kg/m2 (p=<0.0001)

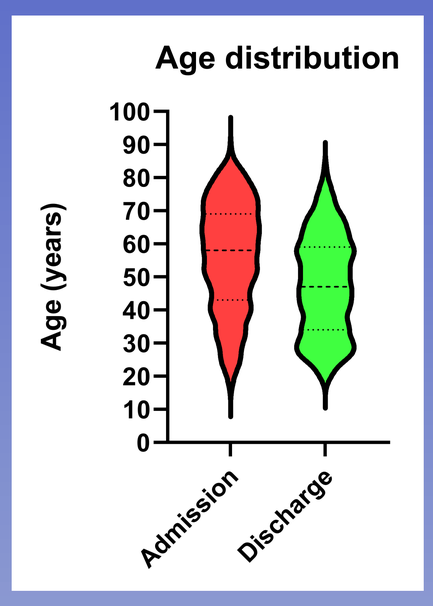
On univariant analysis there were numerous statistical significance including male gender (44.64%vs34.78%;p=0.007), preceding ERCP (15.95%vs8.54%;p=0.0004), presenting complaints such as acute cholecystitis(AC) (28.66%vs16.71%;p=<0.0001), pancreatitis(15.52%vs7.79%;p=0.0002), and choledocholithiasis(20.60%vs10.62%;p=<0.0001), co-morbidities including previous PE(2.86%vs0.0%;p=<0.0001), AF(3.90%vs0.61%;p=0.0003), HTN (30.91%vs16.77%;p=<0.0001), gastric ulcer(1.30%vs0.0%;p=0.0068), and diabetes (12.86%vs7.16%;p=0.0027).

Multivariant analysis identified the following predictive factors for admission post elective LC; ASA >3 and previous pancreatitis have odd ratios >2 with statistically significant *p* values.

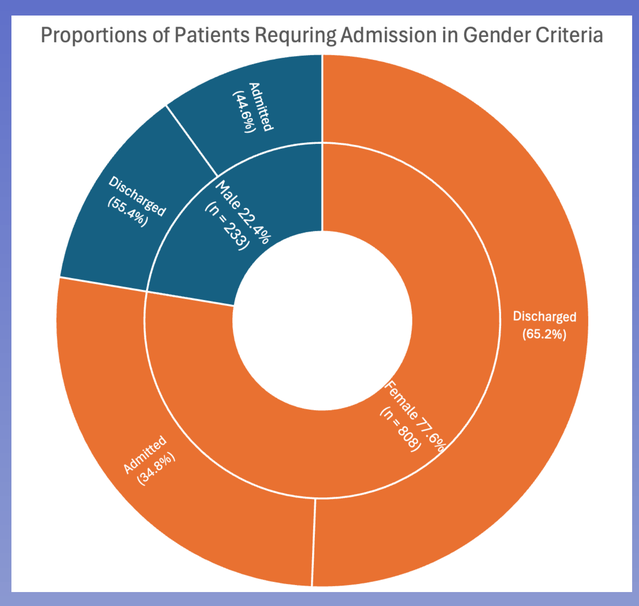
Table 1. Multivariant analysis of predictive factors for admission post elective LC.

Variable	Odd Ratio	Confidence Interval (95%)	p value
Male	1.509	1.082–2.102	0.0149
ERCP	1.858	1.180–2.933	0.0076
Pancreatitis	2.044	1.288–3.244	0.0024
Choledocholithiasis	1.631	1.042–2.543	0.0315
Age >70 years	1.656	1.014–2.708	0.0438
ASA >3	3.192	1.440–4.58	0.0014





Comparison of age distribution for patients requiring admission vs. discharge following elective LC.



Nearly 50% of all male patients required admission following elective LC, compared to ~35% of female patients.

Conclusion

Multiple factors including age, BMI, male gender and previous ERCP have been identified to be associated with admission following elective LC. This underscores the importance of thorough preoperative assessment and risk stratification. Further examination of reasons underlying the predictors identified above and future validation studies may allow the development of an accurate triaging system for use in clinical practice.

References:
1. Carter M. Study shows day case laparoscopic cholecystectomy is safe and can support post-pandemic elective recovery [Internet]. 2024 [cited 2024 May 30]. Available from: https://gettingitrightfirsttime.co.uk/study-shows-day-case-laparoscopic-cholecystectomy-is-safe-and-can-support-post-pandemic-elective-recovery/#:~:text=The%20authors%20also%20found%20day,case%20surgery%20having%20similar%20outcomes.
2. Lucocq J, Scollay J, Patil P. Elective laparoscopic cholecystectomy: Recurrent biliary admissions predispose to difficult cholecystectomy. Surgical Endoscopy. 2022 Jan 13;36(9):6403–9. doi:10.1007/s00464-021-08986-x