

Laparoscopic common bile duct exploration for the next generation: A rationale for junior surgeons to operate

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◇ Introduction

- **Laparoscopic common bile duct exploration (LCBDE)** is a safe, cost-effective single-stage alternative to ERCP for choledocholithiasis.
- Despite proven efficacy, **few surgeons perform LCBDE**, largely due to perceived complexity and limited training exposure.
- This study investigates whether **junior surgeons** can safely perform LCBDE as independent or primary operators.

◇ Methods

Design: 15-year retrospective audit (2008–2023) at Northern Health, Melbourne.

Outcomes:

- *Primary:* Successful LCBDE (stone clearance without 6-month recurrence or ERCP).
- *Secondary:* Operative time, bile leak, and complication rates.

Analysis: Univariate and multivariate logistic regression (STATA v18).

Operator Groups:

- HPB surgeons
- General surgeons
- Junior surgeons (registrars or post-fellowship trainees)

Table 3 – Univariate analysis of factors in predicting successful outcome

Independent variables	Odds ratio (OR)	95% CI	p-value
Age at admission	0.98	0.97 – 0.99	<0.001
Preop imaging findings of CBD stones	0.74	0.51 – 1.1	0.13
Preop ERCP	0.43	0.20 – 1.0	0.04
Max preop CRP	0.99	0.99 – 1.00	0.04
Preop Bilirubin	0.99	0.99 – 1.00	0.07
Emergency admission	1.1	0.68 – 1.7	0.73
Intra-operative findings of CBD stones	2.4	0.92 – 6.1	0.07
Junior surgeon independently or as partial primary	1.5	1.0 – 2.2	0.03
Registrar independently or as partial primary	0.95	0.44 – 2.0	0.89
Post-fellowship trainee surgeon independently or as partial primary	1.3	0.75 – 2.4	0.33
General surgeon as primary only	0.70	0.40 – 1.3	0.23
HPB surgeon as primary only	0.82	0.42 – 1.6	0.55

CBD – Common Bile Duct

ERCP – Endoscopic Retrograde Cholangiopancreatography

CRP – C-Reactive Protein

HPB – Hepato-Pancreato-Biliary

Table 4 – Multivariate analysis of factors in predicting successful outcome

Factors	Odds ratio (OR)	95% CI	p-value
Age at admission	0.99	0.98 – 1.00	0.07
Preop imaging findings of CBD stones	0.85	0.50 – 1.4	0.54
Preop ERCP	0.57	0.18 – 1.8	0.34
Max preop CRP	0.99	0.99 – 1.00	0.31
Preop Bilirubin	0.99	0.99 – 1.00	0.046
Non-bilirubin LFT elevation	1.1	0.69 – 1.74	0.71
Intra-operative findings of CBD stones	5.5	2.6 – 11.7	<0.001
Junior surgeon independently or as partial primary	1.8	1.1 – 2.9	0.016

CBD – Common Bile Duct

ERCP – Endoscopic Retrograde Cholangiopancreatography

CRP – C-Reactive Protein

LFT – Liver Function Test

◇ Results

- **Total cases:** 962 (2008–2023)
- **Overall success rate:** 84.4%
- **6-month retained stones:** 3.6%
- **Junior surgeons as primary/partial operators:** 87.3% success rate
- Median operative time: 150 minutes ($p<0.001$)
- **Predictors of successful outcome (multivariate):**
 - Intraoperative visualisation of CBD stones (OR 5.5, $p<0.001$)
 - Junior surgeon operator (OR 1.8, 95% CI 1.1–2.9, $p=0.016$)
 - **No increase** in serious complications or readmissions.

◇ Conclusion

- **Junior surgeons can perform LCBDE safely and effectively** under structured supervision.
- Their involvement is associated with **positive outcomes** and supports skill transfer to the next generation.
- Training programs should **incorporate LCBDE** into structured curricula to sustain surgical expertise and patient access to single-stage management.

◇ Key Message

- When junior surgeons are supported with structured supervision and stepwise exposure, they can achieve **comparable safety and success rates** to senior surgeons.
- **Empowering junior surgeons to perform LCBDE ensures continuity of expertise.**