

Cholecystectomy Timing after Percutaneous Cholecystostomy in the COVID-19 Pandemic

Daniel Bent Jr MD, Sumedh Kaul MS, Gabriel Brat MD
Beth Israel Deaconess Medical Center, Boston, MA

Background

- Percutaneous cholecystostomy (PC) is an alternative treatment for acute cholecystitis when cholecystectomy may be initially prohibitive.
- Definitive management is interval cholecystectomy after medical optimization.
- Ideal timing of cholecystectomy has not been identified.

Objective

- ✓ Evaluate impact of time to interval cholecystectomy on surgical outcomes during the COVID-19 pandemic when there were restrictions on non-urgent surgery.

Methods

- Single institution retrospective cohort study
- All adults (18+) who had PC for acute cholecystitis during three time periods:

Pre-COVID	September 2019 – March 2020
COVID	April 2020 – September 2020
Post-COVID	September 2021 – September 2022

- **Exclusion:** acalculous cholecystitis, history of hepatobiliary malignancy, prior gallbladder interventions, pregnant.

Baseline Characteristics

Characteristic	Overall n = 97	Pre-COVID n = 23	COVID n = 27	Post-COVID n = 47	p-value
Age, median	76	76	75	77	0.99
Male	59 (61%)	16 (70%)	17 (63%)	26 (55%)	0.50
Interval Cholecystectomy	41 (42%)	10 (43%)	15 (56%)	16 (34%)	0.19
30-day Mortality after PC	7 (7%)	0 (0%)	2 (7%)	5 (11%)	0.35
CCI ≥4	85 (88%)	22 (95%)	21 (78%)	42 (90%)	0.24
Length of Stay Index	8	8	9	8	0.88
Admission, median (IQR)	(4, 14)	(5, 11)	(4, 21)	(4, 14)	
ICU Days, median (IQR)	0 (0-2)	0 (0-2)	0 (0-2)	0 (0-2)	0.81

Outcomes for Interval Cholecystectomy

Outcome	Overall n = 41	Pre-COVID n = 10	COVID n = 15	Post-COVID n = 16	p-value
Interval Cholecystectomy, days, median (IQR)	58 (42, 115)	119 (77, 181)	55 (42, 104)	51 (30, 70)	0.04
Laparoscopic	24 (59%)	6 (60%)	11 (73%)	7 (44%)	0.27
Conversion to Open	8 (20%)	2 (20%)	2 (13%)	4 (25%)	0.88
Subtotal Cholecystectomy	5 (12%)	1 (10%)	0 (0%)	4 (25%)	0.10
Operative Drain	16 (39%)	3 (30%)	4 (27%)	9 (56%)	0.20
ER/Admission with PC Before Surgery, ≥1	17 (41%)	4 (40%)	2 (14%)	11 (68%)	< 0.01
IR PC Tube Interventions Before Surgery, ≥1	21 (51%)	5 (50%)	7 (47%)	9 (56%)	0.92

Additional Results

Postoperative 30 Day Outcomes

No statistically significant differences between cohorts for the following (overall rates):

- Mortality (2%)
- Length of stay (2 days median)
- Re-admissions, ≥1 (15%)
- Post-operative IR drain for abscess (7%)
- Post-operative ERCP (10%)
- Surgical site infection (15%)
- Acute kidney injury (10%), Myocardial infarction (2%), or other complications (7%)

Conclusions

- ✓ Overall, less than half of patients with a percutaneous cholecystostomy for acute calculous cholecystitis will have definitive surgery.
- ✓ Patients who had a PC placed pre-COVID had significantly longer time to interval cholecystectomy likely due to restrictions on non-urgent surgery.
- ✓ Despite longer time to cholecystectomy for the pre-COVID cohort, there were no significant differences in pre-operative PC tube complications, intra-operative difficulty or post-operative complications.