

Minimally Invasive Cholecystectomy is Safe and Feasible Following Endoscopic Transpapillary Cystic Duct Stenting

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BACKGROUND

- The surgical management of acute cholecystitis (AC) in critically ill or medically complex patients remains challenging.
- Advances in endoscopic techniques now allow for endoscopic transpapillary cystic duct (TC) stenting and endoscopic gallbladder drainage in lieu of percutaneous cholecystostomy tubes.
- These methods can be utilized as a bridge while the patient is medically optimized for surgery, however, there is a gap in literature describing this treatment pathway.

OBJECTIVE

We conducted a case series to address the hypothesis that minimally invasive laparoscopic cholecystectomy is safe and feasible following transcystic stenting.

METHODS

- Single site case series from a tertiary care center.
- Identified patients via manual chart review of all individuals who underwent TC stenting from January 1, 2019 to December 31, 2024.
- Includes only patients who subsequently underwent cholecystectomy following TC stenting (17 patients).
- Collected data through manual chart review, including: demographics, TC stenting procedure details, perioperative variables, discharge disposition, and complications within 30 days postoperatively.
- With this data, descriptive statistical analysis (mean ± standard deviation) was performed.

RESULTS

Demographics		
Age (mean, SD)	57.3	15.2
Gender (n, %)		
Male	8	57.1
Female	6	42.9
Race (n, %)		
Asian	1	7.1
Caucasian	10	71.4
Hispanic	3	21.4
BMI (mean, SD)	29.3	6.7

Table 1: Demographics of included patients

Co-Morbidities (n, %)		
Atrial fibrillation	2	1.4
Cirrhosis	5	29.4
COPD	1	5.9
GERD	5	29.4
Hypertension	12	70.6
Hyperlipidemia	8	47.1
Coronary artery disease	3	17.6
Prior VTE	5	29.4
OSA on CPAP	2	11.8
Diabetes	5	29.4
Congestive heart failure	2	11.8
Chronic renal insuffiency	4	23.5
Asthma	3	17.6
Prior malignancy	3	17.6
Prior abdominal surgery	6	35.3

Table 2: Past medical and surgical histories of all patients included

Transcystic Duct (TC) Stenting (n, %)		
No repeat TC stenting	10	58.82
1 repeat TC stenting	6	35.29
2 repeat TC stenting	1	5.88
Indication for repeat stenting		
Cholangitis	1	14.29
Recurrent Cholecystitis	4	57.14
Stent Exchange	2	28.57

Table 3: Number of repeat TC stents performed and their indications

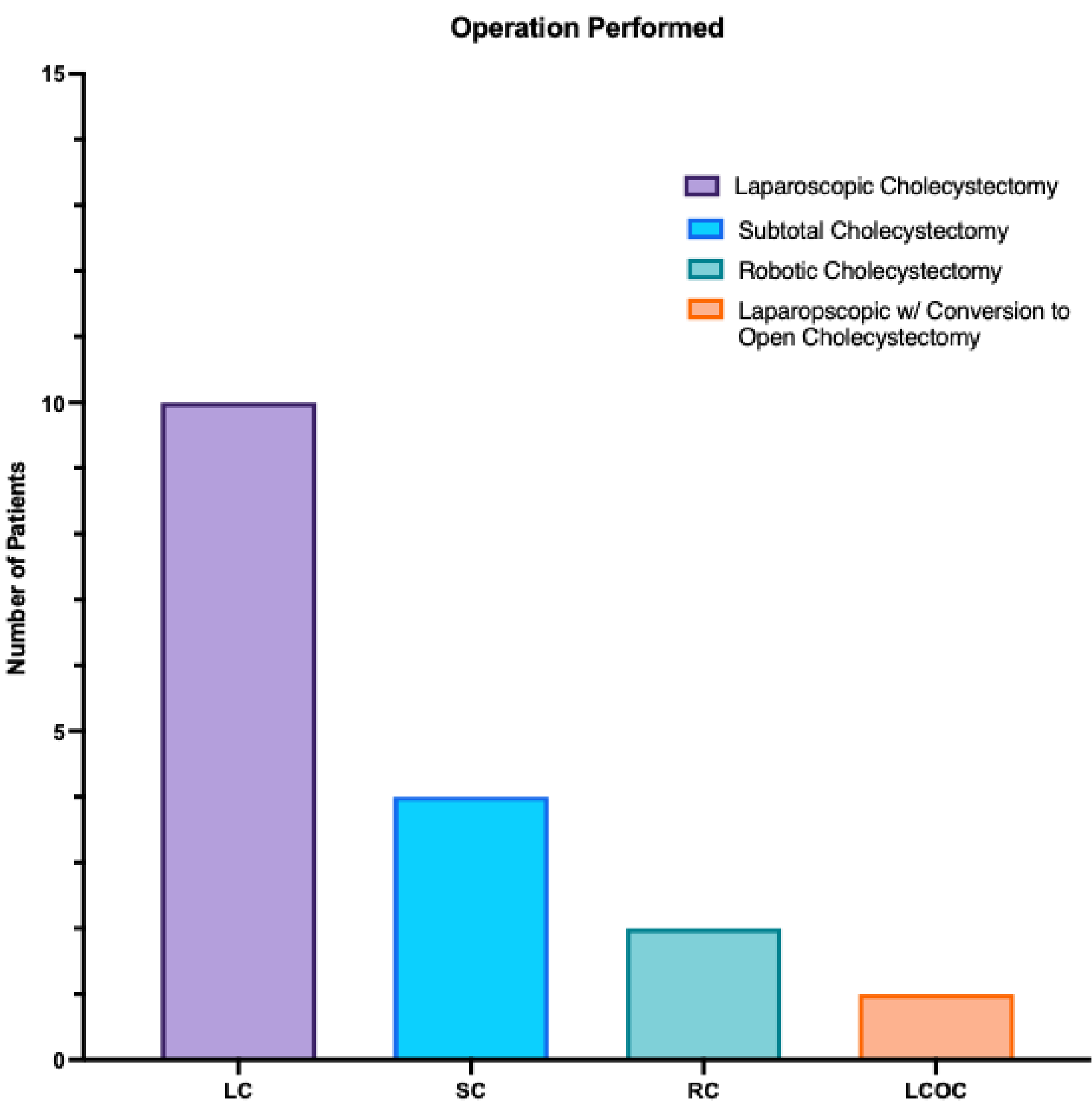


Figure 1: Types of cholecystectomy performed

Perioperative Metrics		
ASA assigned on day of surgery (mean, SD)	3.12	0.70
Operative time (mean, SD)	132.40	60.53
Days to surgery from initial stent placement (mean, SD)	352.76	444.97
Days to surgery from most recent stent placement (mean, SD)	231.59	340.06
Post Op LOS (mean, SD)	2.47	3.73
Stents in place at time of surgery (n, %)		
Yes	9	52.94
No	8	47.06
Discharge Destination (n, %)		
Home +/- services	16	94.12
Skilled nursing	1	5.88

Table 4: Pre- and post-operative metrics

Post Op Complications within 30 days (n, %)		
ICU Admission	1	11.1
Surgical Site Infection		
Superficial	4	44.4
Deep	1	11.1
Organ Space	1	11.1
Post Operative Hemorrhage	0	0
VTE	0	0
Pulmonary Complication	1	11.1
Bile Leak	1	11.1
Death	0	0

Table 5: Post-operative complications identified at 30 days

DISCUSSION

- 94% of the operations were completed in a minimally invasive fashion, indicative that a minimally invasive cholecystectomy is safe and feasible following transcystic duct (TC) stenting.
- Patients who underwent repeated rounds of TC stenting did not appear to have differing outcomes compared to those who did not.
- There was a high range of variability in number of days to operation from the last TC stenting, as there is no apparent difference in outcomes between earlier vs. later operation, the timeline to OR may be largely surgeon and patient dependent.
- Of our cohort, 94% of patients were discharged home, indicating that in the immediate post-operative period, despite our populations higher rate of medical co-morbidities, they did not experience significant post-operative deconditioning.
- The most common 30 day post-operative complication was surgical site infection (4/17), however, our sample size is too small to assess if there is an increased risk of more severe post-operative complications.

CONCLUSIONS

Our case series clearly demonstrates that interval minimally invasive cholecystectomy is safe and feasible for this cohort of patients, and thus definitive surgical management remains an option following transcystic duct stenting. Areas of future investigation should include whether there is an optimal timing of operation following stenting and if whether there is any difference in post operative complications for this specific patient population.