

To evaluate the incidence of gallbladder content spillage and the factors contributing to it during laparoscopic cholecystectomy

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Abstract

Aim: To evaluate the incidence of gallbladder content spillage and the factors contributing to it during laparoscopic cholecystectomy.

Materials and methods: The research comprises 100 consecutive laparoscopic cholecystectomy patients. The data was collected prospectively in accordance with the proforma, which documented the patient's detailed diagnosis, preoperative physical and ultrasound abdomen findings, intra-operative details such as technique, spillage of stones, cause of spillage, method and port of specimen extraction, duration of surgery, and postoperative events and complications. A one-week, one-month, six-month, and one-year postoperative follow-up was undertaken.

Results: In our research, 100 consecutive laparoscopic cholecystectomy procedures were performed. There were 63 female patients and 37 male patients among them. The research group's average age was 49.85 ± 11.58 years. The majority of the patients had several 1 cm movable gallstones. In 88% of patients, the procedure lasted between 30 and 60 minutes. Adhesions of varied degrees were found in 78% of the cases, resulting in a 7% conversion rate. Minimal bleeding was seen in 51% of the instances, significant haemorrhage in 37% of the cases, and no bleeding was observed in 12% of the cases. Gallstone leakage happened in 20% of the instances. In our research, the complication rate for laparoscopic cholecystectomy was 3%; however, the complication rate from spilled gallstones was 1%. At 1, 6, and 12 months of post-operative follow-up, no complaints about the procedure were noted.

Conclusion: Leakage of gallstones and bile after routine laparoscopic cholecystectomy is uncommon and usually results in very minor problems. To prevent difficulties after a spill, it is crucial to remove the stones and do a peritoneal toileting.

Keywords: Laparoscopic Cholecystectomy; Gall Stone Spillage; Unretrieved Intraperitoneal Gallstones.

INTRODUCTION

The cholecystectomy is the second most frequent abdominal procedure in general surgery.¹ Better aesthetic outcomes, less postoperative discomfort, a shorter hospital stay, and a quicker recovery time are just a few of the benefits of laparoscopic cholecystectomy compared to the traditional approach.^{2,3} Gallbladder perforation (GP), a frequent intra operative complication after cholecystectomy, has been documented to occur with a high incidence (between 10% and 33%).⁴ Both the causes and effects of GP have been investigated.⁴ There are several factors that may increase the likelihood of GP occurring, including being male, having a history of acute cholecystitis or laparotomies, doing the procedure using a laser, having an inflammatory or nonvisualized gallbladder, or undergoing a very challenging procedure.^{5,6} Furthermore, there are very few reports of serious consequences from bile and stone leakage. It has been said that since lost stones following GP are a possible nidus of infection and bile spilling might produce chemical peritonitis, they may sometimes cause additional problems such as discomfort, fever, or intra abdominal abscesses. However, GP does not impair the results of the treatment.⁷ However, most of the information available in the literature may be deceptive because the data is largely based on retrospective information, and it is likely that GPs were not recorded in the operation documents because GP is generally believed to be harmless, with no adverse consequences in most cases.

Material and methods

Laparoscopic cholecystectomy was performed on 100 patients in a row for this research. Using the proforma, we prospectively collected data on the patient's diagnosis, preoperative physical and ultrasound abdomen findings, intra-operative details like technique, spillage of stones, cause for spillage, method and port of extraction of specimen, duration of surgery, and postoperative events and complications. One week, one month, six months, and one year after surgery, patients were checked in with for an update. There were in-person evaluations in the outpatient clinic after one week, phone interviews after one month, and more in-person visits after six months and a year. Gallstone leakage and complications during laparoscopic cholecystectomy were examined via the data gathered.

Results

In our research, 100 consecutive laparoscopic cholecystectomy procedures were performed. There were 63 female patients and 37 male patients among them. The research group's average age was 49.85 ± 11.58 years. The vast majority of patients complained of discomfort in the right upper quadrant and/or epigastric area. Nonspecific dyspepsia was the second most often reported problem. Diabetes mellitus affected 25 of the individuals. 77% of the patients in the study had uncomplicated symptomatic gallstones, 4% had incidentally detected asymptomatic gallstones, 1% had gallbladder polyps, 17% had gallstone complications (such as gallstone pancreatitis, cholecystitis, obstructive jaundice, Mirizzi's syndrome, mucocele, and empyema gallbladder), and 1% had acalculous. The pre-operative ultrasonography results are shown in Table 1. In this table, the usual thickness of the gallbladder wall was set at 3 mm, and the common bile duct was set at 7 mm. Inflammation was inferred by increased wall thickness. A dilated common bile duct suggested a stone, a distal CBD stricture, or a passing stone. The majority of the patients had several 1 cm movable gallstones. In 88% of patients, the procedure lasted between 30 and 60 minutes. Adhesions of varied degrees were found in 78% of the cases, resulting in a 7% conversion rate. Minimal bleeding was seen in 51% of the instances, significant haemorrhage in 37% of the cases, and no bleeding was observed in 12% of the cases. Gallstone leakage happened in 20% of the instances. Three to five stones were spilled in 70% of these instances. Less than two stones were spilled in 32% of instances, whereas more than five stones were spilt in 7% of cases. In 61% of instances, peritoneal toileting was performed. All visible peritoneal stones were removed entirely. Table 3 shows the details of the intraoperative results. Table 4 depicts the process for gallstone leakage. Gallbladder perforation was clearly the cause of spilling in all instances. Dissection was the most prevalent cause of gallbladder perforation, followed by the application of a tooth grasper to the gallbladder. The administration of a no-tooth grasper to the gallbladder was the least stressful procedure. Table 5 summarises the postoperative occurrences and observations made throughout the follow-up period. Prior to discharge, two patients had gallbladder fossa-Haematoma collections due to a slipped cystic artery clip, which was repaired with relook surgery. Another patient was treated conservatively after experiencing a biliary leak from the cystic duct stump with loculated collection. In our research, the complication rate for laparoscopic cholecystectomy was 3%; however, the complication rate from spilled gallstones was 1%. At 1, 6, and 12 months of post-operative follow-up, no complaints about the procedure were noted.

Table 1. Ultrasound Findings

Ultrasound Findings	Number	%
Size of GB		
Normal	60	60
Distended	39	39
Contracted	1	1
Sludge		
present	10	10
Absent	90	90
Number of stones-		
0	0	0

1	15	15
More than 1	85	85
GB wall thickness		
>3mm	19	19
<3mm	81	81
CBD size		
>7mm	11	11
<7mm	89	89
Size of Stone		
<10mm	88	88
10-20mm	4	4
>2cm	8	8

Table 2 Gender and age distribution

Gender	Number
Male	37
Female	67
Age	49.85±11.58 years

Table 3. Intraoperative Findings

Intraoperative Findings	Number	%
Surgery duration		
below 30min	6	6
30-60min	88	88
60-90min	4	4
above 90min	2	2
Extension of incision		
Spilt stones	20	20
Wash given		
below 250ml	36	36
above 250ml	64	64
Bleeding		
none	51	51
minimal	37	37
moderate	12	12
severe	0	0
Port of extraction		

umbilicus	58	58
epigastrium	42	42
Adhesion		
partial	78	78
complete	15	15
dense	7	7

Table 4. Mechanism for Spillage

Mechanism for Spillage	Number	%
Tooth grasper	12	12
Non-toothed grasper	2	2
During traction	9	9
During dissection (blunt and sharp dissection)	19	19

Table 5. Post-Operative Details as Inpatient

Parameters	While in Hospital	1 week Post- op	1 month Post-op	6 months Post-op	1 yr. Post-op
Post-op WBC	1	1	0	0	0
Post-op Ultrasound	2	1	0	0	0
Refd pain to Rt shoulder	7	0	-	-	-
Fever	4	0	0	0	0
Pain abdomen	21	1	0	0	0
Abnormal US	1	0	0	0	0
Average days in hospital	2.49	-	-	-	-

Discussion

In the last ten years, laparoscopic cholecystectomy has replaced open surgery as the preferred method of treating gallstones. Problems with bile and gallstone leakage after laparoscopic cholecystectomy have persisted unabated throughout the years. 8,9 As surgeons get more expertise with this technique, they are more likely to encounter acute friable gallbladders, which may be difficult to handle because of restricted room for dissection and complications with instrumentation that cause tearing of the gallbladder wall. It is not known what happens to lost gallstones. Early on in the development of laparoscopic cholecystectomy, it was suggested that lost gallstones should not be treated as a health risk. 10-14 Clinic accounts from the early days of laparoscopic cholecystectomy, using rat models, assert that peritoneal exposure to spilled gallstones has no harmful effects. Welch arrived at the same findings using animal models. 14

In spite of this, when more information became available, a number of documented issues surfaced. In 2002, Brickman conducted a meta-analysis of 116 publications investigating 91 instances of gallstone problems after laparoscopic cholecystectomy carried out over a period of 8 years. They came to the conclusion that losing several or big pigmented stones might lead to dangerous consequences, and that in such a circumstance, a switch to open surgery could be warranted. 15-17

The abdominal wall abscess, broncholithiasis, stone expectoration, cellulitis, dyspareunia, erosion to the back, fat necrosis posterior of the rectus muscle, fever, fistula formation, gallstone granuloma, gluteal abscess, granulomatous peritonitis mimicking endometriosis, ileus, intestinal obstruction, implantation malignancy, incarcerated hernia.^{17,18} This prospective research is the first to report on a late complication associated with spilled stones at our hospital. In our study, 20% of gallstones ruptured during surgery. The incidence has been reported anywhere from 2% to 11%.^{19,20}

One possible explanation for our increased frequency is that we treat all cases of gallbladder illness same, regardless of how severe they are or how easily they may be manipulated. We found no cases of lost gallstones in our study, despite careful efforts to recover every single one. 21-24 Defending the assertion that no stones were overlooked is problematic. According to the available evidence, the incidence rate is somewhere between 2.4% and 4%.^{25,26} Only one percent of patients in our study had complications due to retained stones. There is some evidence in the literature to imply a difference of 7.3 percentage points between stones that were recovered and those that were not.²⁷ These findings are the work of Woodsfield, who compiled information from six research totaling 18,280 laparoscopic cholecystectomy procedures. Our study's low incidence rate is most likely due to chance. Moreover, when compared to comparable series with an average follow-up of 45.2 months, our research had a small sample size and a very short term of observation.²⁸ Thus, it may be concluded that leaking gallstones are a common complication of laparoscopic cholecystectomy, especially in nonselective instances. Despite the low incidence of complications we saw in this research, we advise that every effort be made to recover any stones that may have been lost. However, collateral damage occurs as a result of this process, and sometimes, gallstones are still left behind. There must be a record of this occurrence. It's worth emphasizing that any potential for spilling should be avoided.

Conclusion

Leakage of gallstones and bile after routine laparoscopic cholecystectomy is uncommon and usually results in very minor problems. To prevent difficulties after a spill, it is crucial to remove the stones and do a peritoneal toileting. Our research shows that problems from lost gallstones account for just 1% of all instances, which is far less than what has been previously reported.

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