

# Intraperitoneal Missed Gall Stones during Laparoscopic Cholecystectomy

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## ABSTRACT

**Background:** Perforation of the gall bladder occurs more frequently in laparoscopic cholecystectomy with the subsequent spillage of the bile and gallstones into the peritoneal cavity. Removal of the spilled gallstones can often be a difficulty and time consuming.

**Objectives:** To evaluate the sequelae of missed stones in the peritoneal cavity during laparoscopic cholecystectomy.

**Methods:** A prospective study of 65 patients with missed gallstone during laparoscopic cholecystectomy were studied during the period from Jan 2012 to Jan 2017 in Baghdad Teaching Hospital. The complications were recorded and analyzed.

**Results:** Missed stones-related complications were; port-site infection 7 (10.7%) and subhepatic abscess 1 (1.5%) patients. Other complications are usual complications, which may occur after any uneventful laparoscopic cholecystectomy.

**Conclusions:** Spillage of gallstones is not a serious complication but an effort should be made to retrieve them to avoid possible postoperative complications.

**Keywords:** Intraperitoneal missed gallstone, Laparoscopic cholecystectomy, Postoperative complications.

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Open cholecystectomy was established as the surgical treatment for cholelithiasis in 1882, by Carl Johan August Langenbuch who was the first who performed this procedure which became later on the golden standard for the treatment of cholelithiasis<sup>(1)</sup>. This was the state, until recently, when a major advance in the operative technique of cholecystectomy occurred by the use of the laparoscope which replaced the open method and rapidly became the new golden standard<sup>(2)</sup>.

Although laparoscopic cholecystectomy (LC) carries a lower morbidity and mortality<sup>(3)</sup>, but it has its own drawbacks. Perforation of the gall bladder occurs more frequently in LC with the subsequent spillage of the bile and gall stones into the peritoneal cavity. Removal of the spilled gall stones can often be a difficulty and time consuming, especially when the stones are lost between the bowel loops or folds of the omentum<sup>(4,5)</sup>.

There are scattered reports in the literature talking about the sequelae of missed spilled gall stones in the peritoneal cavity. The sequelae reported in these literature include; development of intra-abdominal abscess, erosion of the sigmoid colon or hepatic duct by the spilled stones and the formation of abdominal wall abscess<sup>(6,7)</sup>.

Spending longer time during the operation of LC to retrieve the spilled stones or even converting to open procedure in order to reclaim these stones is a controversial topic the in the medical literatures.

The aim of this study is to evaluate the sequelae of missed stones during laparoscopic cholecystectomy.

## Methods

In a 5-year period from January 2012 to January 2017, 250 patients underwent LCs in the second surgical unit at Baghdad Teaching Hospital in the Medical City complex in Baghdad. Out of those, a group of 65 patients had gall bladder perforation during the surgery resulting in spillage of a

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stone or more in the peritoneal cavity. This group was followed prospectively for a mean of one year, and included in the current study.

All operations were performed by the same surgical team. Enthusiastic attempts were made to remove the missed stones by using stone extractor or dissector.

All patients underwent classical 4-port laparoscopic cholecystectomy. All patients, with straight foreword operation and suffered from iatrogenic perforation of the gall bladder with gall stone spillage, were included in this study. The patients who needed conversion to open or ended with subtotal or partial cholecystectomy were excluded from the study.

### Results

The studied group consisted of 65 patients. There were 14 (21.5%) males and 51 (78.5%) females. The age ranged between 18 and 70 years with a mean of 38.2 years, (Table 1).

The percentage of iatrogenic gall bladder perforation and subsequent stone spillage during laparoscopic cholecystectomies was 26% (65 out of 250) patients.

The mean operative time was 67.3 min (range 35-150), and the mean duration of hospital stay was two (range 1-10) days.

With regard to BMI, there were 20 patients with more than 25 kg/m<sup>2</sup> (they were two males and 18 females). The mean BMI was 25.1 kg/m<sup>2</sup>.

Fifteen patients had adhesions at the time of operation with difficult laparoscopic cholecystectomy, six of them were males and nine were females.

Six patients had acute cholecystitis at the time of operation.

Nine patients developed postoperative fever, which lasted from one to ten days with a mean of 0.47 day. The fever subsided in all patients with proper antibiotic treatment.

Six patients complained from postoperative right upper quadrant pain. In five of them, the pain subsided within 1 month, while the sixth patient remained complaining from the pain through three years of follow up.

Two patients complained from nausea and vomiting, which responded to medical treatment, (Table 2).

One patient developed sub-hepatic abscess 10 days after discharging from the hospital. He presented with fever and abdominal pain. Sonographic examination revealed a sub-hepatic collection which was treated by antibiotics and drainage by open surgery, (Table 3).

Seven patients developed port site infection and abscess formation, which was treated successfully by drainage and antibiotics.

The complication rate in the current study was 38.5%, (Table 4).

**Table 1: Age distribution of the patients with missed stones.**

Age	No.	%
≤ 20	8	12.3
21-30	18	27.7
31-40	18	27.7
41-50	8	12.3
51-60	6	9.2
61-70	6	9.2
> 70	1	1.5
Total	65	100

**Table 2: Post-operative complications distributed according to age groups.**

Complication	≤ 20	21-30	31-40	41-50	51-60	61-70	> 70	Total
Fever	3	2	0	1	2	1	0	9
Right upper quadrant pain	0	2	2	0	1	1	0	6
Nausea and vomiting	0	1	0	0	1	0	0	2
Port-site abscess	1	1	1	0	2	2	0	7
Sub-hepatic abscess	0	0	0	1	0	0	0	1

**Table 3: Postoperative complication according to the risk factors (BMI, acute inflammation and adhesions)**

Risk Factor		Complication		
	No.	No.	%	
BMI ≤30	56	Fever 7, nausea 1, port abscess 4, Subhepatic abscess 1	23.2	
BMI ≥ 31	9	Fever 2, nausea 1, port site abscess 2	55.5	
Acute inflammation	6	Port abscess 1, Right upper quadrant pain 2	50	
Adhesions	15	Port abscess 2, Right upper quadrant pain 2, fever 1	33.3	

**Table 4: The postoperative complications of the patients with missed stones (n=65).**

No.	Complication	Number of patients	%
1	Fever	9	13.8
2	Right upper quadrant pain	6	9.3
3	Nausea and vomiting	2	3.2
4	Port site abscess	7	10.7
5	Sub-hepatic abscess	1	1.5
All post-operative complications		25	38.5

## Discussion

The operating time was increased in the current study, the mean operation time was 67.3 minutes, in comparison to other studies like this of Nathan Son et al<sup>(8)</sup> who reported a mean operating time of 45 minutes in non-complicated laparoscopic cholecystitis. This prolongation in time is logical because of the attempts to retrieve the missed stones and reflects one of the side effects of this misshapen.

Out of 250 patients who were operated upon for cholecystectomy laparoscopically, in 65 patients, there was spillage of the stones this make a percent of 26%.

Of those 65 patients with spilled stones, 25 (38.5%) patients were having complications. Of those 25 patients, only in eight of them the complications (port site abscess, sub-hepatic abscess) could be directly attributed to the missed stone. In the rest of the patients, the complication (fever, right upper quadrant pain, nausea and

vomiting) could be part of usual complications of uncomplicated laparoscopic cholecystectomy. This may explain the higher rate of complication in the present study in comparison of other studies like this of Horton et al who reported a complication rate of 0.08-.3% after gall stones spillage<sup>(9)</sup>.

In the present study, the spillage of the gall stones occurred during the dissection of the gall bladder from its bed in the liver or during its extraction from the abdominal wall through the port, this was the same observation by Kumar et al from India<sup>(10)</sup>. This was because of the presence of inflammation or adhesions, in the present study, which was partially similar to the finding of Rice et al who reported that "intraoperative gall bladder perforation was more common in men and was associated with increasing age, body weight, and the presence of omental adhesions. There was no increased risk in patients with acute cholecystitis"<sup>(11)</sup>.

In the present study, the age was not recorded as a risk factor in incidence of gallstones spillage. This was not the same observation of Zehetner et al who found an increased risk of gall stones spillage rate with increasing age<sup>(12)</sup>. In the contrary, obesity seems to be a risk factor for increased rate of stone spillage in the current study.

In the Brockman et al study, 60.4% of the patients with missed stone suffered from intra-abdominal abscesses and 12.1% from abdominal wall abscesses<sup>(13)</sup>. In the present study, the port site infection rate was 10.7%, which is comparable to that of Brockman.

Sub-hepatic abscess occurred in 1.5% of the patients with missed stone in the current study. This complication was the most significant and dangerous one which needs a high suspicion index, it could be diagnosed by ultrasound examination and CT scanning.

There are other complications related to missed stones during laparoscopic cholecystectomy reported in the literature which includes fistulas<sup>(14)</sup>, intestinal perforations<sup>(15)</sup>, intrahepatic abscess<sup>(16)</sup>, and gall stones settled in the pouch of Douglas causing pelvic pain, dyspareunia, infertility and dysmenorrhea<sup>(17)</sup>. All these complication were not reported in the present study.

From the above discussion, it seems that intraperitoneal missed stones do not have grave postoperative complications and this is the same conclusion made by Sarli L et al who reported that this event does not cause complications if adequate prophylactic antibiotic therapy is administered; spilled stones are retrieved whenever possible, and the abdominal cavity is abundantly irrigated<sup>(18)</sup>.

In conclusion; Missing gallstones is not a serious complication, still the patients should be informed about this accident and the surgeon should make his effort to retrieve the spilled stones.

## References

- 1- Cuschieri A, Dubois F, Mouiel J, Mouret P, Becker H, Buess G et al. The European experience with laparoscopic cholecystectomy. *Am J Surg* 1991; 161: 385-7.
- 2- Larson GM, Vitale GC, Casey J, Evans JS, Gilliam G, Heuser L et al. Multipractice analysis of laparoscopic cholecystectomy in 1983 patients. *Am J Surg* 1992; 163: 221-6.
- 3- Zucker KA, Baily W, Gadacz TR, Imbembo AI. Laparoscopic-guide cholecystectomy. *Am J Surg* 1995; 162: 36-44.
- 4- Soper NJ. Laparoscopic cholecystectomy. *Curr Probl Surg* 1991; 28: 583-665.
- 5- Soper NJ, Dumegan DL. Does intra-operative gall bladder perforation influence the early outcome of laparoscopic cholecystectomy. *Surg Lap Endoscopy* 1991; 1: 156-61.
- 6- Nicolai P, Foley RJE. Complications of spilled gallstones. *J Laparoscopic Surg* 1992; 262-3.
- 7- Eisenstat S. Abdominal wall abscess due to spilled gallstones. *Surg Lap Endoscopy* 1993; 3: 485-6.
- 8- Nathanson LK, Easter DW, Cuschieri A. Ligation of the structures of the cystic pedicle during laparoscopic cholecystectomy. *Am J Surg* 1991; 161: 350.
- 9- Horton M, Florence M. Unusual abscess pattern following dropped gall stones during laparoscopic cholecystectomy. *Am J Surg* 1998; 175: 375-9.
- 10- T Sathech-Kumar, AP Saklani, R Vinayagam, RL Blackett. Spilled gallstones during laparoscopic cholecystectomy: An overview of the literature. *Postgraduate Medical Journal* 2004; 80(940): 77-9.
- 11- Rice DC, Memon MA, Jamison RL, Agnessi T, Ilstrup D, Bannon MB et al. Long term consequences of intra-operative spillage of bile and gallstones during laparoscopic cholecystectomy. *J Gastrointestinal Surg* 1997; 1(1): 85-99.
- 12- Zehetner J, Shangeh A, Wayand W. Lost gallstones in laparoscopic cholecystectomy: all possible complications. *Am J Surg* 2007; 193-78.
- 13- JG Brockmann, Kocher T, Senninger NJ, Schürmann GM. Complications due to gallstones lost during laparoscopic cholecystectomy. *Surg Endoscopy* 2002; 16(8): 1226-32.
- 14- Woodfield JC, Rodgers M, Windsor JA. Peritoneal gallstones following laparoscopic cholecystectomy: incidence complications and management. *Surg Endosc* 2004; 18: 1200-7.
- 15- Kraft A, Butter M, Bittner R. The lost gallstones, complication after laparoscopic Cholecystectomy. *Chirurg* 1994; 65: 142-3.
- 16- Steerman PH, Sterman SN. Unrelieved gallstones presenting as a Streptococcus bovis liver abscess. *JLS* 2000; 4: 263-5.
- 17- Makanjuola D, Murshid K, al Rashid R, al Damegh S, Fathuddin S. Peritoneal lithiasis and cliptomas following laparoscopic cholecystectomy. *Eur J Radiol* 1996; 23: 121-5.
- 18- Sarli L, Pietra N, Costi R, Gratalora M. Gallbladder perforation during laparoscopic cholecystectomy. *World J Surg* 1999; 23: 1186-90.