

## ORIGINAL ARTICLE

### Assessment of proportion of spillage and factors leading to spillage of gall stones in Laparoscopic cholecystectomy

Ashwani Kumar Singh

Assistant Professor, Department of General Surgery, Saraswathi Institute of Medical Sciences, Hapur, U.P., India

#### ABSTRACT:

**Background:** The present study was planned for determination of chances of spillage and about factors that lead to spillage of gall stones intraoperatively. **Materials & methods:** The present study was conducted for determination of chances of spillage and about factors that lead to spillage of gall stones intraoperatively. A total of 100 patients were enrolled. Complete demographic and clinical details of all the patients were obtained. Intraoperative findings were recorded. All the results were analyzed by SPSS software. Chi-square test and Mann Whitney U test were used for assessment of level of significance. **Results:** Overall, gall stone spillage was seen in 40 percent of the patients. Among the 38 patients within age group of 18 years to 40 years, spillage was seen in 12 patients. Among the 41 patients within the age group of 41 to 60 years, spillage was seen in 18 patients. Distended gall bladder/ multiple stones were the most common technical factors responsible for occurrence of spillage in 20 patients. Short cystic duct with inadequate gall bladder neck was responsible for occurrence of spillage in 8 patients. **Conclusion:** During Laparoscopic Cholecystectomy gall stone spillage occurs in significant proportion of patients at multiple steps of the procedure due to interactive role of both patient related and technical factors are responsible for occurrence of gallstone spillage.

**Key words:** Spillage, Gall stones

**Corresponding author:** Ashwani Kumar Singh, Assistant Professor, Department of General Surgery, Saraswathi Institute of Medical Sciences, Hapur, U.P., India

**This article may be cited as:** Singh AK. Assessment of proportion of spillage and factors leading to spillage of gall stones in Laparoscopic cholecystectomy. *J Adv Med Dent Scie Res* 2015;3(2):228-230.

#### INTRODUCTION

Gallstone disease (GD) (cholelithiasis) is one of the most prevalent gastrointestinal diseases, with a substantial burden to health care systems. Gallstones (GS) may form because of many different disorders. GD is a chronic recurrent hepatobiliary disease, the basis for which is the impaired metabolism of cholesterol, bilirubin and bile acids, which is characterized by the formation of gallstones in the hepatic bile duct, common bile duct, or gallbladder. GD and cardiovascular disease, common diseases worldwide, are strongly associated and have considerable economical impact. Among gastroenterological diseases, GD is one of the world's most expensive medical conditions. In the United States, there are more than 500 000 cholecystectomies, the total cost of which exceeds 5 billion dollars. GS are considered avoidable causes of death.<sup>1-3</sup>

The best way to avoid complications from lost gallstones is to have awareness of the situations where perforation is likely, perform precise dissection, meticulously handle tissue and use devices such as endobags to retrieve dissected gallbladders through the port sites. Perforation usually occurs when dissecting the gallbladder from the hepatic fossa, and care taken at this stage of the operation can save many minutes attempting to retrieve stones from within the peritoneum.<sup>4</sup>

Despite all precautionary measures, it is unavoidable that gallbladder perforation and stone spillage still occur in some patients. In these cases, it is crucial to minimise the number of stones spilled, attempt to retrieve all stray stones and to copiously irrigate the peritoneal cavity. This serves the purpose of diluting any infected bile and may allow the stones to be washed up into the suction system. Some surgeons advocate the use of clips or an endoloop to close the hole in the gallbladder, while others will introduce a retrieval bag and 'park' it on the liver to receive all spilled stones. In some situations it may be necessary to use an extra port adjusted to a 30- or 45-degree scope or use a fan liver retractor to improve visualisation.<sup>5-7</sup>

Antibiotic prophylaxis is not routinely used by everyone, but its therapeutic use has been suggested for patients who undergo laparoscopic cholecystectomy to treat acute cholecystitis, have visibly infected bile, or have a high probability for lost stones. However, antibiotics should not be administered until the bile and stones have been collected for examination and culture, which would allow for the antibiotic selection to be tailored to the patient's condition.<sup>8</sup> Under the light of above mentioned data, the present study was planned for determination of chances of spillage and about factors that lead to spillage of gall stones intraoperatively.

## MATERIALS & METHODS

The present study was conducted for determination of chances of spillage and about factors that lead to spillage of gall stones intraoperatively.

### INCLUSION CRITERIA

- The patients included were the one with symptomatic cholelithiasis proven by ultrasonography and considered fit for Laparoscopic Cholecystectomy.
- All patients who are operated via laparoscopic cholecystectomy were included.

### EXCLUSION CRITERIA

- All patients with Chronic obstructive pulmonary disease, Coronary Artery Disease Coagulation Disorders, Common Bile Duct Stone, Pregnancy, Suspected Carcinoma, Pelvic inflammatory disease, Extensive Scarring, Not Willing For Laparoscopic Cholecystectomy were excluded in the study.

A total of 100 patients were enrolled. Complete demographic and clinical details of all the patients

were obtained. Intraoperative findings were recorded. All the results were analyzed by SPSS software. Chi-square test and Mann Whitney U test were used for assessment of level of significance.

### RESULTS

Mean age of the patients of the present study was 45.2 years. 80 percent of the patients of the present study were females, while the remaining 20 percent of the patients were males. Overall, gall stone spillage was seen in 40 percent of the patients. Among the 38 patients within age group of 18 years to 40 years, spillage was seen in 12 patients. Among the 41 patients within the age group of 41 to 60 years, spillage was seen in 18 patients. Among the 21 patients within the age group of more than 60 years, spillage was seen in 10 patients. Distended gall bladder/ multiple stones were the most common technical factors responsible for occurrence of spillage in 20 patients. Short cystic duct with inadequate gall bladder neck was responsible for occurrence of spillage in 8 patients.

**Table 1: Overall Proportion of gall stone spillage among patients**

Spillage	Frequency	Proportion
Present	40	40
Absent	60	60

**Table 2: Incidence of spillage among patients divided on the basis of age group**

Age Group (years)	Number of Patients	Spillage of Gall Stones Present
18-40	38	12
41-60	41	18
More than 60	21	10

## DISCUSSION

GD is a multifactorial disease. In the general population, one of the main risk factors for developing GD is gender: gallstones are more common in women than in men. Other factors are age, genes and race. Additional factors are obesity, rapid weight loss, glucose intolerance, insulin resistance, high dietary glycemic load, alcohol use, diabetes mellitus, hypertriglyceridemia, drugs and pregnancy. Four major groups of factors that contribute to the formation of cholesterol gallstones to some degree may be identified: (1) those that contribute to cholesterol supersaturation of bile; (2) those that contribute to cholesterol precipitation and crystallization core formation; (3) those that result in impairment of basic gallbladder functions (contraction, absorption, secretion, etc); and (4) those that lead to impairment of the enterohepatic circulation of bile acids.<sup>8-10</sup> Under the light of above mentioned data, the present study was planned for determination of chances of spillage and about factors that lead to spillage of gall stones intraoperatively.

In the present study, mean age of the patients of the present study was 45.2 years. 80 percent of the patients of the present study were females, while the

remaining 20 percent of the patients were males. Overall, gall stone spillage was seen in 40 percent of the patients. Among the 38 patients within age group of 18 years to 40 years, spillage was seen in 12 patients. Among the 41 patients within the age group of 41 to 60 years, spillage was seen in 18 patients. Arishi AR et al suggested that spillage of gallstones may occur in the course of laparoscopic cholecystectomy. The incidence of this mishap and its consequences are variable. Ignored by many surgeons, stone spillage may be the source of significant morbidity many years after surgery. They described the clinical course of a patient who presented with upper abdominal pain and swelling. The past history was positive for laparoscopic cholecystectomy 15 years earlier. After excision, the swelling was found to be a pseudocyst formed around spilled gallstones during a previous cholecystectomy. Apart from postoperative wound infection, the patient recovered well and remains so.<sup>9</sup>

In the present study, among the 21 patients within the age group of more than 60 years, spillage was seen in 10 patients. Distended gall bladder/ multiple stones were the most common technical factors responsible for occurrence of spillage in 20 patients. Khan MI et

al stated that laparoscopic cholecystectomy is regarded as the treatment of choice for symptomatic gallstones disease throughout the world. Two well known complications of the procedure are bile leak and spilled gallstones. This study determined the frequency of bile leak and spilled gallstones during laparoscopic cholecystectomy in our setup. Patients having gallstones were admitted from OPD. A total of 142 patients had laparoscopic cholecystectomy during the study period. Average age was 39.21 years. Spillage of gallstones was the major complication occurring in 15 (10.6%) cases where maximum number of stones was recovered during the procedure. Spilled gallstones were common in females than males. A total of 5 (3.52%) patients had bile leakage.<sup>10</sup>

In the present study, short cystic duct with inadequate gall bladder neck was responsible for occurrence of spillage in 8 patients. Loffeld et al stated that laparoscopic cholecystectomy has become the preferred surgical technique for symptomatic gallstone disease. The technique generally is safe. Probably one of the most common intra-operative complications is gallbladder perforation with stones spreading into the peritoneal cavity. Abscesses and fistula formation in the abdominal wall occur. A long delay can be present between the initial operation and the complications of the lost stones. Although rupture of the gallbladder is usually noticed during preparation and retrieval, the surgeon may not be aware of losing stones. Due to the long delay, the occurrence of intra-abdominal abscesses and fistula is often not linked to the prior procedure.<sup>11</sup>

## CONCLUSION

During Laparoscopic Cholecystectomy gall stone spillage occurs in significant proportion of patients at multiple steps of the procedure due to interactive role of both patient related and technical factors are responsible for occurrence of gallstone spillage.

## REFERENCES

1. Sánchez-Cuén J, Aguilar-Medina M, Arámbula-Meraz E, Romero-Navarro J, Granados J, Sicairos-Medina L, Ramos-Payán R. ApoB-100, ApoE and CYP7A1 gene polymorphisms in Mexican patients with cholesterol gallstone disease. *World J Gastroenterol.* 2010;16:4685–4690.
2. Temel RE, Brown JM. A new framework for reverse cholesterol transport: non-biliary contributions to reverse cholesterol transport. *World J Gastroenterol.* 2010;16:5946–5952.
3. Bagaudinov KG, Saidov SS, Garilevich BA, Zubkov AD, Abdulaev RA, Ovakimian GS. [Improvement of extracorporeal shockwave cholelithotripsy in the comprehensive treatment of cholelithiasis] *Klin Med (Mosk)* 2007;85:56–59.
4. Doggrell SA. New targets in and potential treatments for cholesterol gallstone disease. *Curr Opin Investig Drugs.* 2006;7:344–348.
5. Goldacre MJ, Duncan ME, Griffith M, Davidson M. Trends in mortality from appendicitis and from gallstone disease in English populations, 1979-2006: study of multiple-cause coding of deaths. *Postgrad Med J.* 2011;87:245–250.
6. Helme S, Samdani T, Sinha P. Complications of spilled gallstones following laparoscopic cholecystectomy: a case report and literature overview. *Journal of Medical Case Reports.* 2009;3:8626. Chowbey PK, Bagchi N, Sharma A. Abdominal Wall Sinus: An unusual presentation of spilled gallstone. *J Laparoendosc Adv Surg Tech A.* 2006;16:613–615.
7. Patterson EJ, Nagy AG. Don't cry over spilled stones? Complications of gallstones spilled during laparoscopic cholecystectomy: case report and literature review. *Can J Surg.* 1997;40:300–304.
8. Sathesh-Kumar T, Saklani A, Vinayagam R, Blackett R. Spilled gall stones during laparoscopic cholecystectomy: a review of the literature. *Postgraduate Medical Journal.* 2004;80(940):77-79.
9. Arishi AR, Rabie ME, Khan MS, Sumaili H, Shaabi H, Michael NT, Shekhawat BS. Spilled gallstones: the source of an enigma. *JSLs: Journal of the Society of Laparoendoscopic Surgeons.* 2008 Jul; 12(3):321.
10. Khan MI, Khan H, Ghani A. Frequency of spilled gallstones and bile leak in laparoscopic cholecystectomy. *Pak J Surg.* 2011; 27(2):95-9.
11. Loffeld RJ. The consequences of lost gallstones during laparoscopic cholecystectomy. *Neth J Med.* 2006 Nov 1; 64(10):364-6.