

Review Article

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Dropped gall stones: an entity in evolution

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ABSTRACT

Laparoscopic cholecystectomy is the gold standard for treating calculous cholecystitis. Many a times the procedure may be associated with rupture of the gall bladder and spillage of gall stones and sludge into the peritoneal cavity. The complication of spilled or dropped gall stones in the peritoneal cavity is not fully documented. This is because majority of the cases go unreported. The possible natural history and management of dropped gall stones is discussed in this article.

Keywords: Dropped spilled gall stones, Laparoscopic cholecystectomy

INTRODUCTION

The rate of complications related to laparoscopic cholecystectomy is much lower than open cholecystectomy with the exclusion of bile duct injuries and intra-abdominal sepsis caused by dropped gall stones. The incidence of dropped gallstone is between 16% - 66% of perforated gall bladders during the course of surgery.^{1,2} The traditional thinking was that no significant complication was caused by a dropped gallstone. But with passage of years as more cholecystectomies are being performed by minimally invasive techniques, dropped gallstones now has emerged as a distinct entity necessitating awareness by the general surgeon. The natural history needs to be understood in order to develop both a management and preventive protocol for this condition.

Natural history of dropped gall stones

The natural history of gallstones lying free in the peritoneal cavity is still ill understood. As more cases get reported over a period of time, the natural history will be ascertained.³ Gallstones usually have two components which can cause irritation in the peritoneal cavity.

1. Infection is inadvertently associated with gallstone disease by virtue of the biofilm around the gall stone. This predisposes to development of septic lesions.
2. The chemical constituents of gallstones by themselves are irritants and cause increased secretion of peritoneal fluid in the close vicinity of stone.

This fluid along with a source of infection invariably leads to the formation of an intra-abdominal abscess. The time frame for development of septic complications is uncertain. It may range from the immediate post-operative period to many years after surgery. Common sites for development of septic lesions are the perihepatic region and the pelvis (Figure 1). Therefore, development of abscesses or any uncertain or indeterminate lesions in these areas in a patient who has undergone laparoscopic cholecystectomy should raise a strong suspicion of dropped gallstones.⁴



Figure 1: CT scan showing a dropped gallstone within an abscess cavity.

Other sites for seeding of gallstone during the course of laparoscopic cholecystectomy are the port sites, especially at the umbilical port or epigastric port site. Stones may spill due to rupture of the gall bladder specimen during the course of retrieval through the port openings. This is more common in cases where an endocatch bag is not being used. Retained stone fragments at these sites may give rise to persistent infection with formation of a sinus or in rare cases a fistula.⁵ The development of a fistula at site of ports is strongly suggestive of a dropped stone. If misdiagnosed these septic complication can be quite distressful to the patients and may even culminate into severe sepsis which can even be life threatening as seen in large intra-abdominal abscess.

Clinical features and management

The clinical features are arbitrary with respect to the presentations and the site of symptoms.^{6,7} Any septic lesion at the site of surgery or in the peritoneal cavity in a patient who has undergone laparoscopic cholecystectomy should raise a strong suspicion of dropped gallstones. Detailed scrutiny of the operative notes may perhaps help in the diagnosis if the occurrence of an intraoperative perforation of the gall bladder has been recorded. But in the vast majority of cases this evidence is always lacking which makes diagnosis more difficult.⁸ A differential diagnosis of peritoneal loose bodies, colonic diverticulitis and a dropped appendicolith should be kept in mind and ruled out. A contrast enhanced CT scan (CECT) is the investigation of choice.^{9,10} It will reveal the site of the septic lesion and even the presence of a radio opaque dropped gallstone. However, in majority of cases the CECT may be unable to diagnose presence of stone in the septic cavity. Exploration of abscess cavity in symptomatic patients therefore is necessary. Extensive adhesions at the site may make surgical dissection more challenging thereby increasing the risk of damaging the surrounding structures. A laparoscopic approach may not be feasible in most cases due to the location and

surrounding dense adhesions. An open approach therefore is preferable.

Preventive measures

- The gallbladder should be carefully dissected from the gallbladder fossa.
- Excessive traction on gall bladder during the course of this dissection is to be avoided.
- An endocatch bag should always be used to prevent rupture of the gall bladder specimen and spillage of its contents at the stage of specimen retrieval.¹⁰
- In the event of perforation the perforation should either be sutured or clipped during the course of dissection to prevent further spillage. Even if spillage has occurred the spilled contents should be meticulously aspirated followed by saline irrigation of the area.
- A meticulous second look should be made before removal of the ports.
- It is a safe practice to place a subhepatic drain in cases where the specimen was accidentally perforated to drain any residual fluid collection.

CONCLUSION

- Dropped gallstone has almost emerged as a distinct entity. Though asymptomatic in majority of cases, it could give rise to septic complications in a few cases.
- Intra-abdominal abscesses and cutaneous fistulas or sinuses should raise a strong suspicion of dropped gallstone.
- Surgical intervention preferably open is the mainstay of treatment.
- Meticulous preventive measures should be adopted to prevent a spilled gallstone from evading identification and removal.

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