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Spilled gallstones simulating peritoneal carcinomatosis: A case report and literature review

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ABSTRACT

INTRODUCTION: Laparoscopic cholecystectomy (LC) has become the "gold standard" for the treatment of symptomatic gallstones. However, this surgical technique increases the risk of bile duct injury and lost gallstones. Since over 90% of split gallstones never become symptomatic, they often present as incidental findings on CT-scans. Careful removal of as many stones as possible, intense irrigation and suction are recommended. It has been reported that 8.5% of lost gallstones will lead to a complication, most common are abscesses.

PRESENTATION CASE: We report a case of spilled gallstones simulating peritoneal metastases on radiological investigations. Diagnosis was very difficult, not even an US-guided biopsy of the lesion was decisive. Only a diagnostic laparoscopy confirms the diagnosis.

DISCUSSION: The reaction associated with lost gallstones can mimic other causes, such as soft tissue sarcoma, malignant lymphoma or, as in our case peritoneal carcinomatosis.

CONCLUSION: Spilled gallstones are associated with uncommon, but significant complications, and even the diagnosis of such a condition can cause serious difficulties. Serious effort must be made to prevent gallbladder perforation, and accidental stone spillage should be promptly recognized and properly managed.

1. Introduction

Laparoscopic cholecystectomy (LC) is the gold standard for symptomatic cholelitiasis. In experienced hands, it is a safe procedure with low morbidity and mortality. During the surgical procedure one of the most common intra-operative complications is gallbladder perforation with stones spreading into the peritoneal cavity [1]. This incidence varies between 6% and 40% 2,3. The risk associated with this complication has been considered negligible and remains somehow controversial [2], but Khan et al., [3] confirmed the necessity to remove all lost gallstones during the same procedure, as much as possible with irrigation of the abdomen in order to avoid complications such as Sub-hepatic or Pelvic abscess, Granuloma formation, Port site infection [4]. Our work is in according with SCARE criteria [109].

2. Case report

A 73-year-old man underwent laparoscopic cholecystectomy for symptomatic cholelithiasis. The intraoperative course was remarkable only for intraperitoneal spillage of bile and gallstones. During the procedure the surgeon retrieved them as much as possible. The anathomopathological examination showed chronic cholecystitis. In second post-operative day abdominal pain occurred associated to urinary retention. The patient underwent plain abdomen X-rays showing kidney stones, and was treated with medical therapy. The patient was discharged on postoperative day 4th. Sixteen months later, the patient was submitted to Uro-TC follow up of urinary stones, which showed some peritoneal nodule with the appearance of neoplastic nodules (the biggest was located in epigastrium of 5 cm width) Fig. 1. US-guided biopsy of the main lesion and the pathology showed inflammatory process. The upper GI tract and colon endoscopy were negative. After a multisciplinar meeting the patient underwent explorative laparoscopy and removal of peritoneal nodule. Pathological examination of the removed nodule showed a marked inflammatory response of a foreign body type, including giant cell reaction. Foreign material was represented by needles of cholesterin. The patient was discharged one day postoperatively with a clean wound. Follow-up was uneventful (Table 1).

3. Discussion

Laparoscopic cholecystectomy (LC) has become the "gold standard" for the treatment of symptomatic gallstones. The advantages of LC, compared with open cholecystectomy, include smaller inci-

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Table 1

Author	Publication year	Patient (*n*)	Time after LC
Faour et al. [10]	2017	1	6 years
Lentz et al. [11]	2017	1	2 years
Kim et al. [12]	2016	1	5 months
Ragozzino et al. [13]	2016	1	2 years
Pandit et al. [14]	2016	1	1 year
Moga et al. [15]	2016	1	4 years
Hussain et al. [16]	2016	1	1 year
Grass et al. [17]	2015	1	3 years
Binagi et al. [4]	2015	1	3 years
Bedell et al. [18]	2015	1	3 year
Noda et al. [19]	2014	2	7–13 months
Pazouki et al.	2014	50	10–30 days
Quail et al. [20]	2014	1	5 years
Ahmad et al. [21]	2014	1	2 years
Lee et al. [12]	2013	5	7/18/31/4 (months)/postoperatory 2 days
Peravali et al. [23]	2013	2	3–5 years
Morris et al. [24]	2013	1	15 years
Dobradin et al. [25]	2013	1	8 years
Bastianpillai et al. [26]	2013	1	5 months
Anrique et al. [27]	2013	1	14 years
Chatzimavroudis et al. [28]	2012	1	6 months
Singh et al. [29]	2012	1	7 years
Araiet al. [30]	2012	1	4 years
Papadopoulos et al. [31]	2012	1	8 years
Rammohan et al. [32]	2012	1	4 years
Kayashima et al. [33]	2011	1	3 years
Pottakkat et al. [34]	2010	1	11 years
Hussain et al. [35]	2010	1	9 years
Gooneratne et al. [36]	2010	1	14 years
Bouasker et al. [37]	2010	1	8 years
Morishita et al. [38]	2010	1	1 year
Helme et al. [39]	2009	1	3 weeks
Dasari et al. [40]	2009	1	2 years
Maempel et al. [41]	2009	1	10 years
Arishi et al. [42]	2008	1	15 years
Hougardet al. [43]	2008	1	7 years
Stupak et al. [44]	2007	1	11 years
De Hingh et al. [45]	2007	1	1 year
Pantanowitz et al. [46]	2007	1	7 years
Wehbe et al. [47]	2007	1	10 years
Wittich et al. [48]	2007	1	13 months
Shrestha et al. [49]	2006	1	13 years
Bhati et al. [50]	2006	3	1 week/28 months/7 years
Hand et al. [51]	2006	1	24 months
Iannitti et al. [52]	2006	1	3–5 years
Viera et al. [53]	2006	2	18 months
Van der Lugt et al. [54]	2005	2	15/38 months
Van Hoecke et al.	2004	1	5 years
Castellon-Pavon et al. [55]	2004	1	5 years
Koc et al. [56]	2004	1	6 years
Stevens et al. [57]	2003	1	1 year
Yamamuro et al. [58]	2003	2	8/2 years
Aspelund G et al. [59]	2003	1	10 days
Weiler et al.	2002	1	Immediately (postoperatory)
Papasavas PK et al. [60]	2002	1	15 months
Van Mierlo PJ et al. [61]	2002	1	2 years
Yadav RK et al. [62]	2002	1	1 year
Hawasli A et al. [63]	2002	2	4 years/2 years
Pavlidis TE et al. [64]	2002	1	4 months
Albrecht RM et al. [65]	2002	2	14 days/39 month
Famulari C et al. [66]	2002	1	23 months
Boterill et al.	2001	1	2–5 years
Daoud et al.	2001	1	7 months
Narreddy SRet al. [67]	2001	2	na*
Werber YB et al. [68]	2001	1	6 months
Yao CC et al. [69]	2001	1	2 years
Gretschel S et al. [70]	2001	1	4 months
Battaglia DM et al. [71]	2001	1	9 years
Ok E et al. [72]	2000	1	3 months
Walch C et al. [73]	2000	1	1 year
Bebawi M et al. [74]	2000	1	2 months
Castro MG et al. [75]	1999	1	2–11 months
Ong EG et al. [76]	1999	1	4 months
Chopra P et al. [77]	1999	1	2 years
Frola C et al. [78]	1999	1	18 months
Zamir G et al. [79]	1999	4	6 weeks, 6 months/1 year/4 weeks, 9 months, 14 months/1 year, 3 weeks
Groebli Y et al. [80]	1998	2	15–24 months
Sinha AN et al. [81]	1998	1	na*
Parra-Davila E et al. [82]	1998	1	5 years
Petit F et al. [83]	1998	1	immediately/2 weeks
Lutken et al.	1997	1	1 year
Patterson et al. [84]	1997	1	14 months
Memon et al. [85]	1997	1	8 months
Whiting et al.	1997	1	12 months
Vadlamidi et al.	1997	1	20 months
Läuffer JM et al. [86]	1997	1	3 months
McDonald et al.	1997	6	12 days/Immediate/10 days/10 months/2 weeks/18 months
Chanson C et al. [87]	1997	3	27 months, 6 months, 33 months
Patterson EJ et al. [88]	1997	1	14 months
Brueggemeyer MT et al. [89]	1997	4	3 months, 2 months, 5 months/6 days/6 years/2 years
Chin PT et al. [90]	1997	3	8 months/2 months/5 months
Willekes et al.	1996	1	17 months
Zaans Medical Centre	1996	3	7–24 months/10 years
Pfeifer ME et al. [91]	1996	1	2 years
Sichardt G et al. [92]	1996	1	2 years
Stevens GH et al. [93]	1996	1	5 years and 8 months
Huynh T et al. [94]	1996	1	4 days
Neumeyer DA et al. [95]	1996	1	4 months
Rosin D et al. [96]	1995	1	several months
Ponce J et al. [97]	1995	3	months
Freedman AN et al. [98]	1995	1	13 months
Rioux M et al. [99]	1995	1	1 year
Shocket E et al. [100]	1995	1	2 months
Carlin CB et al. [101]	1995	1	8 months
Mellinger JD et al. [102]	1994	1	7 months/2 weeks after
Van Brunt pH et al. [9]	1994	1	2 months
Gallinaro RN et al. [103]	1994	1	8 months
Leslie KA et al. [104]	1994	1	5 months
Catarci M et al. [1]	1993	1	3 months
Eisenstat S et al. [105]	1993	1	4 months
Trerotola SO et al. [106]	1993	1	2 months
Dreznik Z et al. [107]	1993	1	7 months
Nicolai P et al. [108]	1992	2	5 months/11 months

Na: not available.

sions, reduced postoperative pain, and a shorter recovery time. However, limited visualization and the technical challenges of laparoscopy increase the risk of bile duct injury and lost gallstones. Since over 90% of split gallstones never become symptomatic, they often present as incidental findings on CT-scans. Particular locations, such as Morison's pouch or even intrathoracic stones have been described [5,6]. It has been reported that 8.5% of lost gallstones will lead to a complication. Some risk factors, such as acute cholecystitis with infected bile, pigment stones, prone to higher bacterial contamination, multiple stones (>15), the stone size (>1.5 cm) and age, have been described [7]. Careful removal of as many stones as possible, intense irrigation and suction (10 mm device) and avoidance of spread into difficult accessible sites, as well as the use of intraabdominal bags and laparoscopic graspers are recommended [7].

According to Literature, up to 80%–90% of pigment stones contained bacteria such as Escherichia coli, Klebsiella pneumonia, and Enterococcus [8]. The mean time to abscess formation after LC ranges from 4 months to 10 years [9]. When a peritoneal abscess