

**Original Research Article****Spontaneous perforation of gallbladder and review of literature**

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Mubashar AkramEmail: akram.mubashir@yahoo.in, Tel: +91-9419129818**Abstract**

Background: Spontaneous perforation of gall bladder is a rare entity with high mortality rate whenever there is diagnostic delay. Rupture of gallbladder in association with gallstones is infrequent and without gallstones, it's even rare. Rarity of spontaneous gallbladder perforation often makes diagnosis difficult and delay will lead to increased mortality and morbidity. Gold standard for management of spontaneous gallbladder perforation is early diagnosis and immediate surgical intervention.

Aim: 1.To study the etiological factors and outcomes (in terms of morbidity & mortality, if any) associated with spontaneous gallbladder perforation.

Design and Place: This is a retrospective observational study which was carried out in 21(twenty one) patients admitted in Post Graduate Department of Surgery Government Medical College, Jammu over a period of 3 years w.e.f. October 2014 to October 2017.

Method: 21 patients with spontaneous gallbladder perforation were included in study.11 patients with free perforation of gall bladder underwent immediate surgery in emergency. 09 patients had gall bladder perforation with localized collection (biloma/abscess) and one patient had gall bladder rupture with cholecysto-duodenal fistula. Early Laparotomy with peritoneal lavage/abscess drainage (wherever present) and cholecystectomy was done.

Result: Of the 21 patients included in our study, gallstones were seen in 17 patients. 4 patients who had gall bladder perforation in the absence of gallstones were having other co-morbid conditions. Early intervention decreases complication rate and hospital stay in these patients. Mortality was seen in 2(9.52%) patients.

Conclusion: The best form of management in gall bladder perforation is early diagnosis and immediate surgical intervention.

Keywords: Gall bladder perforation, Acalculus Cholecystitis, Niemeir classification.

Introduction

Gall bladder perforation is a rare and potentially fatal complication of acute cholecystitis with or without gallstones. Incidence of spontaneous gall

bladder perforation in acute cholecystitis is 0.8-3.2% of cases but there is no clear data on the incidence in cases of chronic cholecystitis.

Perforation in acalculus cholecystitis is rarer than

calculus cholecystitis. Gall bladder perforation without gallstones may be seen in patients who have chronic cardio- pulmonary and renal disease; metabolic syndrome such as obesity, diabetes mellitus; collagen diseases; generalised atherosclerosis, under nutrition or are terminally ill. Most cases present with free rupture of biliary contents in peritoneal cavity. The condition has high mortality rate of 10-30%.

Spontaneous gall bladder perforation is often difficult to diagnose preoperatively, although high index of suspicion, ultrasound scan and CT scan can be helpful. However, laparotomy usually confirms the diagnosis. Whenever there is delay in diagnosis, morbidity and mortality will increase.

Material and Methods

This is a retrospective analysis of 21 patients over a period of three years (October 2014 to October 2017). All the patients who had spontaneous gall bladder perforation were included.

Methodology

All patients were put to detailed history taking and a complete clinical examination including digital rectal examination was done. Baseline investigations like Hb, TLC, DLC, BT, CT, serum electrolytes, RFTs, LFTs including serum protein, serum albumin, X-ray chest and abdomen, and ECG were done. USG abdomen/CT scan was done in patients suspected of having gallbladder perforation. A written informed consent was obtained from all the patients before the surgical procedure.

Technique

The technique involved opening of abdomen and thorough inspection of peritoneal cavity. Thorough peritoneal lavage was given. Cholecystectomy plus additional procedures like drainage of abscess/fistula closure wherever required done. Second peritoneal lavage with warm isotonic saline was done at the end of the procedure. Intra-abdominal drain was placed before closure of laparotomy wound. All the

laparotomy wounds were closed in standard manner.

Post-Operative Care and Evaluation

Patient was kept nil per oral with intravenous fluid and antibiotics for 2-3 days with or without nasogastric suction. Orals were started when bowel activity in the form of bowel sounds and passage of flatus or stools was present. Immediate complications were noted and dealt accordingly. Patient was discharged after passing stools for a day or two in the hospital, with the advice of semisolid diet.

Observations

All the patients with spontaneous gall bladder perforation included in study were in the age group of 24-70 years. Twelve (12) patients were males and nine (9) females. Two patients (both male) were less than 35 years of age, youngest one being 24 year old.

Table 1: Age/ Gender distribution of patients with spontaneous gall bladder perforation

Age Group(in years)	Males	Females
20-35	2	
36-50	4	5
51-65	5	3
>65	1	1
TOTAL	12(57.14%)	9(42.86%)

17(80.95%) patients had gallstones associated with spontaneous rupture of gallbladder. 4(19.05%) patients had gall bladder perforation without gallstones. Free gall bladder perforation was seen in 11(52.38%) patients. Type 2 perforation was seen in 9(42.86%) patients and one (4.76%) patient had Type 3 perforation.

Fundus was seen perforated in 13(61.90%) patients and 8(38.10%) patients had perforation in body.

Co-morbid conditions were present in 16(76.19%) patients i.e 4 patients of gall bladder perforation without gallstones and 12 patients of gallstones associated gall bladder perforation. Diabetes mellitus, hypertension and Ischemic heart disease

were the major diseases present as seen in table 2.

Table 2:- Distribution of co-morbid conditions in patients with spontaneous gall bladder perforation.

Comorbid conditions	Patients of gallbladder perforation with gallstones No.(n=17)	Patients of gallbladder perforation without gallstones No. (n=4)
Hypertension (HTN)	2	1
IHD+ HTN	1	
Diabetes mellitus (DM)	5	2
Obesity	3	
Anaemia (Hb <6 gm%)	1	
Chronic obstructive pulmonary disease (COPD)		1
TOTAL	12	4

Results

Laparotomy with cholecystectomy and peritoneal lavage in emergency setting was done in 11 patients who presented with free gall bladder rupture. 9 patients underwent cholecystectomy and drainage of localised collection with release of adhesions. One⁽¹⁾ patient had cholecystoduodenal fistula which needed fistula closure after cholecystectomy.

Spontaneous gall bladder perforation is associated with high complication rate as depicted in table 3.

Table 3: Distribution of patients according to complications (n=21)

Complications	Number of patients	Percentage
Deaths	2	9.52%
Wound infection	4	19.04%
Intra-abdominal collection/abscess	0	0
Wound dehiscence	2	9.52%

There were 2(9.52%) deaths, one of which occurred on 2nd post operative day in male pt who had DM, HTN+IHD and was being managed for acalculous cholecystitis and had free perforation of gallbladder. Second death occurred on 1st post operative day in 68 year old female patient with severe anemia who had gallstone associated rupture.

Early diagnosis and intervention is associated with shorter hospital stay as shown in Table 4.

Table 4: Distribution of hospital stay in patients with spontaneous gallbladder perforation (n=19)

Hospital stay (days)	Number of patients	Percentage
10	3	15.79%
11	6	31.58%
12	4	21.05%
13	3	15.79%
14	1	5.26%
15	1	5.26%
17	1	5.26%
Total	19	100%

Mean \pm standard deviation = 12.05 \pm 2.48 days; Range = 10-17 days.

Discussion

Spontaneous gall bladder perforation as a sequel in calculus cholecystitis is rare and even rarer in acalculus cholecystitis. Gall bladder perforation is more common in males (Lein HH& Huang CS). In our study, 12 (twelve) of the patients are male. Gall bladder perforation was first reported by J Duncan of The Royal Infirmary, Edinburgh in 1844. Fundus of the gall bladder is most common site of perforation owing to its poor blood supply. In our study 13(61.90%) patients had perforation at fundus. Perforation at fundus leads to bile spillage in entire peritoneal cavity causing Type 1 perforation. Localised peritonitis/fluid collection is usually seen with neck/body perforation resulting in Type 2 perforation.

Gall bladder perforation was classified by Niemeir in 1934.

Type 1 Acute, associated with generalised biliary peritonitis.

Type 2 Subacute, consists of pericholecystic abscess, localised peritonitis and fluid collection at perforation site.

Type 3 chronic, consists of cholecysto enteric or cutaneous fistula.

Modification in this classification is Type 4 for chronic perforation with cholecysto biliary fistula formation. Mostly the patients of spontaneous gall bladder perforation are elderly, usually aged 50 or more. 9(42, 86%) patients in our study were in age group of 36-50 years and 5 (five) of them were

females. This may be attributed to increased incidence of gallstones in females in this age. Unlike most studies, two (9.52%) of our cases were less than 35 years of age. Perforation results from cystic duct occlusion (often by a calculus) which causes rise in intraluminal pressure due to retained secretion. Further increase in intraluminal pressure impedes venous and lymphatic flow causing vascular compromise leading to necrosis and gall bladder perforation.

Roslyn and Busutte suggested that gall bladder perforation is caused by hypoperfusion of viscera, secondary to systemic disease. Other factors include trauma, congenital abnormality, infection, pancreatic secretion, obstruction by calculi, malignancy, steroid therapy, abnormal bile, diabetes mellitus, atherosclerotic heart disease, old age and male sex. Co-morbid conditions like Diabetes mellitus, hypertension, COPD, severe anemia were seen in 16 of our patients.

Diagnosis is difficult, so a detailed history and examination is important. Ultrasound scan may show gall bladder wall thickening, pericholecystic fluid and distension. The HOLE sign in which defect is visualised is the only reliable sign of gall bladder perforation. Different modalities have been used to detect gall bladder perforation which include USG scan, CT scan, peritoneal lavage or retrograde. Lublin and Danforth advocated diamethyl iminodiacetic acid(HIDA) scan for detection of gall bladder perforation. However, diagnosis is usually confirmed on laparotomy. Timely intervention decreases the mortality and morbidity of spontaneous gall bladder perforation which otherwise is very high. In our study mortality was 9.52% and average hospital stay 12.05-+2.48 days.

Conclusion

The best form of management in gall bladder perforation is early diagnosis and immediate surgical intervention. Cholecystectomy, peritoneal lavage and drainage of abscess if present, is usually sufficient for Type 1 perforation. Type 2 perforation can be managed by drainage of

abscess and cholecystectomy. If condition of patient permits, USG guided drainage of abscess/fluid collection can be done followed by laparoscopic cholecystectomy at later date. Type 3 perforation requires cholecystectomy and additional surgical procedures such as repair of fistula. Delay in intervention is the main reason for increased morbidity and mortality associated with gall bladder rupture.

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