

Prospective Study of Evaluation and Management of Gallbladder Perforation

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Abstract

Background: Gallbladder perforation is a rare but serious complication of acute cholecystitis. Its clinical features and management has evolved considerably since its classification by Niemeier in 1934. With the advancement in interventional radiology most of the patients are managed conservatively. We are presenting the clinical scenario and management of this rare complication.

Methods: A prospective study was conducted in the surgical emergency and the patients with acute abdomen were evaluated and managed for a period of one year.

Results: Out of the twelve cases, seven patients were male and five were female. Nine patients were above the age of sixty years. According to Niemer's classification, eight patients had type I perforation, four patients had type II perforation and none had type III perforation. Almost all patients had associated co-morbidities like diabetes mellitus and hypertension.

Conclusions: Early diagnosis and emergency surgical treatment of gallbladder perforation with peritonitis is the basic management. Evaluation of the patient depends upon the stability of the patient. Abdominal computerized tomography for acute cholecystitis patients may contribute to the preoperative diagnosis of gallbladder perforation.

Key words: Acute cholecystitis, Niemeier classification, gallbladder perforation, radiological drainage

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I. Introduction

The commonest cause of acute cholecystitis is gall stones in 90-95% of patients [1]. Perforation of gallbladder is one of the rare but life threatening complication seen in patients of acute cholecystitis with increased morbidity and mortality due to delayed diagnosis and management [2]. Most of the cases are diagnosed at time of surgery and patients of acute cholecystitis with high grade fever and raised leukocyte count associated systemic diseases should be meticulously investigated [3]. Niemeier proposed a classification of gall bladder perforation in to three types. Type 1-acute free perforation into the peritoneal cavity, type 2-subacute perforation with pericholecystic abscess, type 3-chronic perforation with cholecystoenteric fistula [4]. A definitive diagnosis is uncommon before surgery and this condition is associated with high mortality and morbidity.

II. Material and Method

A prospective study was conducted in the surgical emergency, department of Surgery Government Medical College Srinagar for period of one year from January 2016 to December 2017. All the patients with peritonitis were operated and patients of acute cholecystitis with fever and raised leukocyte count were evaluated with Ultrasonography and computed tomography in the same admission. Patients with diagnosed gallbladder perforation were managed from radiological drainage to open cholecystectomy. Post operative period remained uneventful in eleven patients and one patient developed deep vein thrombosis on the third postoperative day and was managed with heparin. In the follow up one patient developed incisional hernia for which incisional hernia meshplasty was done.

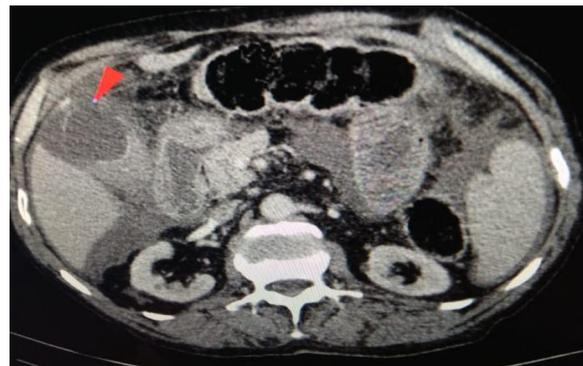
III. Results

Twelve patients were included in this study, seven patients were male and five were female. Nine patients were above the age of sixty years. According to Niemeier's classification, eight patients had type I perforation, four patients had type II perforation and none had type III perforation. Almost all patients had associated co-morbidities like diabetes mellitus and hypertension. Seven patients were managed with open

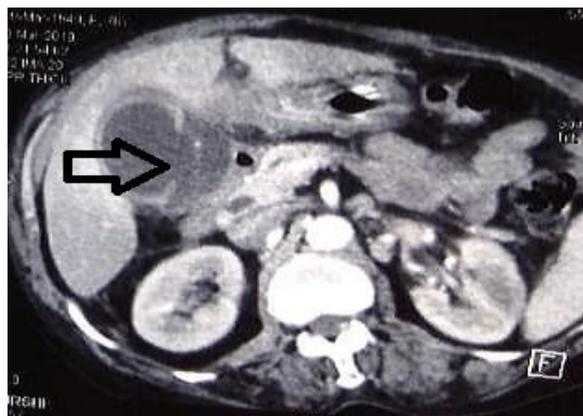
cholecystectomy and five patients with radiological drainage. Out of total cases 10 patients were diagnosed as acute cholecystitis and two were diagnosed as perforation peritonitis [Table 1]. In almost all patients perforation with pericholecystic collection was seen with Computed Tomography [Figure 1] with intraoperative gangrenous changes in the gallbladder wall [Figure 2].

Number	Age (years)	Gender	Diagnosis	Type of perforation	Co-morbidity	Day of definitive management	Type of management
1	57	M	AC	I	HTN	4	OC
2	67	M	AC	I	HTN,DM	3	OC
3	56	M	Duodenal perforation	II	DM	1	OC
4	66	F	AC	I	COPD	5	OC
5	71	M	AC	II	COPD,DCM	4	RD
6	50	F	AC	I	Rheumatoid arthritis	4	RD
7	65	F	AC	II	COPD, HTN	3	RD
8	77	M	Duodenal perforation	I	IHD, HTN, COPD	6	RD
9	71	M	AC	I	HTN, CRD	3	OC
10	73	F	AC	II	--	2	OC
11	61	F	AC	I	COPD	3	RD
12	75	M	AC	I	--	2	OC

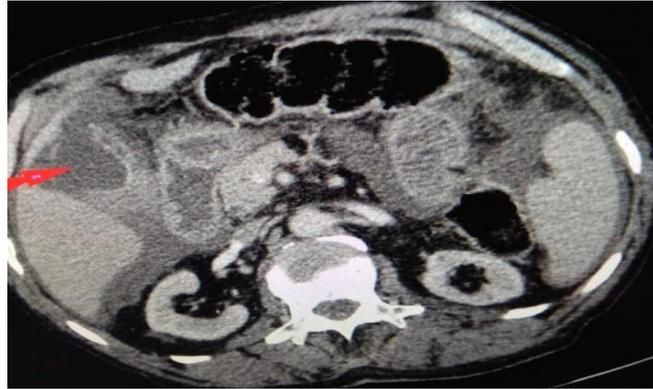
AC- Acute cholecystitis;
 HTN – Hypertension;
 DM – Diabetes mellitus
 COPD – Chronic obstructive pulmonary disease
 RD – Radiological drainage
 OC – Open cholecystectomy
 CRD – Chronic renal disease
 DCM- Dilated cardiomyopathy



A



B



C

Figure 1(A+B+C): Showed Contrast enhanced computed tomography scan of the abdomen with gall bladder perforation with perihepatic collection shown by arrow.

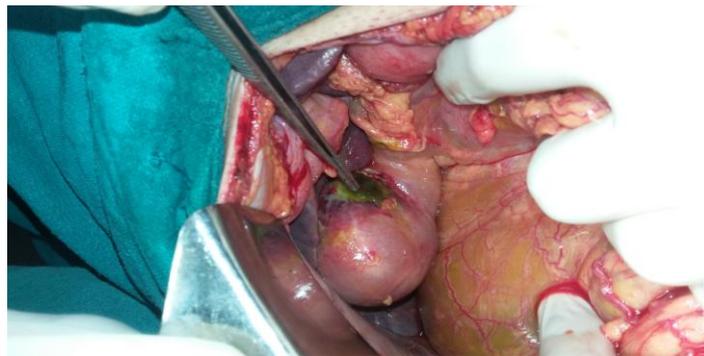


Figure 2: Showed intraoperative picture with perforation of Gallbladder wall shown by tip of forceps

IV. Discussion

Acute cholecystitis may progress to ischemic necrosis and perforation of gall bladder which is more common at fundus due to distal blood supply [5]. Acute uncomplicated cholecystitis is more common among females with a female to male ratio of 2:1 [13]. However, GBP is more frequent in male gender and when the perforation is at fundus there is wide spread spillage of bile into peritoneal cavity as the perforation is not covered by peritoneum as compared to perforation at other sites which is covered by omentum and gut loops with formation of pericholecystic fluid collection [6]. In our study the most common type of perforation noted was type I-out of those the most common site of perforation was the fundus of the gall bladder. The results were similar to study done in Manchester, UK concluded that the incidence of type I and type II perforations was equal. The rapid advancement of interventional radiological since 1985 has largely contributed to the improved mortality rates in patients undergoing percutaneous drainage for type II perforations [7]. Early intervention was considered better in gallbladder perforation. Most of the cases of gallbladder perforations are identified during surgery [8]. Patients who are unfit for surgery other alternative for cholecystectomy are ultrasound-guided transduodenal (or transgastric) gallbladder drainage with stenting and endoscopic transpapillary gallbladder stenting. These techniques have also been successfully employed when percutaneous transhepatic drainage or aspiration is contraindicated or anatomically challenging. However, these techniques are not offered usually due to high mortality and morbidity rates [9, 10, 11]. In our study the duration of symptoms was shorter in patients with type I gallbladder perforation than in patients with type II because of early features of peritonitis. High fever and elevated WBC count are not the diagnostic indications for gallbladder perforation. Parker et al reported that high fever and high WBC count could be observed in 56% and 59% of patients with acute cholecystitis, respectively [12]. Ultrasonographic features of acute cholecystitis, including gallbladder wall thickening, distension, pericholecystic free fluid, and positive sonographic Murphy sign, may also be present in gallbladder perforation cases. Sood et al, noted that the sonographic hole sign, in which the defect in GB wall is visualized, is the only reliable sign of gallbladder perforation [13]. In our study nine out of twelve patients showed perforation of wall on computed tomography (CT). The CT can show more accurate signs of GB wall thickness free intraabdominal fluid, pericholecystic fluid and the defect on the wall due to perforation and abscess [14].

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