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Evaluation of Patients with Gall Bladder Perforation: Experience at a Tertiary Centre

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ABSTRACT

Introduction: Gall bladder perforation is a rare but serious complication that presents to our emergency setup. It is usually a sequelae of acute cholecystitis. It requires urgent intervention, failing which mortality can be as high as more than 50%. Neimeier classification of GB perforation has since become the guide to its management. Because of infrequent and rare occurrence of GB perforation the data regarding incidence and management of it is lacking. We present our experience at a tertiary centre of 35 cases of gall bladder perforation that presented to us since January 2020 till June 2022

Material and methods: This is a retrospective study conducted in Department of Surgery, JNMC, AMU. It includes all the cases of gb perforation that presented, diagnosed and were managed at our hospital from January 2020 till June 2022. Following data were evaluated: age, gender, diagnostic procedure, duration of hospital stay, management, type of procedure, Histopathology, outcome.

Observation: 35 patients were evaluated in our study. Type 1 comprised of 11 patients, maximum patients were from type 2 i.e. 22 out of 35 and type 3 gb perforation comprised of 2 patients according to Neimeier classification. For patients who presented with type 1 perforation, emergency laparotomy with open cholecystectomy and peritoneal lavage was done. Patients with type 2 Gall Bladder perforation were managed conservatively. Type 3 GB perforation has a complicated course ranging from its diagnosis to management. Overall, 3 patients out of 35 expired. 2 of them were type 1 and one was type 3.

Conclusion: Early diagnosis of Gall bladder perforation is the key for proper management of these patients. The algorithm provided by Neimeier is the guide to proceed.

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Introduction

Gall bladder perforation is a rare but serious complication that presents to our emergency setup. It is usually a sequelae of acute cholecystitis [1]. It requires urgent intervention, failing which mortality can be as high as more than 50% [1,2]. Thus GB perforation remains an important problem for the surgeon. Its management has considerably evolved overtime. Neimeier classification of Gall Bladder perforation has since become the guide to its management. Inflammatory process associated with cholecystitis results in thickened GB wall, which if remains persistent for long period of time results in ischemia, necrosis and subsequently perforation [3-5].

Neimeier proposed a classification of Gall bladder perforation: Type 1- acute free perforation into peritoneal cavity Type 2- subacute perforation with pericholecystic abscess Type 3- chronic perforation with cholecysto-enteric fistula [6, 7]. Because of infrequent and rare occurrence of GB perforation the data regarding incidence and management of it is lacking. In many cases it is often an intra-operative diagnosis. We present our experience at a

tertiary centre of 35 cases of gall bladder perforation that presented to us since January 2020 till June 2022.

Material and Methods

This is a retrospective study conducted in Department of Surgery, JNMC, and AMU. It includes all the cases of gb perforation that presented, diagnosed and were managed at our hospital from January 2020 till June 2022. Patient's data were collected from the medical record section of hospital. Patients younger than 14 year and those of traumatic perforation were excluded. All the patients were classified as per the Niemeier classification of gall bladder perforation. Following data were evaluated: age, gender, diagnostic procedure, duration of hospital stay, management, type of procedure, Histopathology, outcome.

Observation and Result

35 patients were evaluated in our study. The number of male patients were 19 and female patients comprised of 16 out of 35 patients. When classifying the patients on basis of their age, maximum patients were from the age group of more than 50 years. 2 out of 35 patients were more than 70 years. All the patients were then classified according to the Neimeiers classification, type 1 comprised of 11 patients, maximum patients were from type 2 i.e.

22 out of 35 and type 3 gb perforation comprised of 2 patients. USG was the initial diagnostic procedure to be done in all the patients. 24 patients were diagnosed with Gall bladder perforation based on USG findings. In 7 patients CECT abdomen was the diagnostic modality. Gall bladder perforation was diagnosed based on intra operative findings in 4 patients. For patients who presented with type 1 perforation, emergency laparotomy with open cholecystectomy and peritoneal lavage was done. Patients with type 2 gb perforation were managed conservatively. These patients had localised collection with no sign of peritonitis or systemic toxic features, percutaneous drainage of collection was done and patient were discharged in stable condition and asked to follow up in the outpatients department to plan for laparoscopic/ open cholecystectomy. Out of these 22 patients, 8 patients were treated with laparoscopic cholecystectomy and 10 patients were managed with open cholecystectomy, 4 patients were lost to follow up. In one patient, who also had stones in CBD, open CBD exploration with T tube placement was done.

One of the was patient was diagnosed as type 3 GB perforation with cholecysto-colic fistula, resection of fistulous segment with open cholecystectomy and proximal ileostomy was done. The most common location for gall bladder perforation was fundus followed by body and neck. Histopathology of 26 patients out of 30 who were operated was suggestive of features of cholecystitis. Histopathology of one patient was suggestive of adenocarcinoma gall bladder, completion extended cholecystectomy was done. Cholelithiasis was the most common precipitating factor (32 out of 35). Type two patients who were initially managed conservatively had a mean hospital stay of 5 days, and later during the course of their surgery, hospital stay ranges from 4 days to 7 days. Patients with type 1 GB perforation had a hospital stay of 8 days. Overall, 3 patients out of 35 expired. 2 of them were type 1 and one was type 3.

Table 1: Showing the Data Collected from the Patients of Gall Bladder Perforation

Features	Type 1	Type 2	Type 3
Number of cases	11	22	2
Mean age (years)	52	58	62
Sex ratio(M/F)	6/5	12/10	1/2
Mode of diagnosis			
USG	4	20	
CT	5	1	1
Intra operative	2	1	1
Site of perforation			
Fundus	5	9	1
Body	4	6	
Neck	2	3	
Treatment			
Emg. Cholecystectomy	11	-	-
Open cholecystectomy Lap cholecystectomy	-	1	-
Percut drainage + delayed lap cholecystectomy	-	8	-
Percut drainage + delayed open cholecystectomy	-	9	-
Open chole + fistula repair	-	-	1
Extended cholecystectomy	-	1	-
Mortality	2		1

Discussion

The incidence of type 2 perforation is higher when compared with other types in this series as well in other series that were reviewed. GB perforation can occur in 2-11% of patients with cholecystitis

where inflammation can proceed to necrosis and subsequently inflammation [6, 8]. Patient with type 1 GB perforation usually present with peritonitis. These patients are in septic shock. They require prompt and aggressive resuscitation and management in form of laparotomy and open cholecystectomy with peritoneal lavage. In these cases the most common site for GB perforation is fungus, as it is the most unreachable site of GB to be covered by the momentum, thus the bile drains into peritoneum [5].



Figure 1: One of the Patient with Type 1 GB Perforation Showing a Perforation at Body of Gall Bladder.

Patients with type 2 GB perforation were earlier managed with laparotomy and abscess drainage along with cholecystectomy [3,9]. But with considerable evolvement of treatment and with the view that immediate surgery can be challenging for patients ad surgeon, these patients are managed conservatively at the time of presentation. Percutaneous drainage in the form of aspiration or pigtail catheterisation is done to drain the abscess. Later interval cholecystectomy either laparoscopic or open can be done as a definitive procedure. With this management, patients usually have decreased morbidity. However the evidence still remains divided regarding the efficacy of drainage over immediate cholecystectomy.

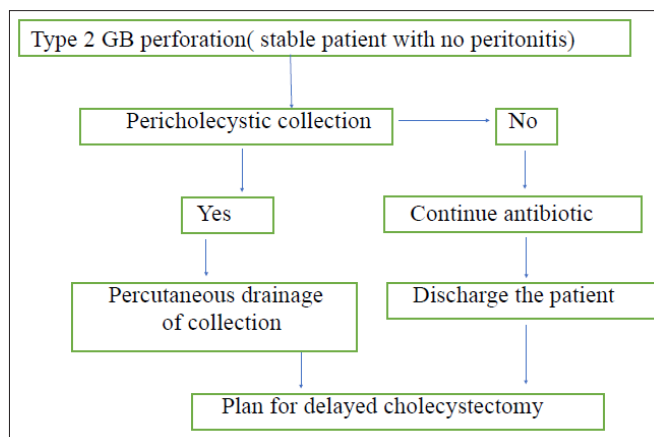


Figure 2: Algorithm for Management of Type 2 GB Perforation

Type 3 GB perforation has a complicated course ranging from its diagnosis to management. Cholecystectomy can be difficult in such cases and will also require additional procedure for repair of the fistula [10-15]. One such patient was operated in our series[16]. The other patient was diagnosed based on CT findings of pneumobilia. The patient being unfit was not operated.

Patients with type 3 GB perforation can also present as intestinal obstruction because of gall stone ileus.

Mortality was highest in this series previous others in type 1 GB perforation due to the poor general condition of patients at the time of presentation, associated co morbidities and delayed presentation to the hospital. Mortality rate in other studies have shown to be ranging between 12 to 42% [15]. Anderson et al in 1987 demonstrated cholecysto biliary fistula as Type 4 GB perforation [17,18].

Conclusion

Early diagnosis of gall bladder perforation is the key for proper management of these patients. The algorithm provided by Neimeier is the guide to manage such patients. Patients with type 1 GB perforation require prompt and immediate intervention. Patients with type 2 and type 3 GB perforation can be managed with a different algorithm depending upon the clinical status of the patients. Although CECT abdomen is the standard for diagnosis, USG findings can also suffice for diagnosis. Surgeons should have a high index of suspicion especially in elder patients who present with symptoms of acute cholecystitis.

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