



Journal Homepage: -www.journalijar.com
**INTERNATIONAL JOURNAL OF
 ADVANCED RESEARCH (IJAR)**

Article DOI:10.21474/IJAR01/5558
 DOI URL: <http://dx.doi.org/10.21474/IJAR01/5558>



RESEARCH ARTICLE

LAPAROSCOPIC CHOLECYSTECTOMY IN EMPYEMA GALL BLADDER - ITS SAFETY AND FEASIBILITY.

DrPrakash Kumar Sahoo, DrSumanSaurav Rout, DrKasturiBharadwaj, DrPriyadarsanKonar and Dr Rima Sultana.

Department Of General Surgery, IMS & SUM HOSPITAL, Siksha O Anusandhan University, Bhubaneswar, Odisha, India.

Manuscript Info

Manuscript History

Received: 07 August 2017
 Final Accepted: 09 September 2017
 Published: October 2017

Key word:-

Laparoscopic Cholecystectomy,
 Empyema Gall Bladder, safety,
 feasibility.

Abstract

Objective: To study the clinical profile of Empyema Gall Bladder and to assess the feasibility of laparoscopic cholecystectomy in such cases. This prospective clinical study covers 69 cases of empyema of the gall bladder, which were admitted in the Department of General Surgery At Institute of Medical Sciences and SUM Hospital ,Bhubaneswar,Odisha,India during the period from January 2015 to December 2016. All the Cases were planned for elective laparoscopic cholecystectomy.

Results: In our series which included 69 patients ranging from age group of 22 years to 68 years,maximum incidence between 40 -60 years .The male female ratio being 1: 2.13.All the cases were attempted laparoscopically out of which 66(95.6%) were successfully completed while only 3 (4.3%) were converted to open due to completed frozen calots anatomy in 2 cases while cholecystoenteric fistulas in 1 case .The mean operating time was 80 minutes. Varied operative difficulties such as bleeding, obscure Calot's anatomy, Perforated/gangrenous Gall bladder were meticulously managed. Post-operative complications were seen in 20(28.9%) patients out of which port site infection (n = 11) was the most notable while others like bile leak was seen in only 5 patients. Maximum number of patients (n=49)were discharged within 48-96 hours with only 6 patients requiring a stay beyond 1 week.

We cocluded thatLaparoscopic Cholecystectomy can be very well performed in cases with Empyema Gall Bladder with the view in mind about increased risk of intra as well as post – operative complications. Impervious patience, meticulous dissection, clarity in anatomy and the experienceof the surgeon though may play key roles in decreased conversion rates and complications.

Copy Right, IJAR, 2017,. All rights reserved.

Introduction:-

Since the time of the Egyptians gall bladder disease has been a major cause of concern worldwide. Empyema comes from the Greek word 'Empyein' meaning producing (suppuration). Empyema of Gall Bladder is a severe form of acute Cholecystitis may it be calculous or acalculous. Acute cholecystitis in the presence of bacteria-containing bile

Corresponding Author:-Prakash Kumar Sahoo.

Address:-Department Of General Surgery, IMS & SUM HOSPITAL, Siksha O Anusandhan University, Bhubaneswar, Odisha, India.

may progress to suppurative infection in which the gallbladder fills with purulent material, a condition referred to as empyema of the gallbladder.

Thortonetal suggested that “Empyema of the gall bladder was described extensively in surgical texts earlier but now receives scant mention¹ or none at all.² In addition, it appears to have been largely forgotten that its course can be chronic.³

Patterns of presentation in empyema of the gall bladder may vary widely with some presenting acutely with features of sepsis, a tender palpable Gallbladder and leukocytosis while in others the course may be quite insidious and chronic due to widespread use of antibiotics or may be the immunosuppressed nature of the patient and may exhibit few signs and symptoms.

In this era of laparoscopy, the overall scope and outlook towards the treatment of gallstone disease and its complications has changed. Features suggesting the diagnosis and seriousness of a dreaded complication of Gall stone disease like Empyema of the Gallbladder are far and few.^{4,5} Earlier Empyema GB was considered as a contraindication for laparoscopic cholecystectomy due to the fear of complications and being the number one cause for a conversion⁶. Increasing number of studies suggesting the relative safety of attempting laparoscopic cholecystectomies for acute cholecystitis and its complications.⁷⁻¹¹ Rates of conversion depend on various factors like obscured calot’s anatomy, uncontrolled bleeding, injury to adjacent structures etc. The number of absolute and relative contraindications to performing laparoscopic cholecystectomy has decreased over the past 20 years as minimally invasive surgical instrumentation and skills have improved. There have been reports of patients with empyema of the gall bladder, who have presented early without significant gangrenous changes or perforation, can be treated with laparoscopic cholecystectomy.

The gallstone diseases are fairly common in this part of the country and empyema gallbladder is often encountered. We decided to aim our study to comprehensively look into the clinical profile of empyema gallbladder and the safety, feasibility and outcome of laparoscopic cholecystectomy in patients with Empyema of Gall Bladder.

Material & Methods:-

This prospective clinical study covers 69 cases of empyema of the gall bladder, which were admitted in the Department of General Surgery, Institute of Medical sciences & SUM Hospital, Bhubaneswar, Odisha, India, during the period from January 2015 to December 2016.

Institutional ethical clearance was taken prior to the conduct of the study. All those patients who has been suspected as having empyema of the gallbladder on the basis of clinical findings, preoperative ultrasonography findings and diagnosed on intraoperative aspiration of pus from gallbladder was included for this study.

After admission in the hospital, necessary particulars regarding the name, age, sex, religion and address of the patients were recorded. The patients were then studied clinically and necessary investigations were done and operation was performed after proper preoperative workup. A well informed written consent was taken from each patient prior to surgery. Laparoscopic Cholecystectomy was initially attempted in all cases. The procedure was done by standard 4 port technique. In case of thickened wall, the gallbladder was punctured and the suction cannula directly introduced into gall bladder to aspirate pus. At times the suction cannula was also used to dissect the dense adhesions in the area of Calot's triangle using continuous pressurized irrigation technique. Data of each patient was recorded in view of the operative findings, intraoperative complications, post-operative complications and duration of hospitalization.

Results:-

Age and sex distribution:-

The age of the patients ranges from 22 years to 68 years. Maximum incidence was found in between the age group of 40-60 years.(Table 1) The average age for female was 46.02 years and for male was 45.5 years. In our study there is a higher incidence of disease in females with a male: female ratio of 1: 2.13.

Distribution of presenting symptoms (table 2):-

In our series pain over upper abdomen was the most consistent presenting complaint found in all the patients. Pain abdomen was mild only in 13 % of patients, others complained of moderate (46.3%) to severe (40.5%) degree of pain over right upper abdomen. Pain referred to right shoulder or the inferior angle of scapula was found in 32 % of the cases. Fever was seen as a presenting symptom in 85.5% of the cases with Nausea and vomiting was also fairly common feature (73.9%). Jaundice was present only in 17 % of patients.

Comorbidities:-

Thorough assessment of the existing co morbid condition if any of the patients was done (Table 3). In our series 26 (37.6 %) patients suffered from Diabetes mellitus type II and were either on Oral Hypoglycemic Agents or on subcutaneous Insulin regularly. 7 (10.1%) of patients had Hypertension and were on anti-hypertensive drugs. 3 (4.3%) patients all males had COPD while only 2 (2.8%) patients both females were on eltroxin for Hypothyroidism.

Distribution of cases in respect of examination findings:-

On examination Icterus was present only in 12 patients (17.3%). All patients had tenderness in the right hypochondrium and localized abdominal guarding was found in 55 cases (79.7%). In 45 cases (65.2%), a tender palpable lump was found in the RHC. Nearly 30 % patients presented with dehydration evident with the high coloured urine. (Table 4)

Laboratory work up:-**Total W.B.C. count (Table 5):-**

Out of 69 patients, 35 had a total WBC count between 10,000-15,000 cell/cmm (50.7%). 11 patients (15.9%) had total WBC counts <10,000 cell/cmm and 16 patients (23.1%) had total WBC count >15,000 cell/cmm. More than 20,000 cell/cmm total WBC count observed only in 7 patients (10.1%)

Liver Function Tests:-

One or more abnormal findings were found in most of the Liver Function tests profiles though none were specific.

USG findings s/o Empyema GB:-

In our series we used ultrasonography findings along with clinical judgement and laboratory values to close in on our pre operative diagnosis. Though no specific USG feature is diagnostic of Empyema GB, the features such as distended GB with thickened edematous wall > 6mm with intraluminal sludge or calculi (80-88%), impacted calculi in GB neck or cystic duct (71%) and some amount of pericholecystic omental adhesions and fluid collections (32%) are definitely suggestive. (Table 6)

The main diagnostic criteria including clinical symptoms and signs along with Total W.B.C. count and ultrasonography findings as enumerated in **Table 4, 5 and 6**.

Preoperative diagnosis was established in 42 (60.8%) patients while remaining 27 (39.1%) patients were identified during surgery. All of these patients were operated laparoscopically within 48 hours of the admission. Laparoscopic Cholecystectomy were completed successfully in 66 (95.6%) while in 3 (4.3%) patients the procedure was converted to Open Cholecystectomy. The reasons for conversion being discovery of a cholecysto-duodenal and cholecysto-colic fistula in one patient while in the other two patients the reason for conversion being an obscure Calot's anatomy. Conversion was found more common in those who had history of repeated attacks in the past.

Total operating time ranged from 45 -140 minutes with a mean of 80 minutes. Maximum patients 35 (50.7%) were operated between 60-90 minutes. 20 (28.9%) patients needed more than 90 minutes of operating time (Table 7).

Various operative findings noted during each surgery was duly noted (**Table 8**). Dense pericholecystic adhesions from the omentum and other adjacent structures including the stomach, duodenum and the transverse colon were very common finding (65.1%) though only 17 (24.6%) cases with fluid collections were noted. Dilated Common Bile Duct was seen in 16 patients (23.1%). Calot's Anatomy was reached and dissected with difficulty in 44 cases (63.7%) while Calot's was completely frozen in 2 cases which were later converted to open surgery. Perforated and gangrenous Gall bladder were noted in 4 cases. A single case was encountered where we found a cholecysto gastric fistula and in the above case we could manage the case safely laparoscopically. While in another case we had to

convert into open surgery when we encountered a cholecysto-duodenal and cholecysto-colic fistula along with a gangrenous Gall Bladder and a relatively difficult Calot's anatomy. We encountered bleeding either from the cystic artery or from the liver bed in around 9 cases (13.0%), but were managed successfully.

The overall rate of postoperative complications was 28.9% i.e. 20 patients. (Table 9) There were 11 cases of port site wound infection, 4 cases of bile leak out of which 3 resolved later spontaneously while in 1 it resolved after an ERCP was done and a biliary stent was placed. 2 patients had intra-abdominal collections out of which one was managed conservatively while the other required a laparoscopic drainage of the collections. 4 patients had lower respiratory tract infection in the post-operative period.

Almost 71% of the patients i.e. 49 out of 69 were discharged within 48-96h. In 14 patients (20.2%) the stay in hospital was extended to 7 days. While the remaining 6 patients were discharged in two weeks time. The average hospital stay in all patients was 5.1 days.

Discussion:-

Gall stone diseases are no doubt more common in female population and incidence is more between the 4th to 6th decade of life though reporting of Gall bladder disease has been in every age.^{12,13} Indian studies have reported maximal incidence in the 4th and 5th decade with complications from acute cholecystitis being common in the 5th decade and beyond.¹⁴ In our series the focus was on Empyema Gall Bladder which was seen to occur in all ages ranging from 22 to 68 years group though the incidence is maximal between 40-60 years of age (65%) making it a disease of the elderly and immunocompromised. There is a higher incidence of disease in females with a male:female ratio of 1: 2.13.

In our series pain over upper abdomen was the most consistent presenting complaint found in all the patients. Most of our patients have moderate (46.3%) to severe (40.5%) degree of pain over right upper abdomen. Similar results were seen in studies by Tseng et al¹⁵ and Malik et al¹⁶. Pain referred to right shoulder or the inferior angle of scapula was found in 32% of the cases. Fever was seen as a presenting symptom in 85.5% of the cases with Nausea and vomiting accompanied pain in most of the cases (73.9%). Jaundice was present only in 17% of patients.

Thorough assessment of the existing co-morbid conditions revealed that 26 (37.6%) patients suffered from Diabetes mellitus type II. We observed that though overall the distribution of DM II in the male and female groups were equal, a very high percentage (59.0%) of males with DM II were likely to have an acute cholecystitis develop into empyema pretty early.

All patients had tenderness in the right hypochondrium and localized abdominal guarding was found in 55 cases (79.7%). In 45 cases (65.2%) a tender palpable lump was found in the RHC similar to other studies where a palpable GB was noted in 58% cases¹⁶. Greater awareness of these various clinical presentations is needed to reduce the considerable morbidity and mortality caused by the delay in diagnosis.

Thrombocytopenia had recorded raised Total WBC count in 90% cases² and LFT abnormalities though none of the LFT findings were specific. Such results were even detected by Chow WC et al in 51% cases. We in our series found raised Total WBC count i.e. > 10000 cells/cumm in 83% patients. In our series we used ultrasonography findings along with clinical judgement and laboratory values to close in on our pre-operative diagnosis. Though no specific USG feature is diagnostic of Empyema GB, the features such as distended GB with thickened edematous wall > 6mm with intraluminal sludge or calculi (80-88%), impacted calculi in GB neck or cystic duct (71%) and some amount of pericholecystic omental adhesions and fluid collections (32%) are definitely suggestive.

In this era of advancements in laparoscopic techniques and increased skill among surgeons laparoscopic cholecystectomy has become the preferable and probably acceptable choice in most of the complications of acute cholecystitis.¹⁶⁻¹⁹

As was suggested by Hunter "to get it while it's hot"²⁰, the safety and feasibility of laparoscopic cholecystectomy has been pushed to its limits as more and more surgeons are performing them in acute cholecystitis. Very few studies have reported its safety profile in Empyema Gall Bladder.

Laparoscopic Cholecystectomy were completed successfully in 66(95.6%) while in 3 (4.3%) patients the procedure was converted to Open Cholecystectomy. The reasons for conversion being discovery of a cholecysto-duodenal and cholecysto-colic fistula in one patient while in the other two patients the reason for conversion being an obscure Calot's anatomy. Conversion was found more common in those who had history of repeated attacks in the past.

The rate of conversion can be significantly reduced by meticulous dissection, patience, clear visualization and proper identification of the anatomy of Calot's triangle. In case of thickened wall, the gallbladder was punctured and the suction cannula directly introduced into gall bladder to aspirate pus as was proposed by Tseng et al¹⁵. At times the suction cannula was also used to dissect the dense adhesions in the area of Calot's triangle using continuous pressurized irrigation technique. Injury to any of the adjacent structures can be prevented by proper visualization. The use of diathermy must be very judicious and limited.

Cox et al²¹ reported a conversion rate of 83% suggested that empyema once diagnosed should be converted without much ado. However Elder et al²² reported a much more encouraging conversion rate of around 12.5% while Malik et al¹⁶ reported a 19.4% conversion rate. However in our series the conversion rate was only 4.3%.

The overall rate of postoperative complications was 28.9% which ranges from minor port wound infection to bile leak and abdominal collection. There was no mortality in our series. Thus our study did not present us with any such life threatening complication which would dissuade the laparoscopic approach towards Empyema GB, though Surgeons should always keep in mind the possibilities while approaching such cases.

Conclusion:-

Empyema of gall bladder is not an uncommon complications of acute cholecystitis. The clinical history of a patient with empyema of gall bladder is most of the time similar to that of a patient with acute cholecystitis and should be suspected based on clinical judgment and laboratory parameters. An aggressive policy of early introduction of broad-spectrum antibiotics and cholecystectomy is the criterion standard of treatment. Laparoscopic cholecystectomy can be performed in empyema of gallbladder keeping in mind a slightly increased risk of complications. However, the technical experience of the surgeon and surgical knowhow plays a key role in the overall outcome. We can conclude from our study that laparoscopic cholecystectomy is a safe procedure and pretty much feasible in the hands of experienced surgeons.

References:-

1. Harding Rains AJ, Ritchie HD. Bailey and Love's short practice of surgery. London: H K Lewis, 1981.
2. Thornton JR, Heaton KW, Espiner HJ, Eltringham WK. Empyema of the gall bladder- reappraisal of a neglected disease. Gut. 1983;24(12):1183-5.
3. Moynihan BGA. Gall-stones and their surgical treatment. Philadelphia: W B Saunders, 1905: 196.
4. Chua CL, Cheah SL, Chew KH. Empyema of gallbladder. Ann Acad Med Singapore. 1988;17:447-50.
5. Chow WC, Ong CL, Png JC, Rauff A. Gall bladder empyema--another good reason for early cholecystectomy. Journal of the Royal College of Surgeons of Edinburgh. 1993 Aug;38(4):213-5.
6. Koperna T, Kisser M, Schulz F. Laparoscopic versus open treatment of patients with acute cholecystitis. Hepato-gastroenterology. 1999;46(26):753-7.
7. Miller RE, Kimmelstiel FM. Laparoscopic cholecystectomy for acute cholecystitis. Surgical endoscopy. 1993 Jul 1;7(4):296-9.
8. Wilson RG, Macintyre IM, Nixon SJ, Saunders JH, Varma JS, King PM. Laparoscopic cholecystectomy as a safe and effective treatment for severe acute cholecystitis. Bmj. 1992 Aug 15;305(6850):394-6.
9. Al Salamah SM. Outcome of laparoscopic cholecystectomy in acute cholecystitis. J Coll Physicians Surg Pak. 2005;15:400-3.
10. Laine S, Gullichsen R, Rantala A, Ovaska J. Laparoscopic removal of the acutely inflamed gall bladder. In Annales chirurgiae et gynaecologiae 1996 (Vol. 85, No. 3, p. 213)..
11. Pisanu A, Altana ML, Cois A, Uccheddu A. Urgent cholecystectomy in acute cholecystitis: laparoscopy or laparotomy?. Il Giornale di chirurgia. 2001 Mar;22(3):93-100.
12. Colcook, BP, Mcmanus JE. Experience with 1356 cases of cholecystitis and cholelithiasis. SurgGynaec Obst. 1955;101:161-72.

13. Adams R, STRANSHAN A. Cholecystitis and cholelithiasis; an analytical report of 1,104 operative cases. *Surgery, gynecology& obstetrics*. 1947 Dec;85(6):776-84.
14. Tyagi SP, Tyagi N, Maheshwari V, Ashraf SM, Sahoo P. Morphological changes in diseased gall bladder: a study of 415 cholecystectomies at Aligarh. *Journal of the Indian Medical Association*. 1992 Jul;90(7):178-81.
15. Tseng LJ, Tsai CC, Mo LR, Lin RC, Kuo JY, Chang KK, Jao YT. Palliative percutaneous transhepatic gallbladder drainage of gallbladder empyema before laparoscopic cholecystectomy. *Hepato-gastroenterology*. 2000;47(34):932-6.
16. Malik A, Laghari AA, Talpur KA, Memon A, Mallah Q, Memon JM. Laparoscopic cholecystectomy in empyema of gall bladder: An experience at Liaquat University Hospital, Jamshoro, Pakistan. *Journal of minimal access surgery*. 2007 Apr;3(2):52-6.
17. Singh K, Ohri A. Laparoscopic cholecystectomy--is there a need to convert?. *Journal of minimal access surgery*. 2005 Jun;1(2):59.
18. Cuschieri A, Dubois F, Mouiel J, Mouret P, Becker H, Buess G, Trede M, Troidl H. The European experience with laparoscopic cholecystectomy. *The American journal of surgery*. 1991 Mar 1;161(3):385-7.
19. Peters JH, Ellison EC, Innes JT, Liss JL, Nichols KE, Lomano JM, Roby SR, Front ME, Carey LC. Safety and efficacy of laparoscopic cholecystectomy. A prospective analysis of 100 initial patients. *Annals of surgery*. 1991 Jan;213(1):3.
20. Hunter JG. Acute cholecystitis revisited: get it while it's hot. *Annals of surgery*. 1998 Apr;227(4):468.
21. Cox MR, Wilson TG, Luck AJ, Jeans PL, Padbury RT, Toouli J. Laparoscopic cholecystectomy for acute inflammation of the gallbladder. *Annals of surgery*. 1993 Nov;218(5):630.
22. Eldar S, Sabo E, Nash E, Abrahamson J, Matter I. Laparoscopic Cholecystectomy for the Various Types of Gallbladder Inflammation A Prospective Trial. *Surgical Laparoscopy Endoscopy & Percutaneous Techniques*. 1998 Jun 1;8(3):200-7.