



STUDY OF POST CHOLECYSTECTOMY BILIARY LEAKAGE AND ITS MANAGEMENT

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ABSTRACT

Background: Cholecystectomy is one of the most frequently performed surgery. The surgery is associated with many avoidable complications and hence requires a serious and cautious approach.

Aim: The aim of this study was to know the outcome of post cholecystectomy biliary leaks and its management methods.

Materials and methods: 10 cases of biliary leaks were studied from 35 open cholecystectomies and 257 laparoscopic cholecystectomies from 2021 April to 2023 April. Pre-operative workup with ultrasound abdomen, LFT and other biochemical investigations were done and diagnosis was established. The outcome of surgery and its most common post-operative complication - biliary leak was studied with following parameters: Post-operative diagnosis, Surgery - Lap or Open, Incision, Method of approach – Fundus or Classical method, CBD exploration, Intra-operative findings, Drains used, Post-operative symptoms, Amount of collections, Removal of drains, USG Sub hepatic collections, ERCP etc. **Results:** In the present study of 10 cases, fundus first method was done in 3 cases of open cholecystectomies and none in laparoscopic cholecystectomies. Classical procedure was done in 7 cases out of which 5 cases were done in laparoscopy method and 2 cases in open method. Intra operative detection of bile duct injury is noted in 3 cases of open cholecystectomies and non in laparoscopic method. In the present study, 56 % of the patients were treated conservatively who required no therapy and surgical placement of the drain itself was sufficient. **Conclusion:** Pain abdomen, Jaundice, Nausea and Vomiting are the major complaints in case of bile leaks and fistulas. Pathologically, chronic cholecystitis is commonest cause of leaks after surgery mainly because of fibrosis at calot's triangle. Incidence of Post-operative bile leaks is almost the same in open and laparoscopic cholecystectomy. Routine placement of drains is must because it permits post-operative evacuation of serosanguineous exudates and monitoring of bleeding or leakage of bile. Abdominal collections, bilomas or sub-hepatic abscess are reported less with the placement of drains.

KEYWORDS : Cholelithiasis, Laparoscopic VS Open Cholecystectomy

INTRODUCTION-

Cholecystectomy is one of the most frequently performed surgeries. The surgery is associated with many avoidable complications and hence requires a serious and cautious approach. The frequency of bile duct injury remains fairly constant. The seriousness of this complication relates in part of problems of biliary fistula and uncontrolled sepsis and in part to the technical difficulties of successful repair of bile duct injuries [1, 2]. Laparoscopic cholecystectomy has now replaced open cholecystectomy as the first-choice of treatment for gallstones unless there are contraindications to the laparoscopic approach. Sometimes a laparoscopic cholecystectomy may be converted to an open cholecystectomy for technical reasons or safety [3].

Complications associated with cholecystectomy are bile duct injuries, bile leak from accessory bile ducts or due to clip displacement from the cystic duct, retained stones in the common bile duct, perforation of gallbladder, bleeding from liver, cystic or hepatic artery, subphrenic abscess and peritonitis. Bile duct injuries are important because they are preventable, but once they occur, they may be associated with considerable morbidity and mortality [4, 5]. Inadequate management of bile duct injuries may lead to severe complications, such as biliary peritonitis leading to sepsis and multiple organ failure in the early phase, and biliary cirrhosis during long-term follow-up. The initial management consists of team work, including an experienced interventional radiologist, an endoscopist and surgeon, which to a great extent reduce the incidence of re-operations.

MATERIALS AND METHODS:

The present study includes detailed retrospective analysis of post cholecystectomy biliary leaks and fistulas its etiological factors and its management methods. All cases that have under gone cholecystectomy (both open and lap) between 2021 April to 2023 April in the department of general surgery at Smt Shardaben Hospital, Ahmedabad and Narendra Modi Medical College, Ahmedabad (Sheth L. G. hospital), with a post operative bile leak of at least 100 ml per day are included in the study.

Cases with no leak or leak less than 100 ml per day were excluded from the study. 10 cases of biliary leaks were studied from 35 open

Cholecystectomies and 257 laparoscopic cholecystectomies from 2021 April to 2023 April. Pre-operative workup with ultrasound abdomen,

LFT and other biochemical investigations were done and diagnosis was established. The outcome of surgery and its most common post operative complication - biliary leak was studied with following parameters:

- Post-operative diagnosis
- Surgery - Lap or Open
- Incision
- Method of approach – fundus or classical method
- CBD exploration
- Intra-operative findings
- Drains used
- Post-operative symptoms
- Amount of collections

- Removal of drains
- USG – Sub hepatic collections
- ERCP
- Management.

RESULT:

Of the 5 post-operative bile leaks in laparoscopic cholecystectomies 4 cases found to have bile duct injury on ERCP and of 5 cases in open cholecystectomies, four cases were reported to have duct injury. In the present study of 10 cases, fundus first method was done in 3 cases of open cholecystectomies and none in laparoscopic cholecystectomies. Classical procedure was done in 7 cases out of which 5 cases were done in laparoscopic method and 2 cases in open method.

Intra-operative detection of bile duct injury was noted in 3 cases of open cholecystectomies and non in laparoscopic method.

DISCUSSION:

Symptoms:

Present study stated that pain abdomen, mostly in the right upper quadrant, vomiting and jaundice were the most common post-operative symptoms of biliary leaks and fistulas. Nausea and vomiting usually precede the jaundice and more commonly appreciated in the early post-operative period. Jaundice invariably develops and is more pronounced with ductal obstruction and sepsis. It is less noticeable with intra-peritoneal bile alone or bile leak without any ductal obstruction.

Table 1 (Symptoms)

Symptoms	No. of cases	%
Pain in abdomen	6	24
Vomiting	3	14
Jaundice	4	16
Fever	3	10
Ileus	1	4
Cholangitis	1	4
Peritonitis	2	6

Table 2 (Occurance)

Diagnosis	No. Of cases	%
Acute cholecystitis	2	20
Chronic cholecystitis	5	50
Cholelithiasis	1	10
Empyema or pyocele	1	10
Mucocele of GB	1	10

Table 3 (Management)

Treatment	Case	%
Conservative	7	56
Endoscopic stenting	4	16
Sphinterotomy + stenting	1	08
Primary Repair	3	12
Re operation	1	04

Table 4 (Laparoscopic VS Open Cholecystectomy)

Operation	Total cases	No. of leaks	%	Bile duct injuries	%
Laparoscopic cholecystectomy	257	12	4.8	04	2.06
Open cholecystectomy	35	04	9.2	04	2.05

Operations (lap vs open cholecystectomy):

The incidence of bile duct injury was almost same in open (2.05%) as compared to laparoscopic cholecystectomy (2.06%). This was in controversy to western findings which state that the incidence of bile duct injuries were more common with laparoscopic as compared to open.

This controversy may be attributable to the experienced, limited surgeons performing laparoscopic cholecystectomy with less incidence of learning curve as compared to the majority of surgeons performing open cholecystectomy with increased incidence of learning curve [7]. The increase incidence of fibrosis noted in this study was due to most of the patients delay in seeking medical treatment. Failure to recognize the anatomical anomaly was due to lack of pre-operative and intra-operative cholangiogram.

Intra-operative detection of bile duct injury:

Bile duct injury detected during open cholecystectomy was only 12% and almost nil in laparoscopic cholecystectomy as compared to the 15% reported in one study [8].

Clinical pathology:

Chronic cholecystitis appeared to be the most common cause in the bile duct injury than acute cholecystitis of the 25 cases. 50% (5 cases) found to have chronic cholecystitis as compared to the acute cholecystitis with 20% (2 cases). One study showed acute cholecystitis is the most common cause of bile duct injury. This controversy is due to increased number of cases of chronic cholecystitis as they delay in approaching for treatment in Hospitals. When compared to the western patients getting the earliest possible treatment [9].

Abdominal collections:

Cases in which tube drain have been kept to detect the post-operative bile leak have resulted in controlled fistula with almost no signs of localized or generalized peritonitis. In uncontrolled fistula huge volumes of bile accumulate in the peritoneal cavity or sometimes in sub-phrenic or sub-hepatic spaces. Sub-diaphragmatic collections are seen only in 16% of cases on ultra sound abdomen and generalized peritoneal collections in 4% (i.e., one case) due to blockage of drain. No collection is seen in about 80 % of cases because of free flow of bile through the tubes. The surgical clinics of N A reports sub-hepatic collections in as many as 25% of cases on ultra sound abdomen.

ERCP Vs Cholangiogram:

Out of 10 cases, post-operative ERCP was done in 8 cases out of which 4 cases were found to have ductal injuries and 1 were having normal anatomy. Post-operative cholangiogram was done in 1 case.

Management:

In the present study, 56% of the patients were treated conservatively who required no therapy and surgical placement of the drain itself was sufficient as compared to the 25% in one study. Endoscopic management of biliary leak is seen in 24% with stenting alone in 16% and sphincterotomy + stenting in 8% of cases as compared to one study. Primary repair over T tube is attempted in 12% of cases where the duct injury is detected intra operatively. Re-Exploration was required in only 1% of the cases.

Drains:

Death reported in one case was due to septicemia. In 7 cases drains were removed by 6th POD in which injury was detected in one case. In 5 cases drains were removed after 14th POD in which injury was found in 3 cases.

Mortality and morbidity:

Mortality and morbidity associated with open chole cystectomy found to be higher as compared to laparoscopic cholecystectomy. Mortality with open procedure found to be 0.5% and 5% morbidity, whereas laparoscopic procedure found to have 0% mortality with 27% morbidity [10].

CONCLUSION:

Pain abdomen, Jaundice, Nausea and vomiting are the major complaints in case of bile leaks and fistulas. Pathologically

Chronic cholecystitis is commonest cause of leaks after Surgery mainly because of fibrosis at calots triangle. Incidence of Post-operative bile leaks is almost the same in open and laparoscopic cholecystectomy. Routine placement of drains is must because it permits post-operative evacuation of sero-sanguineous exudates and monitoring of bleeding or leakage of bile. Abdominal collections, bilomas or sub-hepatic abscess are reported less with the placement of drains. Intra operative detection bile duct injury is commonly noticed with open than laparoscopic cholecystectomy. Laparoscopic injury is attributed primarily because of inexperience with instrumentation and techniques or the experienced surgeon familiar with proper methods yet with inadequate exposure in the operative visual field due to acute or chronic inflammation. Pre-operative cholangiogram is required to know the abnormal duct anomaly. In case of severe inflammation and adhesions, fundus first method carries least duct injury. Drain amount usually becomes nil by 6th POD. Cases which continued to drain after 5-7 days approximately should be suspected as having duct injury and subjected to ERCP. Most of the post operative bile leaks are managed conservatively and by endoscopic procedures, rarely requiring re-operation. Mortality and Morbidity with laparoscopic is much less compared to open cholecystectomy provided it is done in experienced hands.

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