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Symptomatic Time Period And Type Of Laparoscopic Subtotal Cholecystectomy For Cholecystitis Management -Our Institutional Experience - A Prospective Study

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ABSTRACT :
INTRODUCTION : Subtotal cholecystectomy (SC) is a procedure that removes portions of the gallbladder when critical view of safety cannot be identified in ”difficult gallbladders.”It is a modified bail out strategy as contrast to open surgery. The sole purpose of laparoscopic subtotal cholecystectomy is to remove the pathology and reduce complications associated with long term crippling of patient .
AIMS & OBJECTIVES : Toassessthe symptomatic time period and preferred type of subtotal cholecystectomy performed with outcomes of laparoscopic subtotal Cholecystectomy(LSC) in our tertiary care hospital.
MATERIALS & METHODS : This is a hospital based study , conducted in the Department of Surgery, chettinad academy of research and education conducted from January 2020 - April 2022. 25 patients were studied and they underwent LSC. All inclusion and exclusion criteria were taken into consideration .
RESULTS : Primary outcome was to study the symptomatic time period of disease with type of LSC adopted at the time of surgery . The other variables taken into consideration were age , gender of patient , duration of surgery , postoperative stay , postoperative major complications and HPE report at follow up. 25 patients underwent LSC type A and B, type C and D were not done. Patients were started on diet on POD 1. Postoperative pain VAS gradually reduced from 7 to 2 on POD 4. Drain was removed on an average of POD 4. Patients were discharged on an average of POD 5. Patients were called for outpatient visit after 7 days of surgery for suture removal and follow up with HPE report.
CONCLUSION : Laparoscopic subtotal cholecystectomy is a safe alternate route for difficult approach when laparoscopic cholecystectomy is proposed and Type A LSC is preferred in patients with Cholecystitis whereas TYPE B LSC is preferably done in chronic Cholecystitis from the study conducted in our institute . Overall there is a need for high quality research in the management of Cholecystitis with Laparoscopy and further techniques with advancements.

I. INTRODUCTION :

Laparoscopic cholecystectomy is a gold standard treatment for benign gall bladder pathologies and recently with advances for malignant entity as well. After the introduction of laparoscopic cholecystectomy (LC) in the mid-1980s [1], the laparoscopic approach quickly became the standard treatment for gallstone disease . When the ’’critical view of safety ‘‘(positive identification of biliary anatomy) cannot be obtained during dissection of Calot‘s triangle, conversion to open surgery is advocated to prevent bile duct injury [2] . Laparoscopic subtotal cholecystectomy (LSC) is a ”modified redemption procedure” that ensures safe removal of gall bladder and henceforth reduced complications . LSC consists of the removal of most of the organ, usually with dissection at the infundibulum. According to the classification by Henneman et al, there are four types depending on the preservation of the posterior wall, the area of the dissection and the management of the remaining structures. Type A is based on preserving the posterior wall, which would be attached to the gallbladder bed, without closing the gallbladder remnant; type B involves preserving the posterior wall by closing the gallbladder remnant; type C involves making the dissection at the infundibulum of the gallbladder, with closure of the gall- bladder remnant; similarly, in type D, the division is made at the area of the

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infundibulum of the gallbladder, although it is not closed. [3] [Fig1]
The surgeon should remember that a 95% cholecystectomy (i.e., STC) is always safer than a 100 % cholecystectomy where variable portion of the bile duct is also excised along with gallbladder, and bile leak from gallbladder is always safer (i.e. dissection very close to gallbladder wall) then from the bile duct.

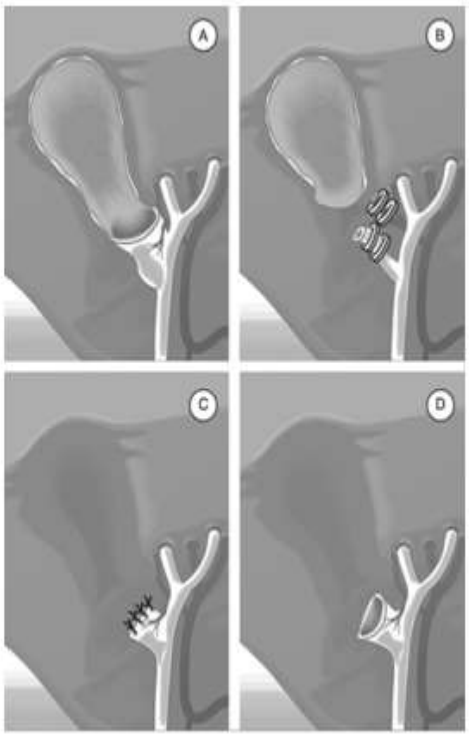

Fig 1:
(A) preservation of the posterior wall of the gallbladder with open remnant; (B) preservation of the posterior wall of the gallbladder with closed remnant; (C) closure of the gallbladder remnant without preservation of the posterior wall; (D) open gallbladder remnant without preservation of the posterior wall.[4]

Aims & Objectives : Toassessthe symptomatic time period and preferred type of subtotal cholecystectomy performed with outcomes of laparoscopic subtotal Cholecystectomy(LSC) in our tertiary care hospital

Materials & Methods: This is a hospital based study , conducted in the Department of Surgery, chettinad academy of research and education conducted from January 2020 - April 2022. All patients admitted in department of general surgery with history , clinical examination and radiological evidence of Cholecystitis were included in the study. Total of 38 patients were taken into consideration and only 25 were selected . All patients were evaluated for demographic characteristics, operative time, duration of hospital stay ,intra operative and postoperative complications .

Inclusion Criteria : 1.Both male and female patients in the age group 20 to 50 years were included 2. Patients with clinical diagnosis and confirmed radiological diagnosis of Cholecystitis were included in the study.

Exclusion Criteria : 1. Patients not confined to the above age group were excluded. 2.Patients who were directly proceeded for open cholecystectomy 3.Patients who underwent other accompanying surgeries in a single laparoscopic setting 4.Patient without Cholecystitis and complications like mucocele or empyema of gall bladder 5.Patient with uncontrolled DM / immunocompromised states were excluded

A detailed history with reference to symptomatic time period was taken and abdominal examination was done daily till intervention. All Patients were given IV Piperacillin Tazobactam according to weight, kept nil per oral till Surgery and posted for surgery within 72 hours of admission. Patients were explained about their condition in detail with the complications that can be expected intra operatively , the need for laparoscopic subtotal cholecystectomy or conversion to open surgery and consent was obtained followed by preoperative preparation. Patient is placed in reverse trendelenburg position . Under general anesthesia laparoscopic ports are created in umbilical , epigastrium , right midclavicular line and right anterior axillary line . Pneumoperitoneum is created . Intraoperative visualisation of gall bladder and the surrounding structures are made . Routine steps of critical view of safety is approached and when we hit the hard point of anatomical alteration in the hepatobiliary tree like dense adhesions of gall bladder to surrounding structures , frozen calots etc causing difficulty for achieving critical view of safety , we proceeded for laparoscopic subtotal cholecystectomy.
The division of infundibulum is carried out by diathermy , type A or type B is performed based on the difficulty. Gall stones if any were visualised in the lumen of remnant , which were removed . Hemostasis is achieved. subhepatic drain is kept and closure is done following release of pneumoperitoneum .

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TYPE B LSC

TYPE A LSC

II. RESULTS :

A total of 25 patients who underwent Laparoscopic subtotal cholecystectomy in chettinad hospital and research institute of one year from January 2021 to April 2022 were included in this study. Intraoperative findings were documented by surgeons , complications and postoperative recovery were also documented and analysed.

Table 1: Demographic Characteristics, Operative Time , Duration of Hospital Stay in all patients and Drain removal

CHARACERISTICS	TYPE A LSC	TYPE B LSC
SYMPTOMATIC TIME PERIOD	7days - 4 months	10days -12 months
TOTAL PATIENTS	16(64%)	9(36%)
AGE	32± 3	37± 5
MALE	7 (28%)	6(24%)
FEMALE	9(36%)	3(12%)
OPERATIVE TIME	100-120 minutes	130-194 minutes
POSTOPERATIVE HOSPITAL	4- 5 days	4-6 days

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STAY		
SUTURE REMOVED ON	**POD 7**	**POD 7**
DRAIN REMOVED ON	**POD 4**	**POD 4**

Table 2 : Postoperative complications

CHARACERISTICS	TYPE A LSC	TYPE B LSC
WOUND INFECTION	**NIL**	**NIL**
BILIARY LEAK	**NIL**	**NIL**

Table 3 : Postoperative HPE

CHARACERISTICS	TYPE A LSC	TYPE B LSC
FEATURES OF ACUTE CHOLECYSTITIS	**10(40%)**	**2(8%)**
CHRONIC CHOLECYSTITIS	**6(24%)**	**7(28%)**

25 patients underwent LSC type A and B, type C and D were not done. Patients were started on diet on POD 1. Postoperative pain VAS gradually reduced from 7 to 2 on POD 4. Drain was removed on an average of POD 4. Patients were discharged on an average of POD 5. Patients were called for outpatient visit after 7 days of surgery for suture removal and follow up with HPE report.

III. DISCUSSION :

"Difficult gallbladder" (GB) is a procedure with an increased surgical risk compared with standard cholecystectomies [5] [6] . Subtotal cholecystectomy was first reported by Madding in 1955 [7] as a replacement for cholecystostomy and a rescue procedure in cases of technically difficult total cholecystectomy (TC). Subtotal cholecystectomy was performed by piecemeal excision of the GB, starting at the Hartmann pouch and leaving a rim of the posterior wall attached to the liver. The remnant is either coagulated or closed with purse string suture . This technique is adapted by many surgeons with modifications . With the introduction of laparoscopic cholecystectomy by Muhe (1985) and Mouret (1987)[8] , LSC was considered a rescue technique in cases of difficult GB to avoid misidentification injuries of the bile duct and vascular structures from severe inflammations that otherwise would have required conversion to an open cholecystectomy . Morbidity and Mortality of open technique is drastically reduced when LSC is proceeded for .TYPE A LSC does not involve the closure of remnant and plain coagulation of remnant finishes the procedure , thus reducing the operative time and bleeding . Whereas TYPE B LSC does involve coagulation of remnant after visualisation of empty remnant and closure. Whereas TYPE C involves dissection upto infundibulum which can injure the Cystic duct or liver parenchyma leading to complications like bile duct injury or leak and bleeding from liver parenchyma .

Patients in our study had an average age of 35 and M:F (Male : female) is 2.5:3 in Type A LSC , 3:2 in Type B LSC which is not significant in this study. Intraoperative time period is variable according to skill of a surgeon and availability of standardised laparoscopic instruments , in our study. Intraoperative time period was more in Type B LSC compared to Type A and postoperative hospital stay did not have much

difference . The symptomatic time period varies from one week to 1 year . In Type A LSC patients present within 4 months and upto 1 year in Type B LSC .

In our study Type A LSC is preferably performed in view of dense adhesions and frozen calots triangle, reducing the intraoperative time .The symptomatic time period is Less compared to Type B LSC . Bleeding was more in Type B LSC . Gall bladder injury and bile leak intraoperatively is 16% in Type A LSC and 8% in Type B LSC.

Postoperatively drain was removed on an average of POD 4 and wound infection is 0% in our study . Patients with HPE report of chronic Cholecystitis is 24% in Type A LSC and 28% in Type B LSC . Features of acute Cholecystitis is 40% in Type A LSC and 12 % in Type B LSC. Symptomatic time period is less in Type A LSC and thus the intraoperative complications, postoperative stay compared to Type B LSC . Type B LSC had long time lag before presenting to hospital and more intraoperative complications . Postoperative follow up done till 6 months showed no recurrence of symptoms or delayed complications in both group of patients .

IV. CONCLUSION :

Type A Laparoscopic subtotal cholecystectomy is chosen preferably by surgeons in our institute for patients presenting with features of Cholecystitis which maybe acute or chronic. Subtotal cholecystectomy is not a replacement for total cholecystectomy ; however, when necessary, it achieves morbidity rates in difficult GBs comparable to those reported for total cholecystectomy, especially regarding CBD injuries[9].

Hence we conclude that laparoscopic subtotal cholecystectomy is a safe alternate route for difficult approach when laparoscopic cholecystectomy is proposed and Type A LSC is preferred in patients with Cholecystitis whereas TYPE B LSC is preferably done in chronic Cholecystitis from the study conducted in our institute . Overall there is a need for high quality research in the management of Cholecystitis with Laparoscopy and further techniques with advancements.

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