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Research Article

Subtotal Cholecystectomy for the Treatment of Difficult Gall Bladder

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Abstract

Purpose: To appraise the efficacy and result of laparoscopic subtotal cholecystectomy (LSC) for patients with severe cholecystitis.

Methods: Between February 2016 and March 2017, 30 patients with severe cholecystitis underwent laparoscopic subtotal cholecystectomy.

Results: The mean operative time was meaningfully high 111.4 min, and the mean blood loss was meaningfully high 52.1 ml. postoperative morbidities 3.3% and postoperative hospital stay 4.9 days. No patient had residue gallstones or gallbladder cancers after a median follow-up of 12 months.

Conclusion: Laparoscopic subtotal cholecystectomy is harmless and effective for avoiding bile duct harms and sinking the conversion rate in patients with difficult gall bladder.

Keywords: *Subtotal Cholecystectomy; Laparoscopic; Cholecystitis; Liver Cirrhosis*

Introduction

Subtotal cholecystectomy, whether open or laparoscopic, has been described as a harmless and effective operation. It is demonstrated in instances of extreme intense cholecystitis, gangrenous cholecystitis or necrotizing cholecystitis, where the level of irritation blocks safe perception of biliary structures. Halfway cholecystectomy evacuates most of the gallbladder, leaving a bit of the neck, and at times the back mass of the gallbladder, in place [1]. It is supposedly endured well, with couple of minor postoperative complexities, however the issues that do happen incorporate repetitive side effects, choledocholithiasis and persevering biliary fistula [2]. Historical records have reported incomplete cholecystectomy performed in the 1950s with washout and evacuation of gallbladder substance with position

of a deplete in the hole of the cystic conduit when analyzation of the hilar structures would be excessively unsafe, or the gallbladder was thickly disciple to the liver bed [2]. It ought to be noticed that despite the fact that actually conceivable, fractional cholecystectomy is not as much as the perfect strategy, which is an entire cholecystectomy, with add up to expulsion of the gallbladder and conclusion of the cystic conduit leftover.

Subtotal cholecystectomy might not offer a treatment in all patients as leaving a portion of the gallbladder in situ in connection to the common bile duct might contribute not only to the creation of new stones, but also leaves a path intact for continued biliary colic and obstruction.

Patients and Methods

Patients

LSC was performed only if no malignant findings were seen on computed tomography (CT), magnetic resonance imaging (MRI), ultrasonography (US), and tumor marker examination. Laparoscopic subtotal cholecystectomy was performed for severe cholecystitis in 30 patients between February 2016 and March 2017. The final decision about LSC was made intraoperatively, and it was performed by an experienced laparoscopic surgeon; defined as a surgeon granted technical certification by the Japan Society for Endoscopic Surgery. Operative time, blood loss, diet resumption, postoperative hospital stays, rate of bacteriologically positive bile, morbidities incidence, and surgical site infection (SSI) were recorded.

Surgical Method

Plain cholecystitis was categorized into the following three categories to help us choose on the most suitable LSC technique: Type 1 was defined as a risk of bile duct injury from dissection of the cystic duct, associated with inflammatory induration or severe adhesion of Calot's triangle; Type 2 was defined as a risk of hepatic vein injury in the liver bed with prominent inflammatory findings in the gallbladder bed; and Type 3 was defined as a mix of Types 1 and 2. In Type 1 surgery, the gallbladder was transected at its neck with no dissection or ligation of the cystic duct or artery (Figure 1A). After LSC, the mucosa in the proximal remnant was cauterized as extensively as possible, and the proximal stump of the gallbladder was sutured and closed with absorbable suture material (Figure 1B). If suturing was difficult because of severe induration of the gallbladder wall, the mucosa adjacent to the cystic duct was sutured and closed from the inner lumen of the gallbladder before the greater omentum was patched to its remnant wall. For Type 2 surgery, LSC was performed on the gallbladder bed and the liver was left intact (Figure 2A) before cauterizing the mucosal layer of the remnant wall with electric cautery (Figure 2B). In Type 3 surgery, procedures for both Type 1 and 2 were completed. All gallstones were retrieved and extracted into a plastic bag with the excised gallbladder wall. An information drain was inserted in Types 1 and 3, but not in Type 2.

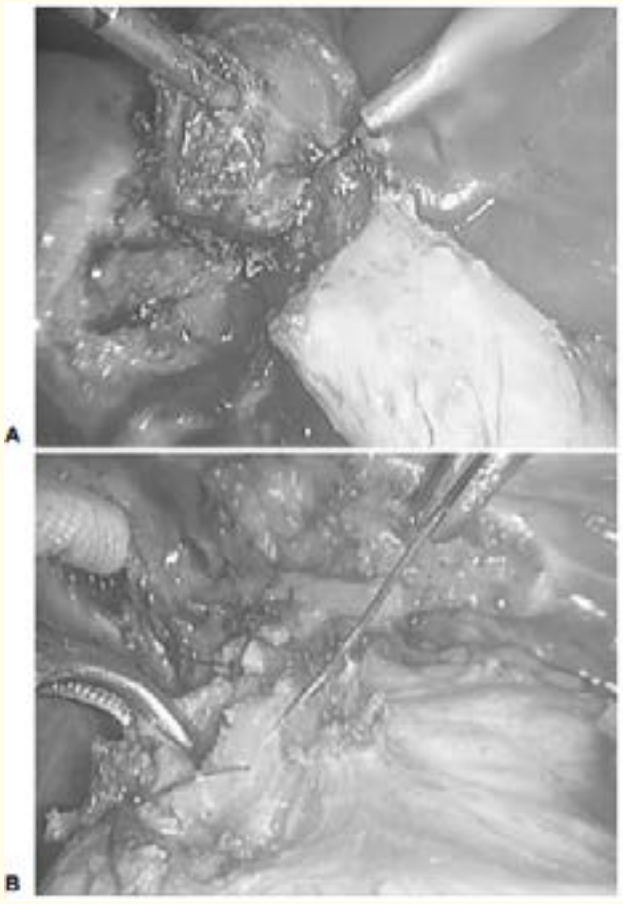

Figure 1A, B: *Laparoscopic subtotal cholecystectomy for cholecystitis with severe adhesion of Calot's triangle (Type I). A: The gallbladder was transected at the neck without dissection or ligation of the cystic duct or artery. B: The proximal stump of the gallbladder was sutured and closed with absorbable thread.*

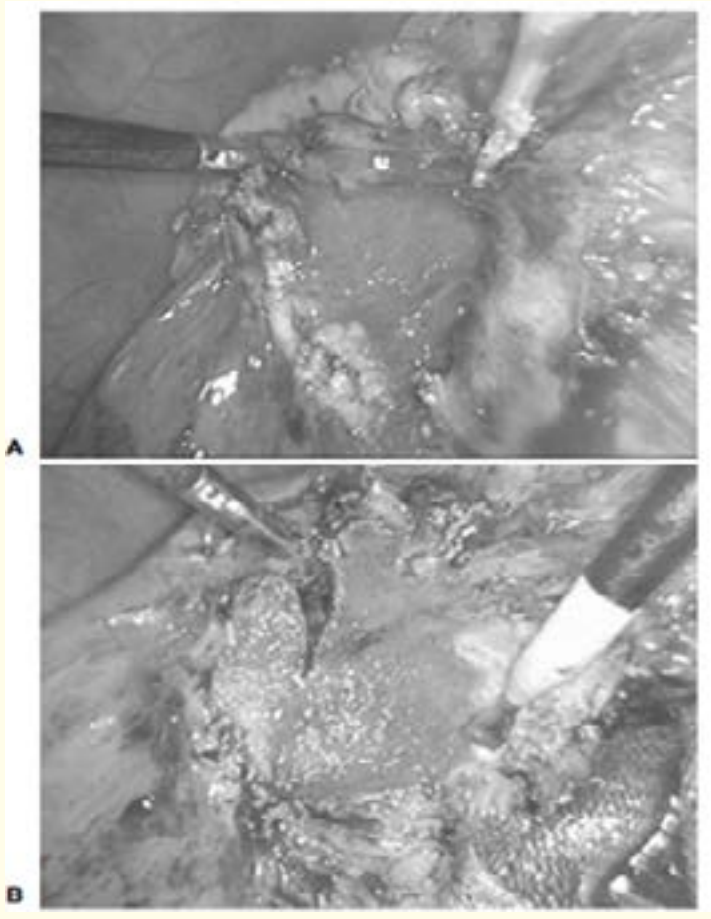

Figure 2A, B: *Laparoscopic subtotal cholecystectomy for a patient with cirrhosis and severe inflammation of the gallbladder bed (Type II). A: Laparoscopic subtotal cholecystectomy was performed on the gallbladder bed leaving the liver intact. B: The mucosal layer of the remnant wall was cauterized with electric cautery.*

Result

Among the 30 patients who underwent LSC, 18 (60%) were 65 years or older and 13 (43.3%) had concomitant cardiopulmonary disease. In the LSC group, 6 patients (20%) had Type 1, 16 patients (53.3%) had Type 2, and 8 patients (26.7%) had Type 3 inflammations. After a median follow-up of 12 months, none of the patients had remnant gallstones, recurrent cholecystitis, or gallbladder cancers (Table 1, 2).

	Subtotal Cholecystectomy (n =30)
Age (years)	62.9
Sex (male : female)	27,13
Operative time (min)	111.4
Blood loss (ml)*	52.1
Bile duct injury (%)	1.7
Conversion to open surgery (%)	1.7
Postoperative morbidities (%)	3.3
Bacteriologically positive bile (%)	38.3
Surgical site infection (%)	1.7
Diet resumption (days)*	1.4
Postoperative hospital stay (days)*	4.9

Table 1: *Patient characteristics and operative outcomes for laparoscopic subtotal cholecystectomy (LSC).*

Characteristics	N	%
Age > 65 years	18	60
Age < 65 years	12	40
Concurrent disease		
Diabetes mellitus	7	23.3
Cardiovascular disease	11	36.7
Respiratory disease	2	6.7
Cancer in other organs	2	6.7
Liver cirrhosis	4	13.3
Clinical presentation		
Acute cholecystitis	7	23.3
Chronic cholecystitis	23	76.7
Classification of severe cholecystitis		
Type I	6	20
Type II	16	53.3
Type III	8	26.7
Complications		
Bile duct injury	1	3.33
Duodenum injury	1	3.33
Postoperative hepatic dysfunction	1	3.33
Postoperative bile leakage	0	0
Gallbladder cancer	0	0
Recurrent cholecystitis	0	0
Remnant gallstone	0	0

Table 2: *Features and difficulties of 30 patients who experienced laparoscopic subtotal cholecystectomy.*

Discussion

Laparoscopic cholecystectomy is hard to finish in patients with serious cholecystitis with intense or ceaseless aggravation of Calot's triangle or liver cirrhosis. The method regularly brings about bile conduit damage and seeping from the cystic or hepatic course [4,5]. A troublesome LC traditionally includes transformation to an open strategy, yet this may bring about expanded postoperative agony, postponed portability, and a delayed healing facility stay [6]. In some open cholecystectomies, seepage is started without fruitful culmination of the cholecystectomy, due to extreme attachments or indistinct life systems of the bile pipe in a few patients with serious cholecystitis. Subtotal cholecystectomy is a protected and attainable system for extreme cholecystitis; Bornman and Terblanche [7] first depicted open subtotal cholecystectomy in 1985; at that point in 1993, the helpfulness of LSC was accounted for serious cholecystitis [8,9]. Laparoscopic subtotal cholecystectomy can decrease operation time, blood misfortune, and the postoperative doctor's facility remains. Therefore, since 2000, we have performed LSC for patients with extreme cholecystitis or liver cirrhosis, bringing about a critical lessening in the rates of bile conduit damage and change to open surgery.

Laparoscopic subtotal cholecystectomy presentation can avert misidentification of the bile conduit, whereby damage to the bile pipe or different organs is stayed away from. Consequently, we characteristic the diminished rates of bile conduit damage and transformations to open surgery at our foundation to the presentation of LSC. The LSC system permits an intraoperative bile spill into the stomach pit; subsequently, the preoperative and intraoperative prohibition of gallbladder malignancy is of most extreme significance. In patients experiencing LSC for extreme cholecystitis, it is important to check for any indication of threat on preoperative CT or MRI examines. All patients experience US to check the blood stream in the gallbladder divider [10]. On the off chance that any harmful discoveries are suspected intraoperatively, LSC ought to be changed over to an open cholecystectomy decisively. None of the patients in this arrangement obliged transformation to open cholecystectomy for suspected gallbladder disease. As far as anyone is concerned, there have been no reports of gallbladder growth following LSC. Experienced laparoscopic specialists were constantly required in the operations in this arrangement, and the choice to perform LSC was made just for those patients with serious cholecystitis or liver cirrhosis. There were no instances of gallbladder growth found amid the middle follow-up of 12 months, in spite of the fact that this period is moderately short for follow-up of gallbladder tumor advancement. We perceive the requirement for consistent catch up with US, attractive reverberation cholangiopancreatography, and tumor marker examinations joined by consciousness of the indications of conceivable growth advancement. Different creators have announced that 3.0% [11] to 19.6% [12] of LSCs performed on patients with extreme cholecystitis were changed over to open cholecystectomy, and that 3.0% [11] to 17.9% [9] of these patients had a bile spill.

The rates of intra-stomach abscess and remainder gallstones after LSC were accounted for to be 3.8% [13] and 16.2% [12], separately. In the present examination, LSC was changed over to an open cholecystectomy in 1.6% of patients, yet in0% in the later period. The occurrence of intraoperative bile pipe damage was as low as 1.6%, and there were no instances of postoperative bile spill. No gallbladder tumor, intra-stomach boil, leftover gallstone, or intermittent cholecystitis was found amid development, showing the security of LSC. Besides, we trust that our idea of characterizing serious cholecystitis into three sorts: extreme bond of Calot's triangle, extreme grip of the liver bed, and a blend of these, in mix with LSC adjusted by the characterization, speaks to a successful new worldview for executing LSC. Aggravation is frequently serious in elderly patients with cholelithiasis, who may have attending cardiopulmonary infections [14], bringing about delayed postoperative hospitalization [15,16]. Lessened working time and diminished blood misfortune would speak to surprising enhancements in the treatment of extreme cholecystitis of elderly patients with corresponding cardiopulmonary infections. Henceforth, LSC can give powerful treatment as it doesn't include persuasively dismembering bonds of the gallbladder neck or liver bed. Laparoscopic surgery is additionally connected with less postoperative injury torment and less confusions than open methodology, bringing about a shorter healing facility stay, which is particularly advantageous to the elderly. Since the presentation of LSC, the rate of postoperative morbidities in elderly patients has diminished essentially (4.2% versus 1.6%; $P < 0.041$), as has the middle postoperative healing facility stay (7 days versus 4 days, $P < 0.001$). Our outcomes demonstrate that LSC is a negligibly intrusive system for elderly patients with extreme cholecystitis.

Conclusion

LSC is a safe and useful procedure for preventing bile duct injuries and lowering the conversion rate in patients with technically difficult severe cholecystitis or liver cirrhosis. Subtotal cholecystectomy is an significant instrument for general and hepatobiliary surgeons facing compound intraoperative situations at high risk of postoperative complications. Subtotal cholecystectomy is not a replacement for TC; nevertheless, when essential, it attains morbidity rates in difficult GBs comparable to those stated for TC, especially regarding CBD injuries. In this way, treatment in patients with complex conditions experiencing SC is managed as safely as in patients with simple conditions undergoing TC. Laparoscopic Subtotal Cholecystectomy generally produces better outcomes compared with open Subtotal Cholecystectomy. Based on our experience, we recommend LSC when LC is contraindicated.

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