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Original Article

Subtotal Cholecystectomy - A Clinical Experience

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Abstract

Introduction: Subtotal cholecystectomy (SC) is a safe procedure in cases of difficult gallbladder (GB) where the Calot's anatomy is unclear. Continuing with laparoscopic cholecystectomy in unclear Calot's anatomy may be dangerous and may result in common bile duct injury. In our study, a significant number of patients got converted to open and underwent SC due to unclear anatomy at the Calots. The purpose of our study is to do the retrospective analysis and assess the results of subtotal cholecystectomies in the last 1 year which has made us to come to the conclusion that SC is a safe alternative to standard cholecystectomy in difficult GBs.

Materials and Methods: Patients who were planned for laparoscopic cholecystectomy between March 2015 and August 2016 were evaluated retrospectively. A total of 142 cholecystectomies were performed during this period. Twelve patients underwent SC out of which ten were open and two were laparoscopically done. In these cases, the GB was resected at the neck, the stones were evacuated, and the remnant was closed by continuous sutures.

Results: A total of 142 cholecystectomies were performed between March 2015 and August 2016 out of which 12 subtotal cholecystectomies were done, 2 were laparoscopically done and 10 were open, 8 were males and 4 were females. Bile leak was noticed in three patients who underwent endoscopic retrograde cholangiopancreatography and made an uneventful recovery. Seroma and post-operative wound infection were other morbidities which were noticed. No mortalities were present. Average length of hospital stay was 7 days.

Conclusion: In cases where there are dense omental or bowel adhesions in the Calot's area and it is difficult to identify the structures, it is safe to undertake a SC.

Key words: Subtotal cholecystectomy, Gangrene gallbladder, Empyema gallbladder

INTRODUCTION

Cholecystectomy is one of the common operations which a general surgeon deals in his day-to-day practice. Although it is common, it is potentially a difficult operation due to the variable anatomy at the Calots. The presence of dense omental or bowel adhesions due to inflammation and fibrosis in the wall of the gallbladder (GB) and surrounding structures makes it a more difficult operation.

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"In 1985 Prof Dr. Erich Muhe of Germany performed the first laproscopic cholecystectomy. He performed 94 such procedures before another surgeon, Phillipe Mouret of Lyon, France, performed his first laproscopic cholecystectomy in 1987, followed by Francois Dubois of Paris, France in 1988."[1]

The incidence of bile duct injury in laparoscopic cholecystectomy is 0.25-0.5%. The incidence is still higher in cases of difficult calots. Hence, clear identification of the structures in the Calot's area is of great significance to perform a safe laparoscopic cholecystectomy.[2] The incidence of bile duct injury in open cases is 0.2%.[3]

Subtotal cholecystectomy (SC) is considered as a safe, effective, and a definitive alternative to the standard cholecystectomy in most of the difficult cases where Calot's anatomy is unclear including portal hypertension.[4] In Type I Mirizzi syndrome, SC is the operation of choice.[5]

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MATERIALS AND METHODS

From March 2015 to August 2016, 142 patients were subjected to laparoscopic cholecystectomy in SIII unit in the Department of General Surgery, St. Marthas Hospital, Bengaluru. Of them 130 patients underwent laparoscopic cholecystectomy, in 12 patients, SC had to be done, 2 laparoscopic SC and 10 open SC (Table 1). The age of the patients was in the range of 35-75 years. Eight were male and four were females. The average stay in the hospital was 7 days. The indications for the SC in the present series were dense omental and bowel adhesions due to inflammation, perforation, gangrene, and empyema GB (Table 2).

Twelve patients were subjected to SC, in which two were laparoscopically and ten were open.

Preoperatively, the patients underwent the following investigations:

Investigations	Number of patients
USG abdomen and pelvis	142
CT abdomen	3
MRCP	1
MRI	1

MRI: Magnetic resonance imaging, CT: Computed tomography, MRCP: Magnetic resonance cholangiopancreatography, USG: Ultrasonography

RESULTS

Twelve patients underwent SC from March 2015 to August 2016. This represents 8.4% of the total 142 cholecystectomies performed during the above period.

Post-operatively, three patients had significant bile leak which did not subside after conservative management. These three patients underwent endoscopic retrograde cholangiopancreatography (ERCP) and stenting and recovered. Two patients had post-operative wound infection out of which one developed incisional hernia. One patient had subhepatic collection which was managed conservatively and recovered. No mortality was noted (Table 3).

Table 1: Surgeries for cholelithiasis from March 2015 to August 2016

Surgeries	Number of patients (%)
Total cholecystectomies	142 (100)
Laparoscopic cholecystectomies	130 (91.54)
Laparoscopic subtotal cholecystectomies	2 (1.40)
Open subtotal cholecystectomies	10 (7.04)

Table 2: Indications for SC

Indications	Number of patients
Dense omental adhesions	12
Empyema of the gallbladder	4
Gangrene of the gallbladder	4
Perforation	1

Table 3: Post-operative complications

Complications	Number of patients (%)
Bile leak	3 (25)
Wound infection	2 (16.6)
Subhepatic collection	1 (8.3)
Bile duct injury	0
Duodenal injury	0

DISCUSSION

SC was first reported by Madding in 1955 as a replacement for cholecystectomy and a rescue procedure in cases of technically difficult total cholecystectomy. His technique involved incising the GB at the fundus down to 1 cm from the CD, followed by excising the redundant GB wall.[6]

Bornman and Terblanche described piecemeal excision of the Hartmann's pouch to expose the cystic duct which is closed by the purse-string sutures from within and also leaves the posterior wall of the GB intact which is either cauterized or left intact.[4]

With the introduction of laparoscopic cholecystectomy by Muhe (1985) and Mouret (1987), laparoscopic SC 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.[7]

SC is a safe and satisfying procedure in patients for whom the standard operation would entails considerable danger.[4] The possibility of injury to the structures in the Calot's region due to distorted anatomy as a result of severe inflammation and adhesions can be avoided by opting the above procedure.

For the experienced surgeon, the average operative time for a laparoscopic cholecystectomy is <1 h. The possibility of prolonged laparoscopic cholecystectomy should be anticipated in patients with acute cholecystitis with intra-abdominal adhesions and adhesions in the Calot's region. Prolonged surgery increases the risk of complications such as bile duct injury and bleeding.[8] In our study, the average operative time was 45 min to 2 h.

Elshaer *et al.* reported post-operative ERCP was performed in 4.1% of the patients and the indications were retained stones in 58.8% and persistent bile leak in 31.4%.[9] In our

study, we performed in 25% of the patients and were mainly for the persistent bile leak.

CONCLUSION

SC is a safe, effective, and definitive procedure in cases with unclear Calot's anatomy where it achieves decreased morbidity rates compare to those reported with total cholecystectomy.

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