

RETROSPECTIVE DESCRIPTIVE STUDY OF OPEN FUNDUS FIRST METHOD CHOLECYSTECTOMY, IN DISTRICT HOSPITAL, DAVANGERE

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Abstract

Background: Fundus first method is a widely accepted and practiced procedure in open cholecystectomy to deal the difficult cases. It can be still followed in normal cases also with mini laparotomy in a setting where laparoscopic facilities are not available. **Materials and Methods:** Retrospective Descriptive Study, done for patients undergoing Open Fundus First Cholecystectomy between January 2010 to December 2021. **Result:** 65 women and 35 men underwent Open Cholecystectomy in Surgery A unit, in the given time period. Median age being 56 years. 85 were elective cases and 15 emergency cases. Median operative time for elective and emergency cases is 50 minutes and 75 minutes respectively. Median post operative stay is 3 and 5 days for elective and emergency cases respectively. Morbidity is 11%. None of the patient had CBD injury during surgery and none of them came with CBD stone complications during follow-up. **Conclusion:** Open Fundus First Cholecystectomy is still advisable where there are no proper facilities for laparoscopic surgeries. With appropriate techniques, injury to CBD and CBD stone complications post operatively can be avoided.

INTRODUCTION

Gall bladder disease is one of the most common procedures done all over the world. Before 1991, an open technique was the standard procedure for cholecystectomy. This usually included performing an intraoperative cholangiogram, and patients usually had a 3-6 day postoperative in-hospital stay. Soon after its introduction, laparoscopic cholecystectomy was considered the method of choice for treatment of gallstone disease,^[1,2] and an early consensus conference concluded that it might confer advantages over open surgery.^[3] Today 92% of all cholecystectomies are done laparoscopically, although open cholecystectomies remain more common in minimal resource settings. With the advent of laparoscopic cholecystectomies, CBD injuries increased by 3 to 10 times. The injury rate dropped to 0.3% but has remained the same despite better training, preventive maneuvers and equipment.

In open cholecystectomy there are two approaches, Retrograde technique and Fundus first method. With many preferring the retrograde technique as it has less chances of hemorrhage and slippage of small stones to CBD.

In previous reports from a controlled trial, no significant differences were observed between mini-laparotomy and laparoscopic cholecystectomy in terms of patients' opinion of general well-being abdominal pain, and scarring one year after surgery^{4,5}. Health-care costs are lower after mini laparotomy cholecystectomy than laparoscopic cholecystectomy.^[6-8]

Against this background it was appropriate to assess open, small-incision cholecystectomy with fundus first approach as a treatment for all patients with gallstone disease in a district hospital with responsibility for surgical training. The assessment emphasised early surgery for patients with acute cholecystitis or, chronic cholecystitis, empyema gall bladder, gangrenous and perforated gall bladder.

Objectives

To assess the morbidity in patients undergoing Open Fundus First Cholecystectomy.

MATERIALS AND METHODS

Retrospective Descriptive Study

Cases admitted in Chigateri District Hospital, attached to JJM Medical College, Davangere (under surgical unit-A), who underwent Open Fundus First

cholecystectomy, were Retrospectively evaluated according to a protocol that involved patient characteristics, surgical details and intra-operative and postoperative complications, including re-operations. Data from January 2010 to December 2021 were retrospectively evaluated.

Sample Size

100 patients who underwent open cholecystectomy in Surgery-A unit were included in the study.

Patients undergoing elective cholecystectomy were given verbal and written information concerning the operation, the expected hospital stay, the complications of surgery. Those admitted through the casualty on emergency basis were transferred to a general surgical ward; from there they were placed on the operation list for cholecystectomy after diagnosis had been confirmed and preoperative measures begun. We tried to operate on patients with acute cholecystitis in the acute or subacute phases of the disease, normally 2 days after admission.

Inclusion Criteria

Patients undergoing open cholecystectomy for Acute and Chronic cholecystitis including Empyema gall bladder, gangrenous and perforated gall bladder were included in the study.

Exclusion Criteria

Patients with CBD stones were not included in the study.

Surgical Technique

The surgical technique used is the Fundus First open cholecystectomy¹⁰⁻¹¹. A Right subcostal incision of approximately 7 to 10 cms in length, 2-3 cms below the Right Costal margin is made. As a routine, the muscle was split longitudinally after cutting of the anterior rectus sheath. The posterior rectus sheath was cut transversely. If distended, the gallbladder was emptied, by making an opening at the fundus and later holding the site with sponge holding forceps or suturing with vicryl. The gallbladder was usually dissected from the fundus region and downwards, with ligation of the cystic artery and cystic duct separately. Normal saline solution was used for washing the abdominal cavity before wound closure. 28fr ICD drain placed for all the cases before closure. Local anaesthesia, 20 – 40 ml of bupivacain 0.25% mg, was infiltrated in the wound at the end of surgery. Early mobilisation was encouraged. Paracetamol was recommended as routine pain medication for five days, if necessary supplemented by diclofenac.

RESULTS

From 1 January 2010 to 31 December 2021, 65 women and 35 men, age between 22 and 75 years old (median 56), underwent open cholecystectomy. 85 cholecystectomies were done as elective procedures and 15 as emergency operations. Ultrasonography confirmed Gall bladder disease diagnosis for all 100 patients.

Gender, American Society of Anaesthesiologists' (ASA) score are shown in Table 1. Age and BMI of patients are shown in Chart 1 & 2 respectively. All the surgeries were done by a single experienced surgeon.

Length of skin incision, operative time and postoperative hospital stay are given in Table 2 for elective and emergency cases separately. Mean postoperative stay for all patients was 3.5 days. Post-operative stay was 3 days for 80 patients with wound incision shorter than 7 cm compared to 4 days for 20 patients with incision 7 cm or longer. Total hospital stay, preoperative stay included, amounted to 5 days (mean) for all patients. 55 patients were cases of Acute calculus Cholecystitis, 30 cases of chronic cholecystitis, 10 cases of empyema gall bladder, 5 cases of gangrenous and perforated gall bladder were operated.

Operative time from the start of incision to the end of procedure is noted. Median Operative time is 50 minutes in our study, which is less compared to median operative time of 55 minutes with retrograde method, performed by the other experienced surgeons in rest of the surgical units.

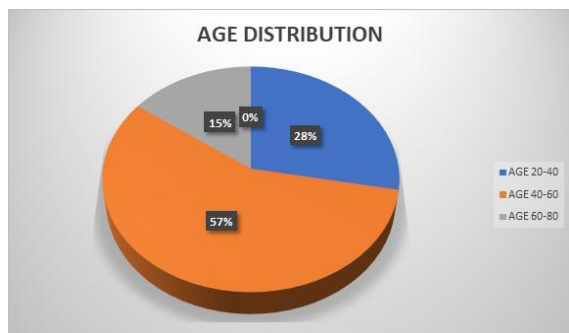
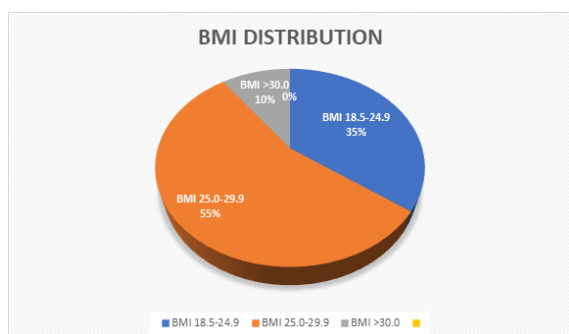
Morbidity of all patients was Eleven percent. One re-operation was done, and there was no mortality. Patient with severe acute cholecystitis, who was re-operated because of bleeding from the liver bed made an uneventful recovery (IIb). Other 6 patients had bile leak from day 1 to day 3, for which no intervention needed, which subsided on its own. Wound infections were identified in 4 patients (grade I in two patients and grade IIa in two patients). Patients with wound infection were older than those without wound infection, mean 67 versus 54 years, but they did not differ significantly from patients without wound infection with respect to emergency indication (30% versus 38%) or BMI (mean 27.3 versus 28.2). None of the patient had CBD injury during the procedure, even though all the patients were operated with Fundus First method. None of the patient came back to the hospital with the complications CBD stone in the follow-up.

Table 1: GENDER, ASA SCORE

	Men	Women	ASA I & II	ASA III & IV
Elective	30	55	76	9
Emergency	5	10	12	3

Table 2: Skin Incision, Operation time and Post operative stay

		Skin incision (cm)	Operation time (min)	Post operative stay (days)
Elective	25 percentile	6	45	2.5
	Median	7	50	3
	75 percentile	10	70	4
Emergency	25 percentile	7	65	4
	Median	8	75	5
	75 percentile	12	90	7

**Figure 1: Age Distribution****Figure 1: BMI Distribution**

DISCUSSION

In the present study of cholecystectomy with intended Small-Incision Fundus First Cholecystectomy for all patients, 15% operations were emergency procedures.

The strength of this report is the inclusion of all cholecystectomies performed by an experienced, single Surgeon during a twelve-year period. Mini-laparotomy cholecystectomy is usually defined as open cholecystectomy through an incision less than 8cms.^[11] In this study median length of incision was 7 cm for elective operations and 8 cm for emergency operations. This demonstrates that surgical training and safety were prioritised in the present study, and it also indicates possibilities of further improvements in day-case rate and convalescence.

The morbidity rate in this series was Eleven percent, when compared to study conducted by Jonas leo et al where the morbidity is 15%.^[12] 10 of 11 complications were of minor clinical importance (Clavien grade I). Total hospital stay in our study was 5 days (mean). These figures compare favourably with other surgical units for gallbladder surgery in Chigateri District Hospital, attached to JJM Medical College, Davangere, who follow Retrograde method for open cholecystectomy. All other 4 surgical units did 350 open

cholecystectomies in total in the same time period, the mean hospital stay was 4 to 5 days (including pre and post-op) in those cases and mean post-op stay was 3 to 4 days, for different units. With median operative time of 55 minutes for elective cases, which is comparable with our study where the median operative time is 50 minutes for elective cases.

Though it is observed that Retrograde cholecystectomy is safer in view of reduced risk of injury to CBD or Right hepatic artery, and decreased chances of slippage of small sized stones to CBD, and less bleeding due to early ligation of cystic artery, Fundus first method cholecystectomy is advised in difficult surgeries like severe inflammatory changes. As in such cases there are higher chances of injury to cystic duct, artery and CBD due to poor visualisation. In our study all the cases were operated by fundus first method and the mortality rate and operative time are comparable to other group where the cases are done in retrograde method.

Early surgery is the optimal treatment for acute cholecystitis (within seven days of the onset of illness), and in mild gallstone pancreatitis surgery should be considered within two to four weeks. Surgical education should therefore prepare the trainee for emergency or urgent gallbladder surgery. The main advantage of using small-incision open cholecystectomy for all patients is its general applicability. Generally Fundus first open cholecystectomy has the risk of slippage of small stones to CBD, and causing complications related to choledocholithiasis. But in our study we did not encounter any such complications related to CBD stones or Injury to CBD.

The limited exposure to open biliary surgery creates a dilemma for training of residents.^[13,14] The present study indicates that small-incision open fundus first method cholecystectomy can still be performed with minimal risk of CBD injury and less chances of slippage of small sized stones to CBD during procedure by emptying the gall bladder before the dissection and with less operative time.

CONCLUSION

Fundus first Open cholecystectomy, with intended mini-laparotomy cholecystectomy, has relatively short hospital stay, similar rate of complications and less operative time when compared to retrograde method. Injury to CBD, Cystic artery, slippage of stone to CBD are of concern and can be minimized

with appropriate techniques. And it is still advisable where there are no proper facilities for laparoscopic surgeries.

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