

Original Research Article

Open Micro-Cholecystectomy Is Still a Valid Alternative in the Era of Laparoscopic Surgery

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Abstract: Today laparoscopic cholecystectomy is considered as the gold standard treatment for gall stone disease. But this facility still is not available for common people in many parts of the country due to the high cost of treatment, technical expertise required and non availability of the technology. So this study was conducted to assess the feasibility and relevance of open cholecystectomy via a very small incision in present era. The aim of this study was to analyze and compare the outcome of open micro-cholecystectomy through a very small incision with laparoscopic cholecystectomy. This study was carried out in two groups of 30 patients each of laparoscopic cholecystectomy(LC) and the open micro-cholecystectomy(MC) done preferably by the fundus first method with a 3-5 cms small subcostal incision. Time required for the procedures, average hospital stay, postoperative pain, complication rates and cosmetic appearance of wound were noted in both groups. Out of 60 patients, 30 were randomized to LC and 30 to MC. The groups were well matched for age and sex. Operating time is less for MC group. Median hospital stay was nearly equal in both groups. Intraoperative complications were less frequent in the MC group, but there was no difference in the postoperative complication rate between the two groups. There was lesser postoperative pain and equally acceptable cosmesis in MC group. There was no bile duct injury in each group and no deaths. In centres where facilities for laparoscopy are not available, open micro-cholecystectomy is a good and feasible alternative to laparoscopic cholecystectomy.

Keywords: Cholelithiasis, Laparoscopic cholecystectomy, Small incision open cholecystectomy, micro-cholecystectomy, minicholecystectomy

INTRODUCTION

Biliary diseases constitute a major portion of digestive tract disorders world over, with cholelithiasis being the forerunner and causing general ill health requiring surgical intervention for total cure [1, 2]. The open conventional cholecystectomy through an 8- 12 cm length muscle cutting incision was until recently considered the gold standard of treatment of symptomatic calculus cholecystitis [3, 4].

The use of a smaller incision in open mini cholecystectomy of 5-7cm length with a limited muscle cutting, proved to have the advantage of substantially reduced hospital stay because of less pain [5, 6]. Several studies were designed to establish whether less trauma to the abdominal wall by further decreasing the size of laparotomy and the extent of muscle cutting lead

to minimize the postoperative pain with the objective of more rapid recovery and return to work [7-9].

Most of investigators are enthusiastic about laparoscopic cholecystectomy and considered it as the gold standard operation of symptomatic gall bladder stones [10, 11] despite the higher risk of common bile duct (CBD) injury which has been recorded up to 10 fold compared with that after open conventional cholecystectomy [12-14]. Also there is a consensus that the surgical cost of LC is significantly greater than open cholecystectomy (OC) and small incision cholecystectomy (SIC). The reason is that LC requires expensive equipment and it is harder to provide such equipment and devices in less developed countries with major obstacles in their healthcare system, this is an important issue requiring attention [15, 16].

In this study, a micro-cholecystectomy was done through 3-5 cm incision using self-illuminating retractors and clipping of the cystic duct and artery, and the advantages and disadvantages of this procedure is compared with laparoscopic cholecystectomy.

AIMS AND OBJECTIVES

The aim of this study is to compare results of the technique of laparoscopic cholecystectomy and micro-cholecystectomy in terms of Operative time, Length of hospital stay, Post-operative pain, post-operative complication and Cosmetic appearance of the wound.

MATERIAL AND METHODS

The study was carried out as a prospective randomized controlled study in the Department of General Surgery at Gajra Raja Medical College and JAH group of Hospitals, Gwalior (M.P.) for a period of one year from September 2013 to September 2014. The study involved total no. of 60 patients blindly randomized into 2 groups in an alternating manner. The study was approved by the ethical committee of the hospital. A written informed consent was taken from all the patients before their inclusion in the study.

The study subjects were patients presenting with symptomatic, ultrasonography proven cholelithiasis and underwent elective cholecystectomy at this hospital. All the patients were interviewed for detailed clinical history and examined. They were then subjected to routine blood investigations as per protocol. The patient with high risk, co morbid conditions, choledo cholithiasis, gall bladder mass, empyema gall bladder or any other pathology requiring added intervention were excluded. Both the procedures were performed under general anesthesia with endotracheal intubation.

METHOD

Patients were admitted from the outpatient clinic and completely randomized into 2 groups: Group A was the control group undergoing laparoscopic cholecystectomy, while Group B was the group undergoing small incision open cholecystectomy. Both the procedures were performed under general anesthesia with endotracheal intubation. Conventional laparoscopic cholecystectomy was carried by traditional four port technique.

Open micro-cholecystectomy was performed through an oblique right subcostal incision of 3-5 cms on the skin. Patient were placed in the supine position and an oblique right subcostal incision of 3-5 cm was given just laterally to the right rectus muscle, subcutaneous fat and fascia were dissected and cut. The muscle was cut with an electrocautery to expose and open the peritoneum. Nasogastric tube decompression was used for better exposure of operative field. Large

packs were inserted between the liver and gut so as to distract the intestines away from the operative field. The gall bladder was identified and was held by a Babcock forceps. Using narrow Deaver's retractors, the Calots triangle was directly exposed. A cabled light source or lighted retractors can be used to illuminate narrow operative field. The gall bladder was removed from the fundus first method or cystic duct and upwards method depending on the surgeon's preference. If gall bladder was very distended it would be aspirated before proceeding, as the empty gall bladder is easier to grasp for dissection. Cystic duct and cystic artery was clipped using clip applicator, divided and gall bladder was delivered. Hemostasis was achieved by electrocautery and/or Gel foam. Peritoneum and sheath were closed by continuous running stitches using a 90 cms Polyglactin suture on round bodied needle (Vicryl™ 2-0). Subcuticular sutures were applied to skin using polypropylene 4 -0 sutures. The adjacent skin was cleansed and a sterile dressing was applied on the operative site.

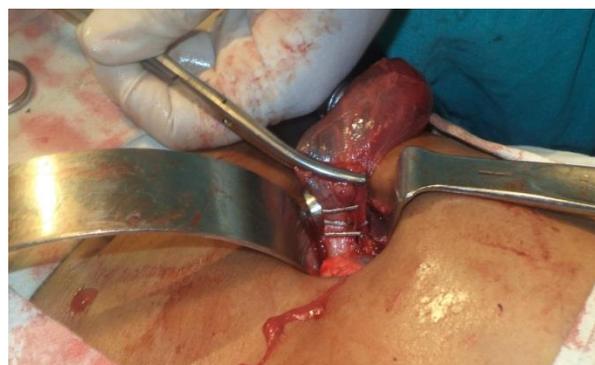


Fig 1: Cystic duct and cystic artery were clipped using clip applicator and gall bladder delivered by the fundus first method through 3.5 cm incision.



Fig 2: Skin incision was measured after the completion of surgery (It was less than 4cm).

Postoperatively nasogastric tube was removed immediately after the surgery in both the operations and patient was shifted to the post-anesthesia recovery room and monitored. Fluids were allowed orally when the patient was fully awake. Analgesics and anti-emetics were used as per patient's requirements. Patients were encouraged to mobilize early and discharged once they were tolerating oral feeding, voided urine and had

achieved adequate pain relief. They were asked to come for follow up in the OPD after 10 days and sutures were removed.

OBSERVATION AND ANALYSIS

The data were all recorded and analyzed using simple statistical tests. Significance was measured using Chi square test, to compare the results. Observation and results of the study are given in Table-1.

It has been observed that there is difference in operating time which was significantly less in MC, this is important for countries where waiting lists for surgeries are long and a high surgical turnover is required. Rest of the parameters like intraoperative & postoperative complications, pain score, postoperative analgesic requirement, and length of hospital stay and cosmetic appearance of wound had no significant difference.

Table-1: Comparison of patient outcome after LC and MC

Parameters	LC	MC	P value
Mean Age	44.5	46.1	>0.05 (.932)
Sex (M/F)	05/25	03/27	>0.05 (0.44)
Mean Operating time (min.)	59.5	47.16	<0.05 (.014)
Intraoperative complications			
Hemorrhage	03	03	>0.05 (0.74)
Bile spillage	09	03	
Stone spillage	05	02	
GB perforation	05	02	
CBD Injury	00	00	
Post-operative complications			
Pyrexia	03	04	>0.05 (0.95)
Retention of urine	01	02	
Pulmonary complications	02	04	
Wound Infection	02	05	
Postoperative analgesic requirement(mg of diclofenac)			
Day1	205	207.5	(0.78)
Day 2	117.5	135	>0.05 (0.14)
Day3	57.5	55	(0.83)
Postoperative Pain Score (VAS scale)			
Day1	5.7	5.6	(0.66)
Day 2	3.6	3.9	>0.05 (0.21)
Day3	1.6	2.1	(0.21)
Length of hospital stay (days)	2.76	3.03	>0.05 (0.25)
Cosmetic outcome (Hollander's wound evaluation scale)	5.1	4.8	>0.05 (0.06)

DISCUSSION

The modern surgery entails providing minimum discomfort to the patient, yet not compromising on the efficacy and outcome of the procedure. Our experience with one such technique of micro-cholecystectomy has brought out the following observations.

Though laparoscopic cholecystectomy is advocated as the gold standard procedure, various pitfalls have emerged with its use which includes loss of tactile stimulus, loss of three dimensional view of operative field, iatrogenic perforation of gall bladder and spillage of stones, biliary injuries commonly to the common bile duct, long learning curve, more incidences of complications and conversion early in the learning curve, port site metastasis of occult carcinoma gall bladder, significant change in plasma potassium levels

during the procedure, significant change in hepatic enzyme levels during the procedure, variation in serum prostate specific antigen after the procedure, aggravation of restrictive respiratory disorders, ECG changes resulting in doubtful safety in ASA Grade 2 and above, catabolic changes in the peritoneum, development of umbilical trochar site `incisional hernia, costly equipment, errors due to faulty or ill-maintained equipment.

Open micro-cholecystectomy procedure has the advantages of small incision size, early resumption of oral feeds, lesser analgesic requirement, shorter post-operative hospital stay and early resumption of routine activities. Subcuticular skin sutures ensure better cosmeses and obviating need of follow up visits to the hospital. No need of any specialized equipment hence cost effective. Short learning curve, as open

cholecystectomy is routinely taught as a part of surgical residency curriculum. Less operative time further decreases the costs by ensuring higher turnover rate. In cases of inadvertent common bile duct stones and per operative complication conversion to conventional open cholecystectomy is done faster. Safety profile of comorbid patients guaranteed, as respiratory and cardiac functions are not depressed. It can be a procedure of choice in acute severe cholecystitis and is also a viable ambulatory day care procedure.

CONCLUSION

Due to minimal complications, fast recovery, less cost and easy reproducibility micro-cholecystectomy can be one of the most acceptable procedures for gall bladder stones. Our experience of 30 cases of small incision cholecystectomy has been without any mortalities and detrimental quality of life outcomes. Therefore we humbly suggest micro-cholecystectomy as a safe, low-cost, realistic, viable, and versatile alternative to laparoscopic cholecystectomy

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