CHOLECYSTECTOMY THROUGH A MINI-LAPAROTOMY A PRELIMINARY REPORT

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ABSTRACT

Cholecystectomy through a small subcostal incision (mini-lap cholecystectomy), has recently been introduced as an alternative to conventional cholecystectomy in an effort to reduce its attendant morbidity. A trial was conducted to assess the morbidity of cholecystectomy performed through a small subcostal incision. Eighteen consecutive patients posted for elective cholecystectomy were operated through such an incision. In 2 [11%], the incision had to be extended. The records of these patients were retrospectively compared with an equal number of consecutive cholecystectomies previously performed by the same surgeon through a conventional incision. There was no significant difference in the average operating time, incidence of wound infection or the number of post-operative complications between the conventional and the mini-laparotomy group. However, the number of doses of post operative analgesic required, the duration of post-operative ileus, hospitalisation and convalescence needed was nearly halved. Thus mini-lap cholecystectomy has much lesser morbidity and is considered to be a safe and viable alternative to conventional cholecystectomy.

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KEY WORDS : Cholecystectomy; Mini-laparotomy; Post-operative morbidity.

Introduction

Since the time it was first performed by Carl Langenbusch in 1882, traditional or conventional cholecystectomy has remained the "gold standard" against which any other form of surgery or treatment modality for gall stone disease may be compared [1]. Although it has a mortality rate of only 0.5 to 1%, it causes considerable post-operative morbidity in the form of pain, discomfort due to ileus, prolonged hospitalisation and convalescence required [1-3]. Percutaneous dissolution of calculi or cholecystolithotomy, and extra corporeal shock wave lithotripsy all have a low morbidity, but are expensive, can only be used in selected patients and have a recurrence rate of more than 50% [1]. In an attempt to reduce surgical morbidity, cholecystectomy is now being performed laparoscopically or through a small subcostal incision [4-7]. A trial was conducted to assess the morbidity of cholecystectomy performed through a small subcostal incision.

Material and Methods

All patients posted for elective cholecystectomy from April to June 93 at Command Hospital (WC) Chandimandir were operated through a small subcostal incision. In all, 18 patients underwent this procedure. The records of these patients were retrospectively compared with an equal number of consecutive cholecystectomies previously performed by the same surgeon through a conventional incision. All the patients in this study had been examined by an ultrasonologist to assess the diameter of the common bile duct (CBD) and exclude any calculi in it. Patients with calculi in the CBD were excluded from the study, as a thorough exploration of the CBD was not considered possible through this small incision. The parameters compared were the operating time, the post-operative complications, and the post-operative morbidity. The features compared to quantitate the post-operative morbidity were the number of doses of analgesic required the duration

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of post-operative ileus, hospitalisation and the time taken by the patient to return to her or his preoperative daily routine (convalescence).

Procedure

The lower chest of the patient was elevated and a 6 cm long right subcostal incision was given, its medial one third dividing the lateral one third of the anterior rectus sheath, and its lateral two third dividing the aponeurosis of the external oblique muscle. The fibres of the internal oblique muscle crossing the line of the incision were divided and those of the transversus abdominis were split along their length. The lateral half of the rectus abdominis was retracted medially and the posterior rectus sheath and the peritoneum opened in the line of the incision.

A gauze pack placed on the part of the duodenum and retracted inferiorly by a long bladed retractor, replaced the left hand of the assistant used in a conventional cholecystectomy. Operative cholangiography was performed selectively in patients who had a history of jaundice, pancreatitis, or a cystic duct wide enough to allow the passage of calculi through it into the CBD, or a CBD of more than 10 mm diameter. Rest of the surgery was conducted in the conventional manner. If during the dissection in the Calot's triangle troublesome hemorrhage was encountered or there was any doubt regarding the local anatomy because of dense adhesions, the incision was extended laterally to improve the exposure. Intra-peritoneal negative suction tube drain was left only if deemed necessary. The wound was closed in layers using chromicised catgut and silk.

The nasogastric tube was removed the same evening or next morning provided the aspirate was less than 50 ml. Oral fluids were started after 30 hours if there was no nausea and the bowel sounds were strong. The patients were discharged when they became independently ambulant and afebrile for three days, and were called back on the 8th post-operative day for suture removal and reviewed fortnightly thereafter.

Results

The age and sex distribution of the two groups of patients was similar. The indication for surgery was cholelithiasis, with its sequelae of chronic cholecystitis, mucocoele or empyema of the gall bladder. Operative cholangiography was performed in 2 patients in the conventional group which were both normal and in 3 patients in the mini-laparotomy group, in which one showed a negative shadow in the CBD suggestive of a calculus. In 2 (11%) patients the mini-laparotomy incision had to be extended laterally, in one because the CBD required exploration and the other due to troublesome hemorrhage during dissection.

There was no significant difference in the average operating time, incidence of wound infection or the number of post-operative complications between the conventional and the mini-laparotomy (mini-lap) group after a minimum follow up period of 6 months (Table 1). One patient in the conventional group developed right basal atelectasis while one patient in the mini-laparotomy group developed a subdiaphragmatic collection of bile which required needle aspiration. The average number of doses of post operative analgesic required, the duration of post-operative ileus, hospitalisation and convalescence needed, are compared in Table 2. There was no mortality in either group.

Discussion

Cholecystectomy through a small subcostal incision, also known as a mini-lap cholecystectomy or mini-cholecystectomy, has recently been introduced as a viable alternative to conventional cholecystectomy, in an effort to reduce its attendant morbidity. This has been possible because of improvement in surgical technique and about 250 cases have been reported in literature to date [4-7]. The use of a stabilised ring retractor (Bookwalter retractor), which comes with a variety of malleable blades, is said to provide an accurate, fixed retraction with excellent exposure throughout the

TABLE 1
Operating time and complications

Group	Average operating time (min)	Wound infection (Number of patients)	Other complications (Number of patients)
Conventional (n = 18)	86	4	1
Mini-Lap (n = 18)	77	3	1

TABLE 2
Post-operative morbidity data (mean)

Group	Analgesic doses	Ileus (hours)	Hospital stay (days)	Convalescence (days)
Conventional	5.6	68.4	11.5	45
Mini-lap	3.4	35.5	6.8	21

TABLE 3
Comparison with data of other series of mini-lap cholecystectomy

	Goco (1983)	Reddick (1983)	O'Dwyer (1990)	O'Kelly (1991)	Singh (1993)	Present study
Patients (No)	50	25	55	32	64	18
Length of incision (cm)	4	3-5	5	5-7	5-7	6
Incision extended (%)	12	—	12.7	9.3	10.9	11.1
Operating time (min)	52	—	61	46	53	77
Post-op analgesic (dose)	—	—	4	4.1	3.2	3.4
Post-op hospital stay (days)	1.5	2.8	3.5	3.0	3.8	6.8
Convalescence/recovery (days)	18.6	34.0	—	—	15.3	21

operation [8], and the procedure has even been performed without an assistant [6].

Although there are reports in literature that it is possible to explore the CBD through a small incision [6,7], this procedure was not attempted in this study. However undertaking operative cholangiography on a selective basis [9] is considered essential [10] since it is not possible to perform an extraductal palpation of the CBD, as the surgeon's hand does not enter the abdomen at any stage [6]. Subcostal or transverse incision for gall bladder surgery have

proved to be less painful [11]. The reduction in pain and discomfort is not only due to the smaller incision, but also because of the shorter duration of post-operative ileus due to minimal handling of the gut. Patients become independently ambulant earlier thus reducing the chances of respiratory and thrombo-embolic complications of prolonged recumbency.

In patients undergoing mini-lap cholecystectomy the duration of post-operative ileus, hospitalisation and the period of convalescence required is nearly halved. The findings

of this trial compare well with those conducted elsewhere (Table 3)

This procedure has also been favorably compared to laparoscopic cholecystectomy [12], which requires expensive equipment and specialised training. Thus mini-lap cholecystectomy is considered to be a suitable alternative not only to the conventional but also to the laparoscopic procedure in our socio-economic setup.

A preoperative ultrasound scan to pinpoint the site of the gall bladder and CBD helps in siting the incision more accurately, and the use of a cold light source provides excellent illumination, however these were not used in this study as such facilities are not available in smaller hospitals and even without them it is possible to achieve satisfactory results.

The results of this trial are encouraging and suggest that a larger prospective randomised study be conducted on similar lines.

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