

MINI CHOLECYSTECTOMY THROUGH 5-CM INCISION: INFLUENCE ON MORBIDITY AND HOSPITAL STAY

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SUMMARY

With the introduction of Laproscopic cholecystectomy and its attended benefits and problems, we undertook to study and review literature on minicholecystectomy, whether mini- cholecystectomy confer the advantage of reduce morbidity and shorter hospital stay and at the same time avoid the problems associated with Laproscopic cholecystectomy. 130 consecutive patients with symptomatic gall stones under went cholecystectomy through a 5 cm subcostal incision. Patients with clinical or radiological evidence of C.B.D. stone were not included in the study. Cholecystectomy was possible in 117 patients (90%) through a smaller incision while in 13 patients (10%) incision had to be extended to deal with difficult problems. With minicholecystectomy it is possible to carry out the procedure safely with reduced morbidity and a shorter hospital stay.

INTRODUCTION

Calculus disease of Biliary tract continue to be one of the major international health problem and over 1000,000 cholecystec-tomies are performed each year world wide.¹ More than hundered years ago surgeons had recognised that it was abnormal gall bladder which formed stone and not stones that made the gall bladder abnormal.

Acting on this belief Carl langanbuch performed first ever cholecystectomy on July 15th 1982² and since then surgical removal of gall bladder has been the gold standard for the treatment of symptomatic gall stone.

Non surgical methods have been suggested as alternate to surgical methods for treatment of gall stone i.e. oral dissolution therapy using bile acids in 1970, Extra corporeal shock-wave lithotripsy (ESWL) introduced in 1980's and contact dissolution therapy using methyl (tetra-butyl

ether (MTBA) in CBD stones but their application criteria, success rate are relevant only in a very small sub group of patients with uncertain our come and as they leave a diseased gall bladder in place these methods are considered only in patients who are very old and very high surgical risk patients.

Introduction of Laproscopic cholecystectomy in 1987^{3,4} an alternate method to remove the gall bladder has challenged the gold standard of tradition cholecystectomy.^{5,6,7}

Despite the escalating interest in this minimally invasive technique of removal of gall bladder the role of Laproscopic cholecystectomy has been questioned whether Laproscopic cholecystectomy has any major advantage over mini open cholecystectomy with a single 5cm or less incision.

Because of following:

- a. Laproscopic cholecystectomy carries large initial costs.

- b. It is attended by higher incidence of biliary complications.¹⁴
- c. Longer operation and anaesthesia time¹⁴ and need to train large number of surgeons for a specific procedures.

The first cholecystectomy by Carl Langenbuch was performed through a T shaped incision.⁵ Since then at least seven further incisions for cholecystectomy have been described.¹⁵ Of these the most commonly used are the right paramedian and Kocher's subcostal incision. The later is performed by many surgeons as it is associated with a lower incidence of pulmonary and abdominal complications.¹⁶ It has also been reported that an upper midline incision is more painful than a transverse incision in gall bladder surgery¹⁷ and a transverse incision heals better than a vertical one.¹⁸ The traditional incision extended from the tip of xiphoid caudally and laterally 5-6cm below the costal margin in to the flank¹⁵ verging between 15.3cm in length, depending upon the size of the patient and adequate exposure with minimal retraction. Improvements in technique since has enabled procedures to be performed safely through smaller incision.

The aim of this study was to determine whether cholecystectomy could be performed solely through a 5cm or less transverse subcostal incision.

MATERIAL AND METHODS

Informed consent was obtained from 130 consecutive patients admitted for cholecystectomy with symptomatic gall stones. A separate proforma was filled for each patient; any the results were entered in broad flow chart and then analysed. Among these 130 patients 11 were male and 119 female with a male to female ratio of 1:10.9. Average age of patient was 46.2 years with a range 17-78 years.

For female patients average age was 42.7 years and male patients 52.1 years with a peak incidence between 40-60 years.

Patients with clinical or radiological evidence of CBD stones or biliary tract malignancy were not included in this study, with no other exclusion criteria.

Of these patients 27 patients (20.76%) were overweight 88 patients (67.67%) were within standard weight for height and 15 patients (11.533) were below standard weight.

Three patients had undergone previous abdominal surgery, appendicectomy in one patient, hysterectomy in one and laparotomy for intestinal obstruction in one. Significant risk factors were present in 8 patients, hypertension in 3, diabetes in 3, ischemic heart disease and thyrotoxicosis in one each.

Amount of intra-muscular analgesic required after operation for each patient was recorded. Post-operative complications were monitored. Pulmonary complications were considered present when there was clinical or radiological evidence of atelectasis, pleural effusion or pneumonia. Wound infection was recorded, where there was clinical evidence of cellulitis or purulent discharge from the wound.

Operative technique

All operations were performed under general anaesthesia. Prophylactic antibiotics were given during induction (1 GM Cephtridone) and continued for further two 8 hours doses except in those patients where acute suppurative process was noted before or during surgery. In these patients treatment was continued with antibiotic for five days and metronidazole was added to the regimen. No DVT chemical prophylaxis was given. A 5cm or less transverse right subcostal incision was made starting from the mid-rectus muscle going laterally. Anterior rectus sheath was

TABLE - 1

PATHOLOGY	NO OF PATIENTS
-Sclero- atrophic G Bladder	2
-Cholecysto-CBD fistula	1
-Gangrenous/perforated G Bladder	2
-Ac Phlegmonous G Bladder	3
-Chronic cholecystitis with Anatomical anomalies	2
-CRD stone unsuspected	1
-Slipped Cystic artery	1
-Ch Cholecystitis with mass in pyloric antrum	1

cut in the line of the incision, along with the external abdominus, if required. Rectus muscle was retracted medially. Posterior rectus sheath and peritoneum were cut in the line of incision while fibers of internal abdominus and transverses abdominus were split.

No preoperative ultrasound was used to localise gall bladder for placing the incision.¹⁰ Placing packs and introducing two 2.5cm broad Dever's retractors to visualize the operative field of Callot's triangle, but no specialized retractors (Book walter retractors) were used.¹¹

Hartman's Pouch of the GB was grasped with a sponge holding forceps for retraction and Callot's triangle dissected out identifying junction of a cystic duct, common hepatic duct and CBD. Cystic artery and its relation to right hepatic artery were also verified. If difficulty was encountered in identifying anatomical landmarks the length of the incision was extended. Operative cholangiography was not performed in any patient. Cystic duct and artery were ligated with 0 chromic catgut. GB was removed from the cystic duct upwards in most cases and rarely from the fundus downwards. In all patient CBD was palpated between thumb and index finger,

as the most reliable indication for choledocotomy and stone detection.^{4,12} As the arguments against the drainage have been strong, suggested by the results of several prospective clinic trials,^{13,14} the GB fossa was drained only in selected cases and that also through a separate stab incision. Peritoneum, transversalis fascia and posterior rectus sheath were closed with a continuous 0 chromic catgut suture. The rectus muscle came over it to cover and support the suture line. The anterior rectus sheath and the split transverses abdominus and internal oblique muscles and the divided external abdominus muscles were sutured with chromic catgut and o-vicryl, skin was approximated with simple nylon suture. Nasogastric tube was not used. Intravenous fluids were given on operation day and were discontinued on 1st post-operative day, while starting on free fluids and light diet. If the patient was pain free, ambulant, afebrile, taking meals and passing flatus/stools and with no drain site/he was discharged from the hospital.

RESULTS

Cholecystectomy through a 5 cm or less subcostal transverse incision was possible in 117(90%) of the 130 patients. They included:

TABLE - II
POST-OPERATIVE COMPLICATION.

Drain site infection	(1)
Chest Infection	(1)
Wound Infection	(2)
Wound Hematoma	(1)

All the GB ladders were sent for histopathology and none was reported normal.

- Chronic cholecystitis	83
- Acute cholecystitis	24
- Mucocele of GB	3
- Empyema of GB	7

The average blood loss per patient was 70cc. (range 35-170cc) The average operation time in study was 35 minutes (range 20-75 minutes).

In 13 (10%) patients the procedure through the smaller incision had to aban-

doned and extended for proper exposure, dissection and avert complications. Patients in whom incision had to be extended/changed, are presented in Table-I.

The average hospital stay for all patients was 4 days (range 2-13 days). The average hospital stay for patient in whom cholecystectomy was possible through the 5 cm incision was .5 days (range 2-5 days). Analgesic was given on operation day as intramuscular diclofenac acid 25 mg to the patient in recovery room and later repeated at 6-8 hourly interval for 3-4 doses. There after majority of patients did not ask for parenteral administration of analgesic. There were 5 patients (3.8%) with minor degree of morbidity listed below. None sustained CBD related complication. There was no morbidity in this study.

DISCUSSION

Despite many recent innovations in the treatment of gall stones^{28,29,32,31,32,11,33} (a

TABLE - III
MINI-CHOLECYSTECTOMY

REF	NO. OF PTS.	NO. OF CONVERSION %	MORBIDITY %	MORTALITY %	MEAN LENGTH OF HOSPITALIZATION DAYS
43	25	0(0)	0	0	2.8
44	89	9(10)	5 (6.2)	0	4.1
46	55	9(16)	5 (9)	0	3.3
Our study	130	13(10)	5 (3.8)	0	3.5

CONVENTIONAL

REF	NO. OF PTS.	MORBIDITY %	MORTALITY %	MEAN LENGTH OF HOSPITALIZATION DAYS
46	1035	42(4.1)	5 (0.5)	8.8
47	1200	59(4.9)	22 (1.8)	7.5

dissolution of gall stones, ESWL or a combination of both, cholecystectomy remains the treatment of choice in symptomatic gall stones.

This study shows that cholecystectomy can be performed safely through a 5cm or less subcostal transverse incision in most patients with symptomatic gallstones. The operation while technically more difficult than cholecystectomy through a standard incision was amenable to the skills of a trainee surgeon as 15-20% operation were carried out by them under supervision.

A major source of complications in open cholecystectomy is the abdominal incision and it is being increasingly recognised that the size of the abdominal incision has profound effect on both the immediate and long term complications with respect to pain and general patient morbidity.^{35,35} Prolonged immobility after abdominal surgery is a significant risk factor for deep venous thrombosis and pulmonary embolism. All of these risks are minimized by using a small incision.

Reduction of abdominal wall trauma with smaller incision is accompanied by rapid recovery and short hospital stay. In this study the average hospital stay was 3-5 days in patients undergoing cholecystectomy through a 5cm subcostal incision. This compares with a hospital stay of 8.5-11 days for cholecystectomy in other centers.^{36,16} Eliminating an average of 3-4 hospital days, with an early return to work (2-3 weeks) translates into enormous cost. So there are economic advantage to the patient, the community and the health care provider.

Advantages of mini-cholecystectomy include, removal of diseased gall bladder, incision is small, technically dissection of cystic duct and artery is precise, bleeding from gall bladder bed is easily controlled, post-operative pain is reduced, cosmetic

advantages is obvious with no risk of wound dehiscence and incisional hernias and a significant financial savings.

Mini-cholecystectomy has also been documented previously with a rapid recovery and short hospital stay and allows the patient to return to work after a reported mean of 18.6 days. Hospital costs with mini-cholecystectomy have also been reported to be greatly reduced.^{36,39}

The main disadvantage of mini-cholecystectomy is loss of exposure, which makes it difficult to teach the procedure to resident surgeons.⁷ That is why it is recommended that mini-cholecystectomy should be performed by those surgeons only who have adequate experience in open traditional cholecystectomy.

A brief comparison with conventional cholecystectomy is given in Table 3 comparing morbidity, mortality and hospital stay.

Further more results compare closely with laproscopic cholecystectomy and avoiding the problems of costs, retraining of surgeons and high incidence of biliary complication as noted in many studies of the lap-cholecystectomy.¹¹

Mini-cholecystectomy is a safe and effective procedure applicable to majority of patients with gall stone disease and provides the definitive therapy by removing gall bladder.⁸

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