

Open Cholecystectomy: Muscle Splitting Versus Muscle Cutting Incision: A Randomized Study.

Islam S¹, Hasan MM², Islam SAKM³.

Abstract

The objective of this study is to compare open cholecystectomy through right subcostal incision (Kocher's incision) between muscle splitting and muscle cutting in terms of duration of operation, postoperative pain, length of hospital stay, morbidity and cosmetic outcome. It is a prospective randomized 3(three) years study which includes 400 patients who underwent open cholecystectomy from January 2012 to December 2014 at Islamia General Hospital (private) and Al Raji clinic (private) of Mymensingh, Bangladesh. Study shows that open cholecystectomy with muscle splitting has significant advantages over open cholecystectomy with muscle cutting in terms of duration of operation time and postoperative pain. Muscle splitting incision is another option to offer patients who elect to undergo open cholecystectomy with less pain and hospital stay.

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Key words: Open Cholecystectomy, Incision, Muscle Splitting , Muscle Cutting.

Introduction

Although several incisions have been described for biliary surgery. But of the most commonly used is one Kocher's subcostal incision. In this study operative techniques is divided into two general categories (A) those considered as muscle splitting and (B) those considered as muscle cutting. In group (A) right rectus muscle is split and in group (B) right rectus muscle is cut in order to provide exposure.

Methods

Inclusion Criteria: All patients diagnosed with cholelithiasis from January 2012 to December 2014.

Exclusion Criteria:

- Patients with acute cholecystitis.
- Patients with choledocholithiasis
- Patients with signs of obstructive jaundice
- Patients with co-morbid conditions
- Morbidly obese patients.

Patients included in this study were admitted at Islamia General Hospital (private) and Al Raji clinic (private) at Charpara, Mymensingh, Bangladesh during the period of 3(three) years from January 2012 to December 2014.

A total of 400 cases were included. Non fo the patient was informed about the type of incision and about study. Proper investigations was done in every case. Peroperative findings, postoperative medications, postoperative severity of pain, wound sepsis and cosmetic looking after stich off all were closely observed.

- * Dr. Md. Shafiqul Islam
Senior Consultant Surgery
Adhunik Sadar Hospital Netrokona, Bangladesh.
- Dr. Muhammad Masud Hasan
Assistant Professor (Anaesthesiology)
Community Based Medical College Hospital Bangladesh.
- Dr. A.K.M Sadequul Islam
Lecturer, Forensic Medicine,
Community Based Medical College Hospital Bangladesh.

***Address of correspondence**
Email : shafiqul2119@gmail.com
Mobile: 01774-005505

Steps of Cholecystectomy: Muscle Splitting vs. Muscle Cutting Operative Technique for Group- A⁴

- Patient was in supine position under General Anaesthesia
- Asepsis-Antisepsis techniques observed
- Sterile drapes placed
- Right Kocher's subcostal incision was made on the skin carried and down to the subcutaneous tissue.
- Anterior rectus sheath cut and opened. Fig.1
- Rectus abdominis muscle dissected free from its tendinous insertions using electrocautery
- Posterior rectus sheath was cut and peritoneum identified cut and entered
- Gallbladder identified
- Intraoperative findings noted.
- The stomach and duodenum are then paked-off out of the way
- Gallbladder grasped with forceps and retracted laterally
- Common bile duct palpated for stones
- Pancreas palpated
- Sharp and blunt dissection was done on the peritoneum overlying the Calot's triangle
- Cystic artery identified, clamped, suture ligated and divided
- Identify the common bile duct/cystic duct junction
- Cystic duct identified, clamped, suture ligated and divided
- Dissection of the gallbladder from the liver bed carried from peritoneal reflection overlying the Calot's triangle up to the fundus
- Gallbladder removed
- Haemostasis done
- Counting of mpos
- Closure done layer by layer.
- Peritoneum and posterior rectus sheath closed with continuous interlocking suture by 0 vicryl and muscles is apposed by 1/0 chronic catgut.
- Anterior rectus sheath closed with continuous running sutures using vicryl o
- Skin was closed by 2/0 cutting body proline.
- Dry sterile dressing placed.

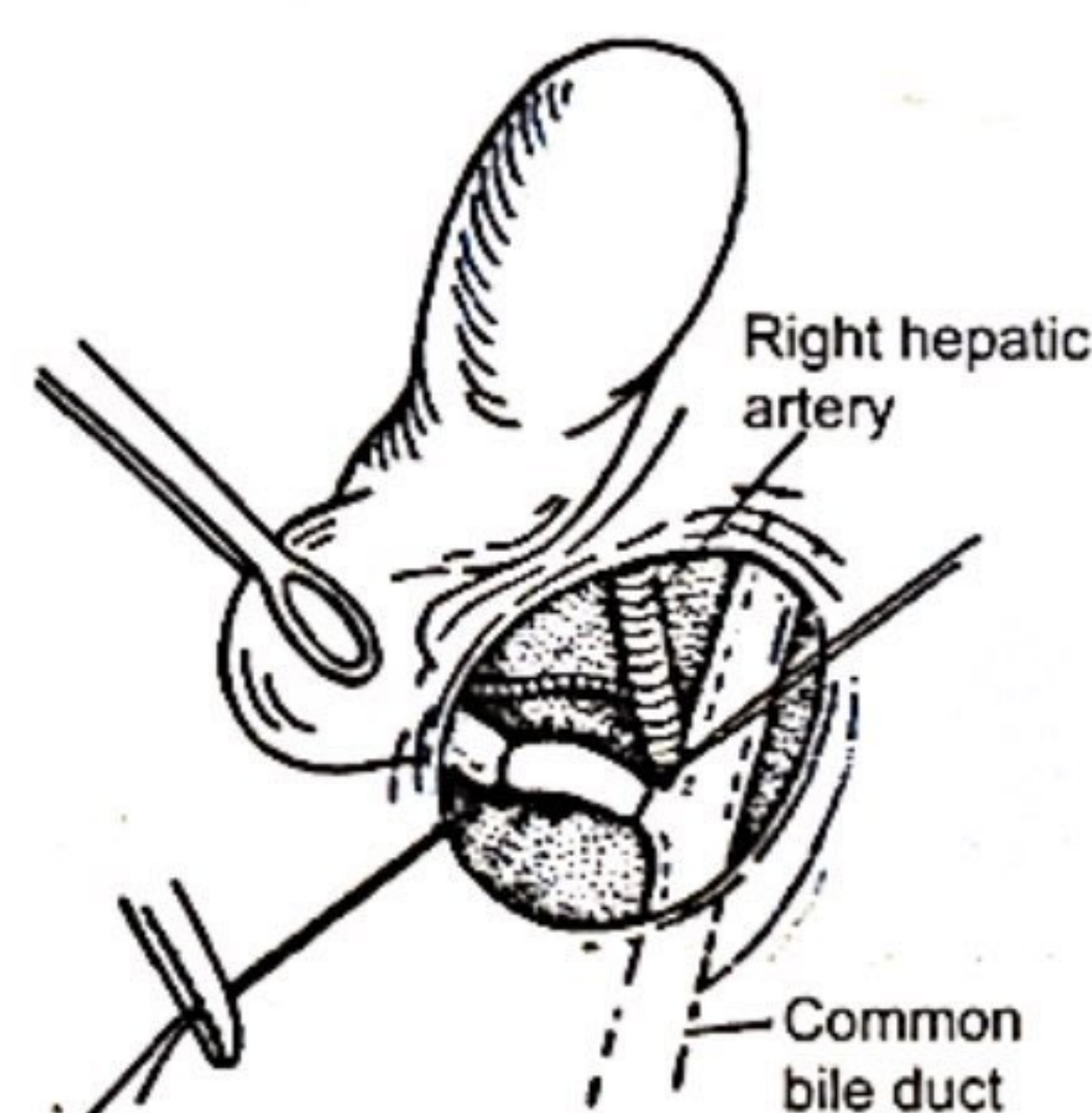
Fig-3 : Open cholecystectomy retrograde method



Fig. 1 Muscle Splitting incision



Fig.-2 : Outlook after muscle splitting incision



Operative Technique for Group B

- Patient was in supine position under General Anaesthesia
- Asepsis-Antisepsis techniques observed
- Sterile drapes placed
- Right Kocher's subcostal incision was made on the skin carried and down to the subcutaneous tissue

- Anterior rectus sheath cut and opened rectus abdominis muscle divided with electrocautery. Figure-4
- Posterior rectus sheath cut, peritoneum identified cut and entered
- Intraoperative findings noted
- The stomach and duodenum are then paked-off out of the way
- Gallbladder grasped with forceps and retracted laterally
- Common bile palpated for stones
- Pancreas palpated
- Sharp and blunt dissection was done on the peritoneum overlying the Calot's triangle
- Cystic artery identified, clamped, suture ligated and divided
- Identify the common bile duct/cystic duct junction
- Cystic duct identified, clamped, suture ligated and divided
- Dissection of the gallbladder from the liver bed carried from peritoneal reflection overlying the Calot's triangle up to the fundus
- Gallbladder removed
- Haemostatsis done
- Counting of mpos
- Wound closed layer by layer
- Peritoneum and posterior rectus sheath closed with continuous interlocking suture by 1/0 vicryl and muscle apposed by 1/0 chromic catgut.
- Anterior rectus sheath closed with continuous running sutures by 1/0 vicryl
- Skin was closed by 2/0 cutting body proline.
- Dry sterile dressing placed.



Fig.-4 : Closing muscle cutting incision



Fig.-5 : Outlook after muscle cutting procedure

Discussion

Surgical removal of the gallbladder has been the gold standard for the treatment of symptomatic gall stones^{2,4}. The standard right subcostal Kocher's incision is usually preferred because the exposure is placed directly over the gallbladder. The subcostal incision heals more rapidly and with less discomfort probably because it is the line of the normal skin crease³. Muscle splitting right subcostal incision is better than muscle cutting incision because in muscle cutting there may be considerable bleeding from the cut edges, and is more time consuming. In muscle splitting incision there is negligible parietal bleeding and intercostal nerve damage is minimum, so therefore postoperative pain gets reduced significantly. Reduction of abdominal wall trauma by use of short muscle splitting incision should be accompanied by rapid recovery for the patients. Cholecystectomy done through muscle splitting incision also minimize wound sepsis and good cosmetic looking, Fig.2

Results

For the period of 3 (three) years from January 2012 to December 2014 a total 400 patients were included in this study. The youngest one was 9 years old girl and oldest was 80 years of female. Majority of patients belong to 25 years to 45 years range of age group. There were 120 males and 280 females.

Table-1: Sex

	Male	Female
	120	280
Group-A	100	240
Group-B	20	40

Length of operation period is reduced by 5-10 minutes in group A patients. parietal bleedings is minimum in group A patients. Hospital stay range from 4 to 7 days. The overall operating time ranged from as short as 18 minutes to as long as 1 (one) hour. Postoperative wound collection was noted in 50 cases. Wound sepsis were found in choledocholithiasis patients who were diagnosed only cholelithiasis preoperatively by ultrasonography and operation was started as cholecystectomy and also observed in cases of acute cholecystitis, empyaema, mucocele of gallbladder. Cholecystectomy and choledocholithotomy and primary closure of common bile duct was done and wounds were closed in situ.

During operation forceful retraction and adequate muscle relaxation was needed in group A patients. Minimum blood loss was observed in group A patients. None of the cases was reopend for any cause. There was no mortality. No patient developed incisional hernia in group A patients and there was also minimum nerve damage. Bile duct exploration and management done in every cases for peroperatively diagnosed as choledocholithiasis.

Choledocholithotomy and common bile duct managed by primary closure. In postoperative follow up in Group B patients were seen depression in the incision line due to retraction of cut rectus muscle were was ugly looking, (Figure-5). But in group A patients good cosmetic scar line was observed. Figure-2.

The findings evidenced to conclude that the two treatment groups are significantly different from each other in terms of length of operation time at operation theater, postoperative pain, length of hospital stay,

postoperative uneventful recovery and cosmetic outcome. Muscle splitting right Kocher's subcostal incision is ideal procedure for open cholecystectomy^{1,5}

Conclusion

In this study, open cholecystectomy with muscle splitting incision has shown its advantage over open cholecystectomy with muscle cutting incision. In muscle splitting incision duration of operation time is less at operation theater, postoperative pain significantly less, reduced length hospital stay and early return to work, less morbidity and good cosmetic outcome. In view of the satisfactory results this muscle splitting incision could act as a wider application in biliary tract surgery. The direct approach to gallbladder combined with minimal bleeding and few postoperative complications makes this an ideal procedure for open cholecystectomy.

References

1. O'Dwyer, P.J., Morphy, J.J and O'Higgins Cholecystectomy, through 5 cm subcostal incision. *Br. J. Surg.*, 1990;77:1189-1190.
2. Douglas, O., Olsen mini-Lap cholecystectomy. *Am. J. Surg.*, 1993;165:440-443.
3. Thorbjarnarson, B. and Gleen, f. Complications of biliary tract surgery *Surg. Clin. North Am.*, 1964;44:431-448.
4. Farquharson's textbook of Operative General Surgery. ninth edition, 2005, 317-337.
5. First Independent Ophthalmic Journal Published from Islamabad Pakistan. Comparison of Muscle Cutting and Muscle Sparing IN Open Cholecystectomy. Vol. 13, No, 1; Jan-Mar 2015.
6. Charles, KM. Sherry. Open Cholecystectomy. *Am. J. Surg.*, 1993;165:435-438.