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MINICHOLECYSTECTOMY VERSUS LAPROSCOPIC CHOLECYSTECTOMY

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ABSTRACT

Objective: To propose that minicholecystectomy is cost effective and is as effective as laparoscopic cholecystectomy.
Study Design: Prospective comparative study
Settings: Surgical Unit II of Peoples Medical College Nawabshah, and Jinnah Medical Center Nawabshah, a private hospital, from January 2008 to December 2009.
Main Outcome measures: Postoperative pain, Length of hospital stay ,Cost of treatment, Time until return to work, Complications.
Methodology; From January 2008 to December 2009 sixty eight patients were selected for Mini- and Laparoscopic cholecystectomy. 36 patients in MC group and 32 patients in LC group were included in study. By decreasing the incision size to 4-7 cm preserving the rectus muscle and using headlights we have reduced our operative morbidity at no increased risk to the patient. The strength of this report is the inclusion of all cholecystectomy performed in one unit in a period of two years. The median operative time for MC in our study was 64 minutes (range 45-82minutes) and is almost equal to that of previous reports (40-74mins).There was no operative mortality. 20 patients were discharged within 24 hours, and 14 patients need to stay for 48 hours, but two patients with complications remained admitted for one week. Median and mean postoperative stay for all patients was 1.5 to 2.4 days respectively.
Conclusion Minicholecystectomy should be considered in every case of gall stone disease particularly in developing countries. Minicholecystectomy is a safe, inexpensive day surgery method of cholecystectomy with minimal time off work after surgery.

Key Words; Minicholecystectomy, Laparoscopic Cholecystectomy, Cost effective,

INTRODUCTION

In current interventional medicine operations on the gallbladder and biliary tract performed by minicholecystectomy are ever more widely used in practice.[1] Cholecystectomy done through minilaparotomy is an alternative procedure with well established superiorities, irrespective of the enthusiasm accomplishment of the intervention in the particular field of surgery. Minichlocystectomy initiated in 1982 and ever since then it marks a ceaseless improvement in technical respect.
Today the removal of gallbladder is the safest, the most effective and widely recommended treatment for gall stone disease. Three essential methods are used for the removal of the gallbladder, standard open cholecystectomy, (CC), Laparoscopic Cholecystectomy (LC), and Minichlocystectomy (MC).[2] Laparoscopic cholecystectomy is the gold standard procedure for symptomatic gall stones but at higher cost, minicholecystectomy has comparable results to LC at an affordable price. During an era when cost containment has increasingly important, a new approach to elective cholecystectomy through a 4 to 5 cm incision is reported. Soon after its introduction LC was considered the method of choice for treatment of gall stone

disease and an early consensus conference concluded that it might confer economic advantage over open cholecystectomy.[3]

Minimally invasive technique in the surgical treatment of gallbladder disease includes laparoscopic cholecystectomy and minicholecystectomy. MC was first described more than two decades ago by Dubois & Berthelet[4] and favorable results were reported at the same time as LC was introduced in UK in 1990.[5,6] At that time little information was available concerning MC. Later single blind randomized controlled trial has indicated that convalescence differences b/w LC and MC are small. [7,8] Cholecystectomy and nearly all biliary tract surgeries can be performed in adults through a right transverse or oblique incision which varies in length from 3 – 6 cm and only require a few narrow retractors. Besides its cosmetic advantages the short incision reduces postoperative pain, abdominal wall and intestinal transit problems and increases the patients general and respiratory comfort. Its major drawback is that it does not permit full abdominal exploration.

Against the back ground it was appropriate to assess open small incision cholecystectomy as a treatment for all patients with gallstone disease. The role and results of LC in the chronic and acute cholecystitis and other emergency conditions of gallbladder and those of MC in chronic cholecystitis have frequently been reported,[4,5,9,10] but the applicability and efficacy of MC in acute cholecystitis have not been properly evaluated. The purpose of this study was to assess and compare the results of LC & MC with either acute or chronic cholecystitis.

PATIENTS AND METHODS

36 patients with gallstone disease underwent MC and 32 patients for LC from January 2008 to December 2009 at Surgical Unit II PMCH Nawabshah and Jinnah Medical Centre Nawabshah were included in this study. There were 26 women and 10 men in MC group, 24 women and 8 men in LC group. Median age was 60 years (range 20-80 years) median BMI was 24 (range 18-30) Fifteen of thirty six patients had an acutely inflamed gallbladder, and twenty one with chronic gallstone disease, underwent MC. In LC group 22 were with chronic gallstone disease and 10 were with acute gallbladder.

Each cholecystectomy was prospectively recorded according to a protocol that involves patient characteristics, surgical details, hospital stay, and intra and postoperative complications including reoperation. Patients undergoing elective LC or MC were given verbal and written information concerning the operation, expected hospital stay, convalescence. We tried to operate on patients with acute cholecystitis in acute or subacute phase of the disease normally on the day after admission or on list. Every patient was given prophylactic antibiotic dose of ceftriaxone and metronidazole 8 hours before surgery and at the time of induction of anaesthesia and post operatively kept on same antibiotic for 48 hours. Thromobosis prophylaxis was administered as tinzaparin subcutaneously the evening before surgery and five hours after surgery.

A personal standardized technique for MC was established after a 4 year experience of performing the operation in patients with chronic gallstone disease. A small cushion was placed under the caudal portion of the right thoracic cage in order to raise the gallbladder region. The incision was started approximately 3 cm to right of the midline ran obliquely parallel to and 3 cm below the right costal margin. The initial length of the incision was 4 -5 cm depending upon the size of the patient. (Fig 1) It was extended if necessary but did not more than 7 cm. As a routine muscle was split longitudinally after cutting the anterior rectus sheath, the posterior rectus sheath was cut transversely



Fig 1

In patients with markedly distended gallbladder decompression of the gallbladder was first step. The gallbladder was usually dissected from fundus first method. The stump of cystic duct and artery were ligated with absorbable suture material and surgical clips were never used. In case of severe inflammation with dissection difficulties, the gallbladder was opened stones were removed and the wall within liver bed was left in situ and the mucosa was diathermised. Drain was placed in the right subhepatic space and wound was closed with nonabsobable polypropylene suture. Field block was routinely performed with 0.25 % bupivacaine injection deep into the plane of intercostal nerves.

The operative time was defined as the period starting at 'knife on skin' and finishing at 'last stitch'. Paracetamol and diclofenac sodium were recommended as routine pain medication for first five days. Early mobilization of the patients was encouraged and discharged within 24 to 48 hours. Median operative time was 64 minutes (range 45-84 minutes).

Laparoscopic cholecystectomy was performed in 32 patients, by four ports, two ports of 10 mm at supraumblical and epigastric region, and two ports of 5 mm in right midaxillary line and right hypochonrium. Patients selected for the procedure, 22 were with chronic gallstone disease and 10 were with acute cholecystitis. Only one case of chronic group was converted to open minicholecystectomy and 3 out of 10 were converted to open procedure MC due to acutely inflamed and swollen gallbladder and difficult to dissect out the calot's triangle. Operative time was mean 95 minutes (range 60-130 minutes). Patients were discharged within 24 to 48 hours.

Statistical Analysis.

Data are presented as median and range, comparisons of operative time, postoperative analgesia, length of hospital stay were done by means of the Mann-Whiney U-test. Difference in time of start of oral diet and complications rate were evaluated by the X^2 test, were considered significant when probability value was < 0.05

RESULTS.

From January 2008 to December 2009 sixty eight patients were selected for Mini- and Laparoscopic cholecystectomy. 36 patients in MC group and 32 patients in LC group, were compared for time of operation, postoperative pain, length of hospital stay, cost of treatment and time until return to work and complications.

In minicholecystectomy group, there were 26 female and 10 male patients, the age range was 20-80 years (mean 60 years) and BMI was 17 to 28.4 (mean 23.4).There were 21 patients with chronic cholecystitis, and 15 were with acute cholecystitis. One patient of chronic gallbladder developed peroperative hemorrhage which was controlled by packing. No patient required conversion to conventional incision of 13 to 15 cm but extended to 7 cm and difficulties dealt in two patients. Three patients were found with dilated CBD with stone which was explored after removing the gall bladder. Two patients

operated for acute cholecystitis developed bile leakage in drain, about 100 ml / day, which was stopped within a week. There was wound infection in one patient which was controlled by antibiotics and daily dressings.

There was no operative mortality. Median operative time was 64 minutes (range 45 -84 minutes). 20 patients were discharged within 24 hours, and 14 patients need to stay for 48 hours, but two patients with complications remained admitted for one week. Median and mean postoperative stay for all patients was 1.5 to 2.4 days respectively.

In LC group there were 32 patients, twenty two with chronic cholecystitis and 10 with acute cholecystitis; age range was same as MC group. There was only one patient of chronic gallbladder disease with difficult dissection in Calot's triangle, converted to open cholecystectomy and three out of ten patients converted to open cholecystectomy. Common Bile Duct (CBD) injury occurred in one patient, hemorrhage in two patients of acute group converted to open procedure. Conversion rate was 0.5% in chronic group and 33% in acute group.

There was no any operative mortality in LC group, mean operative time was 95 minutes (range 60-130 minutes). 21 patients were discharged within two days and 8 patients remained for 3 days and three patients who were converted to open cholecystectomy remained admitted for 5-7 days. Bile leakage was noted in one patient, in drain within 24 hours postoperatively and no patient needed to reopen and leakage stopped in ten days. Two patients developed wound infection which was subsided with antibiotic treatment.

All patients remained in follow up for one year, no one patient in MC group developed incisional hernia, but only one patient developed port site herniation at supraumblical 10 mm port site. Cost of treatment was 40% more in LC group patients than MC group at private hospital patients included in study. Linear scar was acceptable and post operative pain was same on visual analogue scale of 10, in LC group, was 5.5 and in MC group was 5.3 responded well to initially Paracetamol and few patients needed diclofenac sodium.

DISCUSSION

In our study of cholecystectomy with an intended small incision for 36 patients and one third of them were with acute gallbladder disease and about 32 patients were went for LC and one fourth of them were suffering from acute cholecystitis.

More than 2000 cases of MC have been reported world wide without any death or major CBD injuries since first report in 1982.[4,5,7,11,12] Although three randomized controlled trials showed better results for LC than MC, with gallbladder that were not acutely inflamed, in terms of shorter hospital stay, reduced postoperative analgesic requirements or earlier return to normal activities.[5,6,7] The introduction of Laparoscopic cholecystectomy in 1989 by Dubois et al[1] decreased both inpatient time and the time until return to work but a significant number of complications resulted. In a review of 77,604 cases Deziel et al [4] reported a 1.2% instance of complications requiring conversion to laparotomy. In the emergency settings of acute cholecystitis LC is getting popularity rapidly and good results have been reported. [13,14] However the conversion rate to open cholecystectomy is still high varying between 16% to 35% [13,14] In our study the conversion rate was same about 30% to open cholecystectomy in acutely inflamemed gall bladder.

By decreasing the incision size to 4-7 cm preserving the rectus muscle and using head lights we have reduced our operative morbidity at no increased risk to the patient. The strength of this report is the inclusion of all cholecystectomy performed in one unit, in period of two years. In this prospective and consecutive series, median length of incision was 6cm for acute operations. In our study we did 36 minicholecytectomies, in just two patients incision needed to be extended up to 7 cm, through which hemorrhage was dealt easily. CBD exploration was done in three patients through mini incision and the stones were removed without any difficulty. The main advantage of small incision in open cholecystectomy for all patients is its applicability and elimination of double learning curves. From 1995 though 1999, 82% of Swedish patients over the age of 70 treated for acute gall stone disease and 43% of those treated for chronic gall stone disease had an open minilaparotomy operation[13]. Laparoscopic cholecystectomy becomes the most popular technique of treatment of gall bladder lithiasis. The consequences of this procedure including the influence of pneumoperitoneum, affects cardio respiratory system, the increase of frequency of bile duct injury, and shortening of hospital stay are compared with MC which has least chances of these consequences.

Our study indicates small open cholecystectomy incision is an attractive treatment for patients with their high incidences of acute cholecystitis and common bile duct stones which is same as mentioned in a study done in 2000 by Jørgensen T [16] .The median operative time for MC in our study was 64 minutes (range 45-82minutes) and is almost equal to that of previous reports (40-74mins)[17,18]. In this study operative time was measured between, knife to skin,, and ,last stitch,. Post operative hospital stay was about two days in our study which is same as mentioned in the previous studies of MC [19,20,21]. MC is now performed as a day case or ambulatory surgery[22].The results of MC for chronic and acute cholecystitis in our study are comparable with those reported by LC [11,18,19] but at lower cost. Avoiding the need for special instruments improves the cost effectiveness of MC.

CONCLUSION:

1. Minicholecystectomy is compatible to laparoscopic cholecystectomy and is minimally invasive surgical procedure with short hospital stay, evidence based gall bladder surgery.
2. Minicholecystectomy can be performed without the use of special instruments.
3. Minicholecystectomy should be considered in every case of gall stone disease particularly in developing countries.
4. Minicholecystectomy is a safe, inexpensive day surgery method of cholecystectomy with minimal time off work after surgery.

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