

A Comparative Study of Laparoscopic versus Mini Cholecystectomy

S AKHTAR A KAMRAN M N ASLAM A A ALI K M GONDAL A.M.CHAUDHRY

Department of Surgery, Mayo Hospital, Lahore

Correspondence to Dr. Saleem Akhtar

A randomized trial of 100 patients with symptomatic cholelithiasis was carried out in North Surgical ward of Mayo Hospital Lahore. Fifty patients underwent laparoscopic cholecystectomy while fifty patients were subjected to mini cholecystectomy. Our results show longer operating time, less postoperative pain, lesser hospital stay and earlier return to work with laparoscopic cholecystectomy than mini cholecystectomy. There were postoperative complications in each group. There was 4% minor bile leak in case of laparoscopic cholecystectomy but nil in minicholecystectomy. Our results are comparable with other similar series. In conclusion laparoscopic cholecystectomy is probably better than minicholecystectomy in terms of quick postoperative recovery.

Key words: Laparoscopic cholecystectomy, Mini cholecystectomy, Cholelithiasis

Cholecystectomy through laparotomy has been the standard operation for gall stone disease for the past 100 years. In 1879 the first successful removal of stone from gall bladder in human was performed by Lawson tariff¹.

Recent years have seen the development of alternative methods for the management of biliary lithiasis e.g. dissolution therapy with the help of bile salts and MTBE (Methyl-tea-butyl ether), endoscopic and percutaneous methods of stone extraction, biliary lithotripsy and gallstone removal via mini laparotomy².

Laparoscopic cholecystectomy was first introduced in France in 1987 by Dubois et al³ and since its introduction, it has generated much excitement and enthusiasm among general surgeons. Since then, this procedure has been widely accepted and adopted by the surgical community and has become the new gold standard. Laparoscopic surgery intended to minimize the trauma of access without compromising exposure of the operative field. It has been proved that in experience hands, the procedure decreases post operative pain, reduces hospital stay and recovery period without increase in morbidity and mortality rates^{4,5,6}.

Minicholecystectomy is an attractive alternative to conventional cholecystectomy. Mini-cholecystectomy described in 1982 by O'Dwyer is an index that surgeons are making an attempt to reduce the morbidity⁷.

Laparoscopic cholecystectomy has gained wide acceptance for treatment of cholelithiasis in preference to open cholecystectomy though it has been formally compared with minicholecystectomy⁸.

Patients and methods

This study carried out in the Department of surgery at Mayo Hospital, Lahore. A total of 100 patients of both sexes and age groups who presented with symptoms of pain right hypochondrium, flatulent dyspepsia, nausea, vomiting, heart burn and feeling of heaviness and confirmation of cholelithiasis on ultrasonography were offered cholecystectomy as the treatment.

The criteria for selection of the patients were both sexes, age range was from 12 to 65 years, thin to moderate built. Patients were educated about merits and demerits of

both the procedures in detail and were also informed that, there is no evidence that either operation is superior. Patients were randomly allocated by opening sealed envelopes, to either laparoscopic or minicholecystectomy.

Laparoscopic cholecystectomy was performed by introducing pneumoperitoneum usually through 1cm infra umbilical incision initially with a Verres needle. Later on from same incision a 10mm trocar with port is introduced. Cholecystectomy was then performed using two additional upper abdominal ports (epigastric and right hypochondrium) with extraction of gallbladder through infra umbilical incision in most of the cases. Metal clips were applied across the cystic duct cystic and artery before division and dissection was done with diathermy. Skin was closed with usual standard technique.

In minicholecystectomy a transverse incision about 5-7cm made. Rectus abdominis muscle was retracted to approach the abdominal cavity.

The data included age, sex, weight of the patient, duration of operation, reasons of conversion from minicholecystectomy and laparoscopic cholecystectomy to standard cholecystectomy, pain score, post operative nausea and vomiting, post operative complications, length of hospital stay and time to return to removal work.

Results

A total of 100 patients were selected for the study, and consultant surgeons at Mayo Hospital, Lahore, performed cholecystectomies. Fifty patients underwent laparoscopic cholecystectomy while fifty patients were subjected to mini cholecystectomy.

The age and sex distribution in both groups are shown in Table 1. Distribution of patients regarding symptomatology is shown in Table 2.

Table 1. Sex and age distribution.

Sex	Laparoscopic cholecystectomy	Mini Cholecystectomy
Male	13(26%)	5(10%)
Female	37(74%)	45(90%)
Age	43.5 years (22-65 years)	52.5 years (35-70 years)

Table 2. Symptomatology

Symptoms	n=	%age
Pain right upper quadrant	88	88
Flatulence and dyspepsia	64	64
Feeling of heaviness after meals	62	62
Nausea and vomiting	40	40
Fever and others	12	12

The mean operation time for laparoscopic cholecystectomy was 66.87 minutes ranging from 35-100 minutes and for mini cholecystectomy 44.72 minutes ranging from 20 minutes to 65 minutes. So there was significant difference in operating time between laparoscopic cholecystectomy and mini cholecystectomy which was approximately 22 minutes as shown in Table 3.

Table 3. Operating time

Procedure	N=	Time in minutes	Mean minutes
Minicholecystectomy	50	20-70	44.72± 11.04
Laparoscopic cholecystectomy	48	30-110	66.87±13.99

Post operative pain was experienced by patients of both groups with variable intensity according to visual analogue scale (VAS) which was more in mini-cholecystectomy group than in laparoscopic cholecystectomy group. Mean VAS for laparoscopic cholecystectomy was 7.75 and for mini cholecystectomy was 10.64 on the first post operative day as shown in table 4.

Mean injectable analgesia requirement was 3.04(±0.82) for laparoscopic cholecystectomy and 3.22(±0.83) for minicholecystectomy as presented in table 5.

Table 4. Pain score (VAS)

Pain score	Laparoscopic Cholecystectomy (mean 7.75)	Mini Cholecystectomy (Mean 10.64)
4	8	-
6	10	2
8	14	4
10	10	24
12	6	16
14	-	4
Total	48	50

Table 5. Injectable analgesia

No. of Injection	Laparoscopic Cholecystectomy 3.04±0.82	Mini Cholecystectomy 3.22±0.83
2	11	8
3	25	28
4	9	9
5	3	5
Total	48	50

P<0.01 (students t test)

Post operative hospital stay was less for laparoscopic cholecystectomy with a mean of 2.31 days (±0.65) ranging from 2-4 days compared with mini cholecystectomy in which it was 3.12 days (±0.9) ranging from 2-6 days as shown in Table 6.

The patients after laparoscopic cholecystectomy resumed their normal work after a mean of 2.48 weeks (±0.81) ranging from 1-6 weeks as compared to 2.54 weeks (±0.70) ranging from 1-6 weeks in case of mini cholecystectomy as shown in Table. 7.

There were post operative complications 4 each in both groups. Fortunately there was no bile duct injury in this study. There was 4% minor bile leak in case of laparoscopic cholecystectomy but nil in mini cholecystectomy. As shown in Table No: 8

Table No.8 : Complications:

Complications	Laparoscopic cholecystectomy (n=)	Mini-cholecystectomy (n=)
Injury to CBD	0	0
Haemorrhage	1(2%)	0
Bile leak	2(4%)	0
Wound infection	1(2%)	1(2%)
Pulmonary complications	0	3(6%)
Chest infection	0	0
Total	4	4

Laparoscopic cholecystectomy was successfully completed in 48 patients. In 2(4%) patients the procedure was converted to traditional cholecystectomy. The reasons for conversion were haemorrhage 1(2%) and empyema 1(2%). There was no mortality in both groups.

Discussion

Cholecystectomy is the gold standard for the management of gall stone disease. Alternative methods as dissolution therapy with the help of bile salts and MTBE, endoscopic and percutaneous methods of stone extraction and biliary lithotripsy have unsatisfactory long term results.

There is a significant difference in operating time between laparoscopic cholecystectomy and minicholecystectomy of 22 minutes. This supports the learning curve for laparoscopic cholecystectomy^{9,10}. Our operating time for both laparoscopic and minicholecystectomy were significantly lower than in other studies as shown in Table .No.9

Table No.9. Comparison of operating time.

Study	LC	MC	Value
Peters et al (1991)	85.27±39	-	-
Barkun et al (1992)	85.96±32	73.1±24.5	0.08
Malik et al. (1992)	90	-	-
Barkun et al. (1993)	86±3	73±25	.008
Zahidet al.(1993).	-	60(45-80)	-
McGinn et al.(1995)	74	50	<0.05
Chaudhry et al.(1995)	80	-	-
Present study(1997)	66.87±13.99	44.72±11.04	0.05

Laparoscopy vs Mini Cholecystectomy

Patients of both groups experienced the pain score with variable intensity, higher in minicholecystectomy as compared to laparoscopic cholecystectomy. This is comparable with other studies^{11,12}

Both laparoscopic and mini cholecystectomy procedures are associated with shorter hospital stay and earlier return to normal activities than traditional cholecystectomy. Between these two minimally invasive procedures hospital stay and return to normal activities was slightly longer in case of mini cholecystectomy. These result are comparable with other studies as shown in Table No.10 and 11

Table No 10: Comparison of mean hospital stay (in days) of Laparoscopic cholecystectomy and Mini-cholecystectomy.

Study	Cases	LC	MC	P-value
McGill group(1993)	62	3(1-13)	4(1-6)	0.001
Tate et al (1993)	22	1.45(0.69)	2.82(2.82)	0.02
McGinn et al (1995)	310	2(0-7)	3(1-8)	<0.001
Present study(1997)	100	2.31	3.12	<0.01

Table No 11: Comparison of mean time taken by patients to return to normal activities after Laparoscopic cholecystectomy and Mini cholecystectomy (in weeks).

Authors	Year	LC	MC
Dubois et al	1982	-	4.8
Menill	1988	-	3.8
Barkun et al.	1993	1.7	2.8
Zahid et al.	1993	-	1.7
Tate et al.	1993	1.7	2.8
McGinn et al.	1995	1.5(0.6-13.0)	6.0(0.8-11.0)
Present study	1997	2.48(±0.81)	2.54(±0.70)

In our study the laparoscopic procedure was successfully completed in 96% patients, while in 4% patients the operation was abandoned in favour of conventional cholecystectomy. This rate is comparable with other studies.¹¹ There was no conversion in minicholecystectomy which is comparable to some studies⁷ and different from others¹¹.

Conclusion

Laparoscopic cholecystectomy and mini cholecystectomy

both provide safe and effective treatment for most patients with gall stones. Both require the additional skill of a trained surgeon and its safe performance seems to be related o proper training and experience. Laparoscopic cholecystectomy is probably better than mini-cholecystectomy in terms of quick postoperative recovery. Conversion to standard cholecystectomy should be done where technical difficulties are encountered.

References

1. Fallugi MAR, McBreen MP: Historical background. Postgraduate surgery. Editor Fallouji MAR: Heinmann Book Oxfords 1989,PPH
2. Olsen DO, Mini-Laparoscopic cholecystectomy, Am J Surg 1993; 165: 440-43.
3. Dubois F, Icard P, Berthelot G, Levard N, Coelioscopic cholecystectomy. Preliminary report of 36 cases. Ann Surg 1990; 211:60-2.
4. Berggren U, Gordh T, Grama D, Haglund U, Rastad J, Arvidsson D, Laparoscopic versus open cholecystectomy:hospitalization sick leave, analgesia and trauma response. Brit J Surg 1994; 81:1362-65.
5. Lester F. Williams, William , Chpman, Roger A Bonau, Edwin C. McGree, Russel W. Boyd J. Kenneth Jacob. Comparison of laparoscopic cholecystectomy with open cholceystectomy in a single center. Am J Surg 1993: 165: 459-65
6. Messahel M. Post-cholecystectomy admission to the intensive care unit - comparison between open, mini-lap and laparoscopic techniques. 1995:50;901-4.
7. Odwyer PJ, McGregor JR, McDermott EWM, Murphy JJ, Higgins NJO. Patient recoveryfollowing cholecystectomy through a 6 cm or 15 cm transeverse subcostal incision; a prospective randomized clinical trial. Postgraduate Medical Journal 1992: 68; 817-19.
8. Barkun JS, Barkun AN, Meakin JL. Laparoscopic versus open cholecystectomy: The Canadian Experience. Am J Surg 1993; 165: 455-58.
9. Larson GM, Zukan KA, Vitale GC. Multipractice analysis of Laparoscopic cholecystectomy in 1983, patients. Am J Surg 1992; 163: 221-6
10. Orlanodo R, Russel JC, Lynch J. Laparoscopic cholecystectomy: A atatewide experience. Arch Surg 1993: 128; 494-99.
11. McGinn FP, Miles AJG, Uglow M, Ozmen M, Terzi C, Humby M, Randomized trial of laparoscopic cholecystectomy and mini-cholecystectomy. Brit J Surg 1995: 82; 1374-77.
12. Tate JJT, Lau WY, Leung KI, LI AKC. Laparoscopic versus mini-incisional cholecystectomy. The Lancet 1993;34