

Comparative Study between Minicholecystectomy Versus Lap Cholecystectomy

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ABSTRACT

Introduction: Open cholecystectomy is still the most common operation performed in our country. Amount of trauma inflicted by surgeon is directly proportional to the length of incision. There emerged a clear trend towards smaller incision which leads to development of mini-cholecystectomy in 1982. But with the introduction of lap cholecystectomy in the year 1987, the surgical community witnessed a revolution in basic ideology. Aim of the study was to compare post operative pain, wound infection and duration of hospital stay with mini-cholecystectomy and lap cholecystectomy and to determine the rate of conversion to standard open cholecystectomy from lap cholecystectomy and mini-cholecystectomy.

Material and methods: 100 Patients were randomly divided at time of induction of anesthesia into one of two groups i.e. mini-cholecystectomy and lap cholecystectomy. Incision length was kept 4-5 cm in mini-cholecystectomy.

Results: Pain was estimated by pain score. Mean operating time was 50 minutes for mini cholecystectomy and 119 min for lap cholecystectomy. Conversion rate to standard open cholecystectomy in mini-cholecystectomy was 8% and 6% in lap cholecystectomy. Wound infection rate was 4% in both group of patients.

Conclusion: Pain score of patients undergoing laparoscopic cholecystectomy was less as compared to patients who underwent mini-cholecystectomy. However there was not much difference in rate of conversion to standard open cholecystectomy and rate of wound infection in both groups but hospital stay of lap cholecystectomy patients was less as compared to mini-cholecystectomy.

Keywords: laparoscopic cholecystectomy, mini-cholecystectomy, comparison

INTRODUCTION

As lap cholecystectomy was introduced in the year 1987, the surgical community witnessed a revolution in basic ideology. It has many advantages over conventional cholecystectomy such as use of smaller incision, cosmetically better and no muscle is cut. This leads to less morbidity, decreased pain and early mobility.

But open cholecystectomy is still the most common operation performed in our country because it avoids infrastructural and instrumental costs, the need to train large number of surgeons who are already in practice and is bereft of many problems inherent with lap cholecystectomy.

Surgical community has realized that surgical incision contributes to morbidity and mortality.¹ Amount of trauma inflicted by surgeon is directly proportional to the length of incision and division of muscles. There emerged a clear trend towards smaller incision which lead to development of mini-cholecystectomy in 1982.² So the study was done to compare post operative

pain, wound infection and duration of hospital stay with mini-cholecystectomy and lap cholecystectomy and to determine the rate of conversion to standard open cholecystectomy from lap cholecystectomy and mini-cholecystectomy.

MATERIAL AND METHODS

This study was conducted at BPSGMC Khanpur, kalan between december 2013 to december 2014. Ethical clearance from local review board and informed consents from patients was taken as required. 100 patients based on inclusion exclusion criteria were randomly divided at time of induction of anesthesia into one of two groups i.e. mini-cholecystectomy and lap cholecystectomy.

Inclusion criteria: All patients above 10 years of age group having cholithiasis, visiting to the OPD, were included in the study.

Exclusion criteria: All patients having H/O jaundice, pancreatitis, empyema, mucocele, CBD stones were excluded from study.

Incision length was kept 4-5cm in mini-cholecystectomy. A subcostal transverse incision was given in all cases of mini-cholecystectomy. After cutting anterior rectus sheath rectus muscle was split 2-3 cm right of linea alba. Posterior rectus sheath was exposed after splitting and retracting the rectus muscle. This was then divided vertically and peritoneal cavity was opened. This was done so as to have better comparative results as many studies have shown that it is the cutting of rectus muscle which is responsible for pain and morbidity.^{3,4} Lap cholecystectomy was done by using standard four ports. All patients were subjected to investigations for confirmation of diagnosis and anesthesia fitness. In the postoperative period all patients were interviewed and observation were noted as described below

STATISTICAL ANALYSIS

SPSS 13 was used for statistical analysis. We calculated mean, standard deviation for categorical data. Statistical comparison was done with the help of t test.

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RESULTS

Table-1 shows age and sex distribution of mini-cholecystectomy and lap cholecystectomy patients. It was found to have more patients of cholelithiasis between age group 26 to 55 years.

No sedation was required or given to any of the patients of either group. Immediately after surgery on day zero 10 patients had nausea and vomiting in both groups. Nausea and vomiting was not seen in any patient of either group after day zero.

Mean operating time

Patients who underwent mini-cholecystectomy had a mean operating time of 50 min while patients in whom lap cholecystectomy was done time taken was much longer as compared to mini-cholecystectomy. Mean operating time for lap cholecystectomy was 119 min.

Wound infection rate

Wound infection in both group of patients was noted. 2 (4%) patients of mini-cholecystectomy had minor serous discharge from wound site. In lap chole group 2 (4%) patients develop wound infection in the epigastric port site.

Conversion to standard open cholecystectomy

4 (8%) patients of mini-cholecystectomy group had to be converted to standard open cholecystectomy. In lap cholecystectomy only 3 (6%) patients had to be converted to standard open cholecystectomy

Hospital stay

Hospital stay of both group of patients was noted and mean was calculated to have comparison. Mean hospital stay of mini-cholecystectomy patients was 4.3 days while that of lap cholecystectomy patients had mean hospital stay of 3.16 days.

DISCUSSION

Age: Mean age of mini-cholecystectomy patients and lap cholecystectomy patients was 40.40 and 42.82 with p value >0.05 and t value .7072 as shown in Table-1. Average age of presentation was fourth decade which is also the reported age of peak incidence by other surgeons.⁵⁻⁷ In both groups patients were of same age group without any statistical significant difference. Measurement of pain was done by simple pain, sedation and nausea scoring system as given by Dr. Ann Coleman.⁸

Pain score: Patients of lap cholecystectomy suffered from less pain as compared to mini-cholecystectomy as mean pain score for lap cholecystectomy was less as compared to mini-cholecystectomy as shown in Table-2. This decrease in pain in lap cholecystectomy is mainly as no muscle is cut and only small 4 skin incisions at different places are given.

Mean operating time: Mean operating time was 50 min for mini-cholecystectomy and 119min for lap cholecystectomy in our study. Study done by Axel Ros et al⁹ had shown similar timing for lap cholecystectomy (108min) and mini-cholecystectomy (48min). Mean operating time for lap cholecystectomy was more as compared to mini-cholecystectomy. This was because it takes time to start the procedure in lap cholecystectomy as we are to set and test the instruments, camera, telescope, suction, electrocautery etc. before starting the surgery and another reason was because lap cholecystectomy was in the initial stages of development and the time decreases as the experience was gained. Similar findings have been noted by Majeed et al.¹⁰

Age(in yrs)	Mini-cholecystectomy			Lap cholecystectomy		
		M	F		M	F
10-25	5	0	5	5	0	5
26-40	21	1	20	17	2	15
41-55	18	1	17	17	5	12
56-70	5	1	4	11	3	8
>70	1	0	1	0	0	0
Mean age	40.40			42.82		
Standard Deviation	13.02			12.66		
Pvalue $>.05$, t value .7072						

Table-1: Age distribution

Day	Pain score	lapcholecystectomy I	mini cholecystectomy
1	0	0	0
	1	24	4
	2	26	23
	3	0	23
Mean		1.420	2.560
P value <0.001 t value 7.756			
2	0	9	1
	1	38	22
	2	3	25
	3	0	2
Mean		.932	1.610
p value <0.001 t value 6.463			
3	0	24	3
	1	26	44
	2	0	3
	3	0	0
Mean		.589	1.136
p value <0.001 t value 7.318			
4	0	45	16
	1	5	34
	2	0	0
	3	0	0
Mean		.143	.769
value <0.001 , t value 7.315			

Table-2: Value of pain score in patients of both groups

Wound infection rate: There was not much difference in the infection rate of patients in both groups. Infection rate in both groups was 4%. While wound infection rate in various other studies¹¹⁻¹³ varies from 2.2% to 5.9%. However in patients of lap cholecystectomy group it was the epigastric port site which got infected most of the time. It may be because we remove gallbladder from epigastric port and while removing there occurs some spillage of bile into the wound.

Conversion rate: There was not much difference in the rate of conversion in both groups. In mini-cholecystectomy group length of incision had to be increased in 4 cases. Out of 4 cases incision extended in two cases was because of obesity, one was because of difficult dissection in calot's triangle and another was because of empyema gallbladder. In lap cholecystectomy group conversion to open was done in 3 cases. Out of 3 cases one was because of CBD injury and another 2 were because of frozen calot's triangle.

Hospital stay: Hospital stay of patients of both groups was

noted. In our study mean hospital stay for mini-cholecystectomy patients was 4.3 days and lap cholecystectomy patients was 3.16 days. Similar studies conducted by Majeed A.W. et al¹⁰ and McGinn FP¹⁴ et al had reported no difference in the hospital stay of both group of patients while study conducted by McMohan AJ et al¹⁵ had reported shorter hospital stay for patients of lap cholecystectomy group.

CONCLUSION

In this era of expensive health care, any strategies that decreases duration of morbidity and disability and reduce length of hospitalization arouse tremendous interest among medical community. There is clear indication that on average these patients took one day more for recovery and discharge from hospital as compared to patients undergoing lap cholecystectomy. This leads to availability of more beds for patients without any increase in physical infrastructure which can be used to treat other patients. This is especially useful for developing countries which have limited resources and less number of beds per thousand population. Therefore lap cholecystectomy is definitely better than mini-cholecystectomy because of less pain, morbidity and reduced hospital stay.

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