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Original Research Article

A Comparative Study of Laparoscopic Cholecystectomy V/s Minilaparotomy Cholecystectomy

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ABSTRACT

Background: Laparoscopic cholecystectomy and minilaparotomy cholecystectomy are the minimal access procedures which came into existence to reduce the surgical trauma. The major concern relating to complications of laparoscopic Surgery is of increased rate of accidental injury to adjacent structures. The aim of this study to compare the merits and demerits of tubeless minilaparotomy cholecystectomy and laparoscopic cholecystectomy.

Materials & Methods: The present study is a comparative and prospective study between minilaparotomy cholecystectomy and laparoscopic cholecystectomy for which 100 cases were selected from the surgical department of mahatma Gandhi hospital from July 2011 to December 2012. Pre-operative biochemical investigations and ultrasound scanning were already done in order to rule out any associated liver or extra-hepatic biliary disorder.

Results: Most of the patients were between 31 to 50 years of age. The present study showed presenting complaints the difference between the two groups was not found to be statistically significant (p value>0.005). The pre-operative & post-operative finding was no statistically significant difference between two groups. Overall mortality was no significant difference between two groups.

Conclusion: We concluded that Laparoscopic Cholecystectomy has emerged as the gold standard in the treatment of gall stones because of the many advantages like better cosmesis, minimal wound pain, with early resolution, shorter hospital stay and early return to work.

Key Words: Laparoscopic cholecystectomy, Minilaparotomy, Cholecystectomy, Surgical Procedure.

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INTRODUCTION

The gall stones may lie dormant or more frequently can lead to symptoms because of acute or chronic inflammation, the disease becomes more prevalent as age advances. The most common acquired problem of billiary tree is cholelithiasis. The wide prevalence of this disease has led to wide interest of medical fraternity in this problem. Surgical removal of gall bladder has been the gold standard treatment of gall stone disease since it was described by Carl Langenbuch. Oral dissolution agents, lithotripsy and contact dissolution have been suggested as alternatives to surgical removal of gall bladder.[1]

The evolution of minimal access procedures represents part of the traditional surgical development. Laparoscopic cholecystectomy and minilaparotomy cholecystectomy are the minimal access procedures which came into existence to reduce the surgical trauma. With the introduction of minimal access procedures, cholecystectomy is evolving into an outpatient procedure. Patients are able to return to preoperative functional status rapidly with minimal postoperative morbidity and pain. Additionally these procedures have gained more acceptance because of cosmetic desirability of the small size of the scar.[2]

Despite the increasing interest in the minimally invasive technique of laparoscopic surgery, the role of this new technique has been questioned in the management of gall bladder diseases because of its association with higher rate of complications, especially in the early phases of learning curve of the surgeons.

Minilaparotomy cholecystectomy has been suggested as an alternative to conventional as well as to the laparoscopic cholecystectomy as it incorporates the benefits of both these procedures. Like laparoscopic cholecystectomy it does not require any special instruments or any specialized training and the procedure is done under direct vision .unlike conventional cholecystectomy no nasogastic tube , drain used. Like the

laparoscopic cholecystectomy it is less traumatizing, as the incision length is limited. Unlike laparoscopic cholecystectomy where image of the operative field is obtained on the screen{2-D vision}, and nasogastric tube and drain used , minilaparotomy cholecystectomy is done under direct vision {3-D vision} and no nasogastric tube and drain used .Because of its minimal invasive nature like laparoscopic cholecystectomy, there is shorter hospital stay and early return to work.[3]

The major concern relating to complications of laparoscopic Surgery is of increased rate of accidental injury to adjacent structures as a result of loss of three dimensional vision, reduced visual field and loss of tactical sensation together with the price of learning curve as both senior and junior surgeons acquire the new skills necessary to perform laparoscopic cholecystectomy safely. Pneumoperitoneum related complications are CO2 embolism, vasovagal reflex, cardiac arrhythmias and hyperbaric injury. Trocar related injuries are abdominal wall bleeding, haematoma, visceral injury, vascular injury. In mini laparotomy cholecystectomy there is minimal interference with the general peritoneal cavity and with gastrointestinal motility.[3] The aim of this study to compare the merits and demerits of tubeless minilaparotomy cholecystectomy and laparoscopic cholecystectomy.

MATERIAL & METHODS

The present study is a comparative and prospective study between minilaparotomy cholecystectomy and laparoscopic cholecystectomy for which 100 cases were selected from the surgical department of mahatma Gandhi hospital from July 2011 to December 2012.

These cases were choosen and proved by USG for cholelithiasis. Pre-operative biochemical investigations and ultrasound scanning were already done in order to rule out any associated liver or extra-hepatic biliary disorder.

Inclusion criteria

1. Patients having one episode of right upper quadrant pain or epigastric pain with ultrasonographically proven cholelithiasis.
2. Patients fit for surgery.

Exclusion criteria

1. History or ultrasonography abdomen suggesting of common bile duct stones.
2. Other gall bladder pathology eg. Carcinoma.
3. Patient having co-morbid conditions.

Detail history and careful physical examination in each patient is done, during pre-operative period.

Table 1: Distribution of cases according to age

Age (years)	Tubeless Mini laparotomy cholecystectomy	Laparoscopic cholecystectomy
10-20	0	0
21-30	3	6
31-40	22	20
41-50	15	14
51-60	9	8
61-70	1	2
Total	50	50

Table 2: Clinical Presentation (Symptoms & Signs)

Complaints	Tubeless minilaparotomy cholecytectomy	Laparoscopic Cholecytectomy
Diffuse pain abdomen	50	50
Nausea & vomitting	10	12
Fever	5	4
Dyspepsia	20	18
Similer History	25	22

Table no. 3: Per Operative Finding

Per-operative Findings	Tubeless Mini- laparotomy cholecystectomy	Laparoscopic Cholecystectomy
Multiple adhesion	12	10
Distended G.B.	18	20
Contracted G.B.	20	20

Table 4: Post-Operative Observations

		Tubeless -Mini Laparotomy Cholecystectomy	Laparoscopic Cholecystectomy	p Value
Nausea & Vomiting	1st day	5	7	>.05(NS)
	2nd day	3	4	
	3rd day	0	0	
Pain	No Pain	44	42	>.05(NS)
	Moderate Pain	6	7	
	Constant Pain	0	0	
Comfort	Very Comfortable	40	39	>.05(NS)
	Comfortable	10	11	
	Mild Discomfortable	0	0	

Table 5: Morbidity And Mortality

Post Operative Complications	Tubeless Mini – laparotomy Cholecystectomy	Laparoscopic Cholecystectomy	
Fever	2	4	**>.05(NS)**
Pulmonary complications	_	2	**>.05(NS)**
Wound Infection	2	4	**>.05(NS)**
Mortality	0	0	**>.05(NS)**

Table 6: Hospital Stay

Days Of Stay	Tubeless Mini – laparotomy Cholecystectomy	Laparoscopic Cholecystectomy
0 – 3	45	43
4 – 6	4	3
7 or more	1	4
Drain Per Day		
1ST	-	10-20 C.C
2ND	-	20-30 C.C
3RD	-	30 C.C or more

Table 7: Operative & intraoperative Details

DETAILS	Tubeless Mini – laparotomy Cholecystectomy	Laparoscopic Cholecystectomy	p value
Operative time	20-30 min.	60-90 Min.	<.5(S)
Blood Loss	30-40 C.C.	30-40 C.C.	>.5(NS)
Bile Leak	4	2	>.5(NS)
Bleeding	2	4	>.5(NS)
Bile Duct Injury	-	1	<.5(S)
Drain and N.G tube Used	-	50	<.5(S)
Conversion	-	2	<.5(S)

RESULTS

The present study showed the median age (range) of the patients was 39.5 years (21–65) in the laparoscopic group and 42 years (22-65) in minilaparotomy group. Most of the patients were between 31 to 50 years of age. The difference between the two groups was not found to be statistically significant (p value>0.005) (table 1).

The present study showed presenting complaints the difference between the two groups was not found to be statistically significant (p value>0.005) (table 2). The pre-operative & post-operative finding was no statistically significant difference between two groups (table 3). Overall mortality was no significant difference between two groups (table 4).

The duration of hospital stay after surgery was for a median period of 2 days (1 – 7) in minilaparotomy group and 3 days (2 – 10) in laparoscopic group. The difference was however not found to be statistically significant (table 5).

The operating duration of operation was 20-30 minutes in minilaparotomy group and 60-90 minutes in laparoscopic group. Laparoscopic group took longer time due to gas leak, difficult adhesions, bleeding, bile leakage, slippage of clips. So the conversion rate in laparoscopic group was 4% in our study. Drain and nasogastric tube used in all patients of laparoscopic group and minilaparotomy group no drain and nasogastric tube used (table 6).

DISCUSSION

Gall bladder disease has been known since antiquity. In recent past, there has been an upsurge in the detection of biliary tract disease in India. This is attributed mainly to availability of better diagnostic facilities in most of the medical centers in our country and secondly, due to the increasing awareness of general public about gall stone disease.[4]

Laparoscopic cholecystectomy and minilaparotomy has many advantages such as better cosmesis, minimal wound pain, short hospital stay and early return to work, but it is questionable minicholecystectomy advantages over Laparoscopic cholecystectomy.[4]

The success of any surgery involving new instrument and technique is usually measured by assessing a number of factors, sufficiency and cost effectiveness along with definite advantages other the older methods are important elements.

Most of the patients were between 31 to 50 years of age. The difference between the two groups was not found to be statistically significant. As age advances incidence of biliary diseases and gall stone diseases increases, as stated by I Petite (Maingot abdominal operation 8th edition).

Hoffman & Marinne[5] described an increase incidence of pain was found in drained patients as compared to undrained patients. Kopelman et al[6] concluded that in minilaparotomy results are cosmetic and excellent in terms of postoperative pain, morbidity, and period of hospitalization.

The finding is comparable to Likewise Majeed et al[7] reported that laparoscopic cholecystectomy took longer to perform than minilaparotomy cholecystectomy (median 65 versus 40 minutes) and offered no benefit over minilaparotomy cholecystectomy in terms of postoperative recovery, hospital stay and time return to work or full recovery. Similarly others[8-14] too found laparoscopic cholecystectomy was longer to perform. As experience is gained, the operating time is decreased. The surgeon gets trained in dealing with challenging cases in the course of his / her learning curve.

In this study, we are lucky that mortality noted zero, though we encounter some minor and 2 major complication. Two major complications are bleeding and bile duct injury found in laparoscopic cholecystectomy group. Both are converted to open procedure and managed. Minor complication like bile leakage 1 and 2 respectively found in minilaparotomy group and laparoscopic cholecystectomy group. Ros et al[13] intra operative complications like gall bladder perforation, bleeding, stone left in abdomen, vascular, bowel, hepatic injuries were more common in laparoscopic group.

O'Kelly et al[15] supported the views of O'Dwyer et al[16], on minicholecystectomy. They themselves undertook a study and observed that minicholecystectomy neither required expensive equipment nor the acquisition of special surgical training. According to them, surgeons trained in conventional cholecystectomy could easily change their technique to meet the demands of a minimal approach and perform it in approximately equal time.

On the other hand, laparoscopic cholecystectomy required substantial new skills and had more chances of intra operative complications, like injury to bile duct or other adjacent viscera, especially in the initial learning phase of the operating surgeon. Similarly others[17-20] found intraoperative complication in laparoscopic group like bile duct injury, bleeding , injury to adjacent viscera. Bile leak similar found Vibhu kapoor et al.[21]

Baxter and O, Dwyer[3] study gave similar results in both groups. They suggested that the two techniques cold be used interchangeably.

Sharma et al[22] found that minicholecystectomy is a safe, viable alternative to laparoscopic cholecystectomy in the third world countries where financial constraints are still a major cause for concern.

McMohan[9] and Calvert[23] have reported significant difference between the costs of the two procedures, claiming laparoscopic technique to be costlier. Mc Mohan[9] found laparoscopic cholecystectomy to be costlier by about 400 pounds and Calvert[23] reported laparoscopic cholecystectomy about 29% costlier as compared to minicholecystectomy. The difference was mainly in the costs of surgery and the equipments. Using disposable instruments like trocars was obviously costlier as reported by Mc Mohan[9]. Nilsson[24] reported a reduction in the cost of the laparoscopic procedure if the number of surgeries performed per year was more and reusable instruments were used. Under such circumstances, the costs of the two procedures were found to be comparable.

CONCLUSION

We concluded that Laparoscopic Cholecystectomy has emerged as the gold standard in the treatment of gall stones because of the many advantages like better cosmesis, minimal wound pain, with early resolution, shorter hospital stay and early return to work. Though it is easier to teach and learn the laparoscopic procedure with the help of magnified visual display, specialized training is a must in case of the laparoscopic technique.

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