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A COMPARATIVE STUDY ON ELECTIVE LAPROSCOPY VERSUS OPEN CHOLECYSTECTOMY AMONG CENTRAL INDIAN POPULATION

General Surgery

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ABSTRACT

INTRODUCTION : Gall stones disease is noteworthy health issue globally and is the foremost reason for morbidity across the world. There is a decision budge in the treatment ofgall stones from an open method considered to be the gold standard for gall stones treatment in late 1980's, to the revolutionary minimally invasive laproscopic technique in the current trend. Hence the present study was undertaken to compare treatment choice (laproscopic versus open method) and the outcomes for cholecystectomy.

AIM: Tocompare theefficacy and the outcomes ofelective laproscopy versus open cholecystectomy among central Indian population in terms time taken for operative procedure, complications,and the duration of hospital stay.

MATERIALS AND METHODS: The present study was carried out in 100 patients having an age group ranging from 20-70 years of central Indian population. Patients were thoroughly explained pros and cons of the procedure and the valid written. informed consent was taken prior to the surgery Present study was conducted after receiving clearance from the institutional ethical committee. Patients were divided into laproscopic and open cholecystectomy groups (Group I & II) by simple random sampling technique.

RESULTS: By comparing the two groups it was observed that the mean operation time for Laproscopic surgery was comparatively more significant i.e. 102.98 minutes than the mean time taken in group II (Open cholecystectomy) which was around 70.5 minutes($p<0.001$). Group I (1.12 ± 0.58days) patients had less Hospital stay postoperatively than group II patients(4.72 ± 1.48 days) .Complications has been observed among both the groups with no significant difference ($p>0.05$). 12% of Group I patients had complications while in group II patients complications were noted in 18% of patients.

CONCLUSION: Elective laproscopic surgery is considered to be safe and effective than the open cholecystectomy with low complication rate, briefing the hospital stay, and a comfortable postoperative period in acute cholecystitis,

KEYWORDS

Elective Laproscopy, Cholecystectomy, Central Indian Population

INTRODUCTION:

Gallstone disease (GSD) is the major health issue globally affecting 10 to 15% of the adult population across the world. Majority of the cases were asymptomatic, while symptomatic among 1-2 % of patients necessitates surgery, causing the cholecystectomy to be one of the most regular surgical procedure executed by a general surgeon[1].Prevalence in India ranges from 10 to 20%[2]involving near about 4.3% of the population[3]. In comparison with south Indian population GSD is seven times more common among north Indians[4] and the northeastern states of UP, West Bengal, Assam, Bihar and Orissa. With increase in age (>40 years) the incidence of gall stone disease also increases by 4- 10 fold[5].

In the year1882 KarlLangenbuch excerpt that the gallbladder should beconfiscated, because it forms the stones but not for the reason that it contains stones[6,7]. Formerly open cholecystectomy(OC) was believed to be the gold standard procedure for treating GSD. But many of the recent studies has put forward that the laproscopic cholecystectomy which was launched in 1985 has become the treatment of choice for symptomatic patients that has improved the patients satisfaction, abridged the extent of hospital stay , Postoperative recovery and a low complication rate& morbidity. Laproscopic cholecystectomy(LC) is advantageous in many ways over open cholecystectomy but it has its own pitfalls like it calls for high cost setup with extensive instrumentation, special trained personnel with precise knowledge[8], and a lengthy learning arc, which has led to a serious debate comparing the pros and cons of these two procedures for treating stones in gall bladder. Most studies have also stated that the extent of time taken for laparoscopic cholecystectomy is much longer than the open technique[9].

The present study was aimed at evaluating the merits and the demerits of laproscopic versus open cholecystectomy in treatment of symptomatic gall stones and also to check the efficacy and the outcomes of laproscopic cholecystectomy in terms time taken for operative procedure, complications and the duration of hospital stay.

MATERIALAND METHODS:

The present study was done on patients who were admitted in the surgical wards of Chirayu Medical College & Hospital, Bhopal for either laproscopic or open. A total of 100 symptomatic patients diagnosed with gallstones under ultrasonography with an age ranging from 20 to 70 years were included in the study. Age and sex distribution were depicted in Table-1.

Table 1: Patient's Age and Sex distribution

AGE GROUP (YEARS)	GROUP I (Laproscopic Cholecystectomy)	GROUP II (Open Cholecystectomy)	MALE	FEMALE
20-35	**10**	**12**	**04**	13
36-50	**31**	**28**	**10**	55
51-70	**09**	**10**	**06**	12
Total	50	50	20	80

Patients were divided into two groups, Group I (50 patients) underwent laproscopic cholecystectomy and Group II (50 patients) underwent open surgery. All were treated under general anesthesia. After getting clearance from institutional ethical committee present study is carried out. Informed consent from the patient was taken prior to the surgery. Patients were thoroughly explained pros and cons of the procedure. One day prior to the surgery patients were admitted. Clinical history was taken from all the patients in detail. Physical examination followed by thorough investigation was done on all patients. Assessments for medical and anesthetic fitness were done. Randomization of patients was done in operation theatre with standard anesthetic practice and pain control proceedings. Laproscopic surgery was performed using a standard four baseball diamond port method in all the patients while open surgery was done via 10- 15 cm incision on right sub coastal region. Liga clips were utilized on cystic duct and artery while endocautery was used for haemostasis. Surgical Resection of gall bladder is carefully done from the liver bed using diathermy and is removed through the port side of epigastria along with endobag.

INCLUSION CRITERIA:

Symptomatic patients (Both male and female) with single or multiple gall stones detected sonographically.

EXCLUSION CRITERIA :

Patients less than age of 20 years and over 70 , and with the history or investigation signifying jaundice, mucocele, gall bladder mass, Portal hypertension, Liver cirrhosis, empyema, pregnancy, laproscopy to open cholecystectomy conversions has been excluded.

Reckonable outcomes from the current study were the primary measure which includes mortality, chief complications and relief from symptoms. While the secondary measure comprises of time taken for surgery, Hospital stay, Convalescence period and the cost effectivity. Statistical analysis is done with SPSS software version 22.0. and the values were noted and represented in tables as number, percentage and mean.

RESULTS:

Equal number of patients (n=50) has undergone Laproscopic and open cholecystectomy in the present study with the patients age ranged from 2o to 70 years. Majority of the patients in the current study were female patients falling in the age group of 36 to 50 years. The operation time for Laproscopic surgery was comparatively more significant50-165 minutes(mean 102.98) than the mean time taken in group II (Open cholecystectomy) which was around 35 to 100 minutes (mean 70.5 minutes) ($p<0.001$) as shown in Table -2 because of several reasons like Calott's triangle, gall bladder perforation, dense adhesions, other technical issues etc.

Table 2: The time taken for operation in Laproscopic versus open cholecystectomy.

Type of Cholecystectomy	Time taken for Operation	Mean operation time	Standarddeviation
Laparoscopic	50-165 min	102.98 min	34.275
Open	35-100 min	70.5min	17.86

Post operative complications such as abdominal infection, wound infection, vomiting, intraoperative bleeding, incision hernias, Bile duct injury, Pulmonary and cardiac problems , mortality were noted in both the groups but these complaints are significantly less among Group I as compared with group II with a statistical significance difference ($p< 0.001$).Table 3 Figure 1. None of the postoperative cardiac problems and deaths was encountered.

Table: 3: Post-operative complications in Group I (LC) vs. Group II (OC)

POST OPERATIVE COMPLICATIONS	GROUP I (Laproscopic Cholecystectomy)	GROUP II (Open Cholecystectomy)
Wound infection	6	12
Intra operative bleeding	3	1
Abdominal infection	0	4
Bile duct injury	1	0
Incision Hernias	2	6
Pulmonary problems	1	4
Cardiac problems	0	0
Mortality	0	0

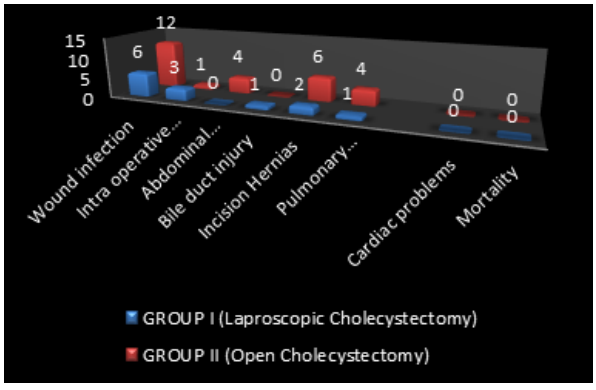

Figure 1: Post-operative complications in Group I (LC)vs. Group II(OC)

The mean duration of hospital stay was 3.7 days among Group I patients while it was 6.2 days in Group II patients with open cholecystectomy. Statistical analysis is done by applying individual sample t test to the postoperative duration of hospital stay needed to the type of surgery. It was observed that group I patients has statistically significantly less hospital stay in comparison with group II ($p <0.001$)

Out of 50 laproscopic surgeries four cases has been converted to open cholecystectomy out of which 3 were due to the rupture of cystic artery ended in bleeding, other one is because of injury to the common bile duct resulted from diathermy. The conversion rate was 4/50=0.08 (8%) which is in accordance with the limits of which is within limits of worldwide laparoscopic cholecystectomy conversion rate of 5% to 10%worldwide laparoscopic cholecystectomy conversion rate.

DISCUSSION:

The mean age in the present study was44.2 years and most of the patients were female accounting for about 80% and many of them were belonging to the rural areas. The age and the sex profile of the present study is in correlation with the study done by Al- Otibi et al[10]46.1 years was the mean age of patients and 81% found that be women patients in their study. Statistically in terms of hemodynamic and hematological profile there were no differences among the two groups.

The mean time taken for the open cholecystectomy was 70.5 $\pm$ 17.86 min which is shorter than the mean duration for laproscopic cholecystectomy 102.98 min $\pm$34.275 min. The present study is in resemblance with the study performed by Karim T et al[11] over 100 patients diagnosed with cholelithiasis aged between 25 to 65 years where the mean duration for the open cholecystectomy is 70 minutes which was significantly shorter than the mean time taken for the laparoscopic cholecystectomy i.e.103.98 minutes ($P<0.001$).

Postoperative hospital stay in the present study was 3.7 days among Group I patients (shorter duration) in comparison with 5.8 days in Group II patients which remains as the foremost advantage of the laproscopic cholecystectomy. The present is in accordance with the study reported by Anmol N et al[12]the median postoperative hospital stay was three days in laparoscopic cholecystectomy group while it was seven days for open cholecystectomy group.

In the present study post Operative complications like wound infection and incision hernias were significantly higher among Group II patients as compared to Group I patients. This study is similar to the results from the study done by Ranjan R et al[13].However postoperative cardiac problems and morbidity were not encountered in the present study. In an extensive study conducted by Coccolini et al[14] on a huge population of over 1248 patients of which 697 patients underwent for laparoscopic surgery and 677 for open cholecystectomy ,has reported that the post- operative death rate was half in laparoscopic cholecystectomy in comparison to open cholecystectomy.

CONCLUSION:

The present study is done with an aim to compare the efficacy and the outcomes of elective laproscopy versus open cholecystectomy among central Indian population in terms time taken for operative procedure, complications and the duration of hospital stay. Based on the above results Elective laproscopic surgery is considered to be safe and effective than the open cholecystectomy with low complication rate, briefing the hospital stay, and a comfortable postoperative period in acute cholecystitis. Limitation of this study is having stern inclusion criteria hence not applicable to entire field of gall stone disease.

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