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Laparoscopic Cholecystectomy and Open Cholecystectomy: A Comparative Study

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Abstract: This study was undertaken to compare laparoscopic cholecystectomy and open cholecystectomy as an elective surgical procedure for cholecystectomy. This retrospective analytic study was conducted at a tertiary care centre during 6 calendar months period among 56 cases of cholelithiasis requiring cholecystectomy. Out of 56 cases of cholelithiasis, 35 cases operated via laparoscopic approach and remaining 21 cases were operated via open cholecystectomy. The mean time taken for surgery was 65.14 ± 24.75 minutes for laparoscopic cholecystectomy and 63.57 ± 25.50 minutes for open cholecystectomy (P>0.05). The frequency of bleeding (other than standard bleeding during the surgical procedure) was 2/35 (5.71%) in laparoscopic cholecystectomy and 2/21 (9.52%) in open cholecystectomy (P>0.05). The wound infection occurred in 2/35 (5.71%) in laparoscopic cholecystectomy and 3/21 (14.29 %) in open cholecystectomy (P>0.05). The total leucocyte count (TLC), frequency of septicaemia, analgesia duration and hospital stay did not differ among both groups. Injury to the common bile duct occurred in 2/35 (5.71%) cases of laparoscopic cholecystectomy. The quality of life in terms of days of analgesia required and days of absenteeism from work also did not differ statistically among the both groups. Laparoscopic cholecystectomy had lower morbidity (wound infection, bleeding, pain, hospital stay). The bile duct injuries are more common in laparoscopic cholecystectomy.
Keywords: Laparoscopic cholecystectomy, Open cholecystectomy, Comparative study.

INTRODUCTION

Cholelithiasis is the most common surgical biliary disease which affects women more than men [1].The surgical treatment of cholelithiasis involves open or laparoscopic cholecystectomy.

Now days, laparoscopic cholecystectomy is preferred over open cholecystectomy due to lower morbidity [2-5].

The indications of surgery for asymptomatic gallstones are presence of diabetes, porcelain gall bladder and gallbladder with multiple stones and hemolytic anemia[6]. Always there is debate ongoing about the best surgical procedure among these two: open/laparoscopic cholecystectomy.

This study was undertaken to compare laparoscopic cholecystectomy and open cholecystectomy as an elective surgical procedure for cholecystectomy.

MATERIALS AND METHODS

This retrospective analytic study was conducted at a tertiary care centre during 6 calendar months period among 56 cases of cholelithiasis requiring cholecystectomy. Out of 56 cases of cholelithiasis, 35 cases operated via laparoscopic approach and remaining 21 cases were operated via open cholecystectomy. The recruited patients were above 18 years of age and had given written informed consent for the surgery. Pregnant females were excluded from the study. For each patient, USG was done for confirmation of cholelithiasis and CBD stone was ruled out by MRCP (Magnetic resonance cholangiopancreatography). Standard post-operative care was provided to each patient. In case of uneventful recovery patients were discharged from hospital. If patient had complication, they were managed accordingly. All the patients were followed up regularly after surgery for at least 3 months.

STATISTICAL ANALYSIS

Microsoft Excel® and SPSS® 20 for Windows® were used for data storage and analysis. The qualitative data were expressed in percentages and quantitative data were expressed as mean ± standard deviation. Unpaired t-test and Chi-square tests were used to determine statistical difference between variables. Statistical significance was set at P value ≤ 0.05.

RESULTS

In our study, out of 56 cases of cholelithiasis requiring cholecystectomy, 35 cases were operated via laparoscopic approach and remaining 21 cases were operated via open cholecystectomy. The male: female ratio of was 2:5 in laparoscopic cholecystectomy group and 1:3 in open cholecystectomy group. The mean age was 42.20 ± 16.10 (range 21-75) years in laparoscopic cholecystectomy group and 41.29 ± 14.45 (range 23-74) years in open cholecystectomy group (P>0.05). The most common co-morbid condition was hypertension and chronic obstructive pulmonary disease associated with smoking behaviour. (Table No.1)

The mean time taken for surgery was 65.14 ± 24.75 minutes for laparoscopic cholecystectomy and 63.57 ± 25.50 minutes for open cholecystectomy (P>0.05). The frequency of bleeding (other than standard bleeding during the surgical procedure) was 2/35 (5.71%) in laparoscopic cholecystectomy and 2/21 (9.52%) in open cholecystectomy (P>0.05). The wound infection occurred in 2/35 (5.71%) in laparoscopic cholecystectomy and 3/21 (14.29 %) in open cholecystectomy (P>0.05). The total leucocyte count (TLC), frequency of septicaemia, analgesia duration and hospital stay did not differ among both groups. Injury to the common bile duct occurred in 2/35 (5.71%) cases of laparoscopic cholecystectomy. The quality of life in terms of days of analgesia required and days of absenteeism from work also did not differ statistically among the both groups (Table No.2).

Table-1: Characteristics of study population underwent Laparoscopic and open cholecystectomy

	Laparoscopic (35)	Open cholecystectomy (21)	P
Age (Years)	42.20±16.10	41.29±14.45	>0.05
Sex (M:F)	10/25	6/15	>0.05
HTN n(%)	6 (17.14)	4 (19.04)	>0.05
DM n(%)	1(2.86)	00	>0.05
TB n(%)	00	1(4.76)	>0.05
COPD n(%)	03 (8.57)	02 (9.52)	>0.05
Previous surgery n(%)	4 (11.43)	1(4.76)	>0.05

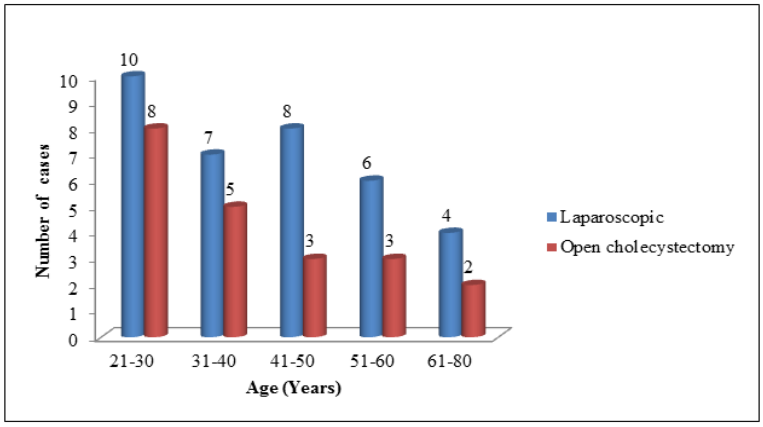

Fig-1: Age wise distribution of study cases

Table-2: Complications of Laparoscopic and open cholecystectomy

	Laparoscopic (35)	Open cholecystectomy (21)	P
Time taken for surgery (Minutes)	65.14±24.75	63.57±25.50	>0.05
Bleeding n(%)	2 (5.71)	2 (9.52)	>0.05
Wound inf n(%)	2 (5.71)	3 (14.29)	>0.05
TLC ($x10^3$ cells/mm^3)	7180.48±2560.65	7622.57±2656.81	>0.05
Septicaemia n(%)	2 (5.71)	3 (14.29)	>0.05
Common Bile Duct Injury n(%)	2 (5.71)	00	>0.05
Analgesia (Days)	5.05±1.96	5.91±2.92	>0.05
Hospital stay (days)	9.76±2.95	9.91±4.57	>0.05
Absenteeism from work (Days)	17.46±8.21	19.67±6.19	>0.05

DISCUSSION

This study was planned to compare laparoscopic and open approach for cholecystectomy. In this study, females outnumbered the male cases which is supporting the data that females more often had cholelithiasis than male [7,8]. The probable cause of female predominance may be obesity and biliary stasis due to pregnancy and hormonal changes (progesterone reduces motility of gall bladder and therefore biliary stasis occurs which favours stone formation)[9].

The wound infections were more in open cholecystectomy due to large wound associated with a large incision can act as a nidus for infection. This finding of more wound infection is similar with previous studies [10-11].We found longer duration of surgery in laparoscopic cholecystectomy and also higher frequency of bile duct injury. These may be due to the fact that laparoscopic cholecystectomy had limited access to the abdomen leading to longer duration of surgery and bile duct injuries [6].The bleeding, septicaemia, duration of required analgesia, hospital stay and absenteeism from work were higher in open cholecystectomy but not significant statistically which may be due to small sample size. The reasons for analgesia in both procedures were different. In open cholecystectomy, analgesia required for wound pain and in laparoscopic cholecystectomy, analgesia was needed for shoulder tip pain secondary to diaphragmatic irritation due to CO2 pneumoperitoneum [12,13].

The hospital stay and absenteeism from work were less in laparoscopic cholecystectomy which is similar with previous reports [14-16].

LIMITATIONS

The present study has some limitations. This was a cross-sectional, retrospective study with a limited sample size, thus the nature of the investigation and the results do not imply a general case, and longitudinal studies are needed.

CONCLUSION

Laparoscopic cholecystectomy had lower morbidity (wound infection, bleeding, pain, hospital stay). The bile duct injuries are more common in laparoscopic cholecystectomy.

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