

LAPAROSCOPIC CHOLECYSTECTOMY;

Per-operative factors responsible for difficulty in performance and conversion

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ABSTRACT.....Objective: The objective of this study is to determine the per-operative factors responsible for difficulty in performing laparoscopic cholecystectomy and lead to conversion. **Study Design:** Prospective analysis study. **Place and Duration of study:** This study was carried out in General Surgery Department of Dow University Hospital Ojha Campus and Civil Hospital Karachi, from Jan 2011 to July 2012. **Methodology:** This study consisted of one hundred & forty six patients with gallstone disease. All patients had full clinical examination and right hypochondrium was especially examined for assessment of murphy's sign, palpable mass and visceromegaly. Base line and specific investigations were done in all patients especially ultrasound of abdomen as diagnostic modality and for assessment of gallstone disease. Inclusion criteria was that all patients diagnosed as case of gallstone disease. LC procedure was not attempted in patients with history of abdominal surgery, pregnant ladies due to risk of foetal loss, carcinoma of gall bladder acute pancreatitis, obstructive jaundice and unfit patients for general anesthesia. **Results:** Out of 146 patients included in this study 133 were female (91%) and 13 male (9%); with female to male ratio of 10.2:1. The mean age was 39.21 +6.20 years. Per Operative findings were adhesions in calot's triangle 24(16.43%) cases, severe & tight adhesions around gallbladder and calot's triangle 21(14.38%) cases, obscured anatomy in calot's triangle 17(11.64%) cases, intrahepatic gallbladder 11(7.53%) cases, adhesions around gallbladder 26(17.80%) cases, empyema 13(8.90%) cases, mucocele 9(6.16%) and anatomical variation 14(9.58%) cases. We observed out of 21 patients who had Severe & tight adhesions around gallbladder and calot's triangle, lead to difficulty in performing laparoscopic cholecystectomy in 11(52.38%) cases followed by 17 cases of obscured anatomy in calot's triangle and 14 cases anatomical variation also lead to performing difficult laparoscopic cholecystectomy in 6(35.29%) and 5(35.71%) cases respectively. Four (2.73%) cases out of 146 had to be converted to the open cholecystectomy procedure. **Conclusions:** We conclude our study revealed that various peroperative factors which make the difficult laparoscopic procedure and lead to open cholecystectomy are severe adhesions in calot's triangle, severe & tight adhesions around gallbladder and obscured anatomy in calot's triangle.

Key words: Laparoscopic cholecystectomy, Conversion rate, Factor , Open cholecystectomy.

Article Citation

Iqbal P, Memon AA, Jamali KS, Shaikh U, Qureshi AWA. Laparoscopic Cholecystectomy; Per-operative factors responsible for difficulty in performance and conversion. Professional Med J 2013;20(3): 444-449.

INTRODUCTION

Nowadays surgery is modernized into minimally invasive techniques. Laparoscopic Cholecystectomy has now replaced open cholecystectomy as the first-choice of all surgeons¹. History of laparoscopic surgery is attractive and long. Kelling created a main laparoscopic camera chip in 1987². Cholecystectomy due to gallstone is one of the most commonly performed surgical procedures all over the world. In modern era, swift changes in the treatment of gallstones since 1987, when first laparoscopic cholecystectomy was performed³. In Pakistan first laparoscopic cholecystectomy was performed in 1991⁴.

The day by day increasing skills in laparoscopic

cholecystectomy is leading to more problems coming up while attempting complicated cases⁵. The various peroperative factors that make laparoscopic cholecystectomy a technically difficult procedure like acute cholecystitis, empyema gall bladder, gangrenous cholecystitis, fibrosed gallbladder, severe adhesions in calot's triangle and intrahepatic gall bladder⁶⁻⁸. These problems are difficult to assess preoperatively but are frequently faced during laparoscopic procedure and responsible for major difficulty in performing the surgery.

The current study was aimed to evaluate various intra operative predictive factors encountered during laparoscopic cholecystectomy which are responsible for difficulty in performing laparoscopic cholecy-

stectomy and conversion to open cholecystectomy.

MATERIAL & METHODS

This observational study includes one hundred & forty six patients with gallstone disease, admitted through the outpatient department, as well as from casualty department and referred from medical wards of Dow University Hospital OJHA Campus Karachi, Pakistan, for laparoscopic cholecystectomy, from Jan 2011 to July 2012.

All patients had full clinical examination and right hypochondrium was especially examined for assessment of murphy's sign, palpable mass and visceromegaly. Base line and specific investigations were done in all patients especially ultrasound of abdomen as diagnostic modality and for assessment of gallstone disease. Inclusion criteria was that all patients diagnosed as case of gallstone disease. LC procedure was not attempted in patients with history of abdominal surgery, pregnant ladies due to risk of foetal loss, carcinoma of gall bladder acute pancreatitis, obstructive jaundice and unfit patients for general anesthesia. Results were prepared with help of tables and graphs. Data was analyzed through SPSS software.

RESULTS

146 cases of gallstone disease were operated through laparoscopic cholecystectomy procedure. Out of 146 patients included in this study 133 were female (91%) and 13 male (9%); with female to male ratio of 10.2:1. There was wide variation of age ranging from a minimum of 25 years to 65 years. The mean age was 39.21+6.20 years. The patients presented with pain in RHC 91%, pain in RHC along with pain in epigastrium 75%, Nausea & Vomiting 19%, dyspepsia 47% and fever in 8% of cases. The abdominal ultrasound report showed single stone in 34(23.28%) patients whereas multiple stones in 112(76.71%) patients and associated findings included impacted stone at the neck of gallbladder in 4(2.73%), thick wall

gallbladder in 75(51.36%) patients, empyema gallbladder 13(8.9%) patients, mucocele 6(4.1%) patients, contracted gallbladder 33(22.60%) cases and adhesions around gallbladder in 48(32.87%) patients (Table No.I).

Variable	Number of Patients	%age
Gender		
Male	13	9%
Female	133	91%
Age		
25 to 40 years	69	47.26%
41 to 55 years	55	37.67%
56 to 65 years	22	15.06%
Presenting Complains		
Pain in Right Hypochondrium	132	90.4%
Pain in RHC & Epigastrium	110	75.34%
Nausea & Vomiting	28	19.17%
Dyspepsia	69	47.26%
Fever	12	8.21%
Abdominal Ultrasound Findings		
Single Stone	34	23.28%
Multiple Stone	112	76.71%
Impacted Stone at Neck of Gallbladder	4	2.73%
Thick Wall Gallbladder	75	51.36%
Empyema	13	8.9%
Mucocele	6	4.1%
Contracted Gallbladder	33	22.66%

Table-I. Variable

Per Operative findings were adhesions in calot's triangle 24(16.43%) cases, severe & tight adhesions around gallbladder and calot's triangle 21(14.38%)

cases, obscured anatomy in calot's triangle 17(11.64%) cases, intrahepatic gallbladder 11(7.53%) cases, adhesions around gallbladder 26(17.80%) cases, empyema 13(8.90%) cases, mucocele 9(6.16%) and anatomical variation 14(9.58%) cases. We observed out of 21 patients who had Severe & tight adhesions around gallbladder and calot's triangle, lead to difficulty in performing laparoscopic cholecystectomy in 11(52.38%) cases followed by 17 cases of obscured anatomy in calot's triangle and 14 cases anatomical variation also lead to performing difficult laparoscopic cholecystectomy in 6(35.29%) and 5(35.71%) cases respectively (Table-II).

Over all per Operative Finding	No. of patients (n=146)	No. Case in which difficulty in performing laparoscopic cholecystectomy	Conversion rate
Adhesions in calot's triangle	24(16.43%)	5(20.83%)	—
Severe & tight adhesions around gallbladder and calot's triangle	21(14.38%)	11(52.38%)	1 case
Obscured anatomy in calot's triangle	16(10.95%)	6(35.29%)	1 case
Intrahepatic gallbladder	11(7.53%)	—	—
Adhesions around gallbladder	26(17.80%)	—	—
Cholecysto-duodenal Fistula	1(0.68%)	1(0.68%)	1 case
Empyema	13(8.90%)	2(15.38%)	—
Mucocele	9(6.16%)	1(11.11%)	—
Contracted gall bladder	11(7.5%)	2(18.18%)	—
Anatomical variation	14(9.58%)	5(35.71%)	1case

Table-II. Per operative finding

Four (2.73%) cases out of 146 had to be converted to the open cholecystectomy procedure.

DISCUSSION

Since 1989, laparoscopic technique has been choice in the treatment of symptomatic gall stone. Some cases of the planned laparoscopic cholecystectomy needs conversion due to multiple factors⁹ like pathology, the level of skill of the surgeon, and technical factors all can play major role in the decision for conversion.

This study explore the experience of 146 patients that underwent laparoscopic cholecystectomy. Number of female was dominant over the male as estrogen can increase cholesterol and reduce gallbladder motility. Women who are pregnant or who take birth control pills or hormone replacement therapy have higher levels of estrogen and may be more likely to develop gallstones and ratio of male to female ratio was 1:10.23. Siddiqui K¹⁰ reported male to female ratio of 1:5.2 which is quite different from present study. Maximum number patients reported in the 4th and 5th decade of life with mean age was 39.21 + 6.20 years in comparison with other study where the age range was 16-59 years with mean 37 ± 10 years¹¹.

Clinically patients mostly presented with pain in right hypochondrium and epigastrium. In our study patients commonly presented with pain in RHC 91% , pain in RHC along with pain in epigastrium 75%, Nausea & Vomiting 19%, dyspepsia 47% and fever in 8% of cases. Laghari et al¹² reported the patients presented with upper abdominal pain either in right hypochonderum (51.67%) or in right hypochondrium and epigastrium (29.17%) or epigastrium (19.17%).

The clinical parameters were further evaluated by ultrasound scan. This showed mostly multiple stones in 112(76.71%) cases and associated status of gallbladder like thick wall gallbladder in 75(51.36%) cases followed by contracted gallbladder 33(22.60%)

cases, empyema gallbladder 13(8.9%) cases, mucocele 6(4.1%) cases and impacted stone at the neck of gallbladder in 4(2.73%) cases. An international study conducted by Ji et al¹³. Reported ultrasound finding were multiple stones in 69.71%, thick wall gallbladder in 41.67% and adhesions in 35% of cases.

Some national and international studies investigated risk factors for difficulty in performing laparoscopic cholecystectomy and conversion^{14,15,16}, which have reported variables that may appear significant in one study but not in another. These variations may be due to the particular population, differences in surgical skill and differences in training systems¹⁶.

Severe & tight adhesions around gallbladder, calot's triangle and obscured anatomy in calot's triangle are two of the most important reasons of difficulty in performing laparoscopic cholecystectomy procedure. Our study observed severe tight adhesion in 21(14.38%) cases due to repeated attacks of acute Cholecystitis leading to difficult identification of structures of calot's triangle, only one patient was converted. However the study of Soomro AH¹⁷ reported per-operative findings of adhesion of gall bladder with surrounding structure (Calot's triangle, stomach, colon and omentum in 47.1% cases).

The most common reason for conversion was difficulty in performing dissection with failure to recognize a clear anatomy either due to severe inflammation, adhesions or uncertainty of anatomical landmarks¹⁸. In our study 16(10.95%) cases had obscured anatomy in calot's triangle, 6(35.29%) out of 16 cases there was difficulty in performing laparoscopic procedure and lead to conversion to open in one case. In 2012, a study conducted on 103 patients of acute cholecystitis by Rehan Masood¹⁹ at Rawalpindi reported 2(1.9%) cases were converted to open due to difficult anatomy at calot's triangle.

In our study Cholecysto-duodenal Fistula found in one

case and lead to conversion to open. However in the study of Shamim M²⁰ reported over all 6.17% conversions were due to dense adhesions between gallbladder and bowel. On conversion, one patient with bilio-digestive fistula (1.23%); fistulous communication between the GB fundus and pylorus was excised along with cholecystectomy and primary repair of defect was done. With improved and advanced laparoscopy skills, biliodigestive fistulas is being managed laparoscopically with low morbidity and no mortality^{21,22}. In our study over all conversion was 2.7%.

CONCLUSIONS

Our study revealed that various peroperative factors which make the difficult laparoscopic procedure and lead to open cholecystectomy are severe adhesions in calot's triangle, severe & tight adhesions around gallbladder and obscured anatomy in calot's triangle. However experience surgical team, careful dissection around gall bladder and in calot's triangle can make the laparoscopic procedure much easy and possible.

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Article received on: 10/01/2013
Accepted for Publication: 15/02/2013
Received after proof reading: 15/03/2013

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