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RISK FACTORS RESULTING IN CONVERSION OF LAPARASCOPIC TO OPEN CHOLECYSTECTOMY.

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ABSTRACT

INTRODUCTION: *Since its introduction in 1988, Laparoscopic cholecystectomy has rapidly evolved as the procedure of choice in treatment of symptomatic gall bladder disease. But due to interplay of multitude factors, there is a substantial proportion of patients in whom laparoscopic cholecystectomy cannot be successfully performed, and for whom conversion to open surgery is required. The purpose of this study was to contribute our experience to the existing data in the literature, concerning several important aspects of laparascopic cholecystectomy.*
METHODS: *In this study, seventy six (76) laparoscopic cholecystectomies performed at surgical unit II of a community based teaching hospital of Chandka Medical College, from January 2008 to December 2008 were Prospectively analyzed. The patients studied included 72 women (95%) and 4 men (5%) with a mean age of 45.2 years (range, 25-75 years). A written informed consent was obtained from patients included in the study and data collected on printed Performa included age, gender, history of pain in right hypochondriac region, jaundice, previous abdominal surgery, obesity and concomitant diseases (DM, HTN,,COPD), white blood cell (WBC) count, preoperative liver function tests, ultrasound findings of the gallbladder, and suspicion of common bile duct stones.*
RESULTS: *Of the seventy six (76) patients in whom laparoscopic cholecystectomy was attempted, 8 patients (10%) required conversion to open surgery. The most common reason for conversion was inability to define anatomy in patients with inflamed contracted gallbladder (n = 4). Significantly independent Predictive factors for conversion were male gender, previous abdominal surgery, thickened gallbladder, empyema gallbladder, on preoperative ultrasonography.*
CONCLUSION: *This study reviews the safety and efficacy of laparoscopic cholecystectomy, but like any other surgical procedure, there are limitations to its application to all patients. There are a number of factors which may necessitate conversion of this minimally invasive to a major procedure. If these factors like Increasing age, early diagnosis of acute cholecystitis to prevent natural progression of disease, history of previous upper abdominal surgery, aberrant anatomy, co morbidities are identified appropriately or preoperatively, unexpected conversion to major procedure, postoperative morbidity and mortality can be significantly reduced.*

K**EY WORDS:** Laparoscopic cholecystectomy, risk factors, conversion.

INTRODUCTION

The gall bladder should be removed not because it contains stones but because it forms them" was the statement given by Carl Langenbuch, in 1882 when he did the first cholecystectomy[1]. Bernheim from the United States was the first surgeon to publish his experience in laparoscopy entitled "organoscopy" in the Annals Of Surgery 1911.[2,3] In 1929 Kalk, "father of modern laparoscopy" advocated refinement in the technique through the introduction of the Faroblique (135 degrees) lens system, separate pneumoperitoneum needle and a second puncture site[4]. Since then the scope of surgery revolutionized and the lapararoscopic cholecystectomy rapidly evolved as the procedure of choice in treatment of silent and symptomatic cholelithiasis worldwide. Being minimally invasive technique with increased patient and surgeon preferences, it offers additional benefits of less pain, reduce disability, cosmetic acceptance, shortened postoperative hospital stay, early return to normal activities, and relative low risk of complications [5]. despite all these favoring factors there is still a substantial proportion of patients in

whom laparoscopic cholecystectomy can not be performed successfully, and in another proportion of patients conversion to open surgery is often required due to interplay of multitude of factors. The purpose of this study was to contribute our experience to the existing data in the literature, concerning several important aspects of laparascopic cholecystectomy, like preoperative and intraoperative factors predicting conversion of laparascopic to open cholecystectomy, the most common complications encountered, and suggestions for their prevention.

MATERIAL AND METHODS

One year study (January 2008 to December 2008) was conducted prospectively at surgical unit II of a community based teaching hospital of Chandka Medical College Larkana. Seventy Six (76) patients who underwent laparoscopic cholecystectomy were enrolled in study after obtaining a written informed consent. The data collected on printed Performa included preoperative demographic data, detailed history of symptoms of gallstone disease (non acute or acute symptoms), previous abdominal surgeries, concomitant medical conditions (Diabetes Mellitus, Hypertension, ischemic heart disease, chronic obstructive lung disease, Pancreatitis, Cirrhosis), findings on physical examination (tenderness or rigidity in the right upper abdominal quadrant, fever), laboratory evaluations of routine blood tests and/or including white blood cell (WBC) count, liver function tests, and ultrasonography as the diagnostic tool. The laparoscopic cholecystectomy was performed using a standard four-puncture technique in all patients. Postoperative data of cases completed successfully by laparoscopy were compared with the cases converted to open cholecystectomies, in terms of operative time, postoperative hospital stay, time to resumption of soft diet, complications during the postoperative period and mortality. The statistical data analysis was done with SPSS for windows version 10.

RESULTS

In the period under review a total of seventy six (76) patients in whom laparoscopic cholecystectomy was attempted were included in the study. 73 patients were admitted through outdoor clinics, while two patients were admitted through emergency. The patients with peritonitis, sepsis, pregnancy or cholangitis, or bleeding disorders considered as contraindications were excluded from the study. There were 72 female (95%) and 4 males (5%) with a mean age of 45.2 years (range, 25-75 years) as shown in Table 1.

TABLE NO. 01

No:	Age groups	No of patients	percentage
1	21-30	12	(16%)
2	31-40	18	(23%)
3	41-50	32	(42%)
4	51-60	08	(11%)
5	61-70	04	(5%)
6	71-80	02	(3%)
	Total	**76**	**100%**

TABLE NO. 02

No:	Clinical presentation	No of patients	percentage
01	Pain in Right Hypochondrium	32	42%
02	Pain in RHC with dyspepsia	42	55%
03	Pain in RHC with fever	2	3%
	Total	**76**	**100%**

TABLE NO. 03

No:	Co- morbidities	No of patients	percentage
01	Hypertension	8	11%
02	Diabetes mellitus	2	3%
03	HTN +DM	6	8%
04	COPD	4	5%
05	Obesity	2	3%
	Total	**22**	**29%**

TABLE NO. 04

Causes of intra operative conversion	No of patients	Percentage
Adhesions	2	25%
Inflamed gall bladder	2	25%
Gall bladder tumor	1	12.5%
Empyema of gall bladder	1	12.5%
Uncontrolled hemorrhage	2	25%
Total	**8**	**100%**

Conversion rates at different areas around the globe.

Study	location	Year	Percentages of conversion
Magee et al 17	UK	1996	10
Vecchio et al 17	USA	1998	11.5
Guraya et al 17	KSA	2004	2.9
Lim et al 18	Singapore	2005	11.5
Tarcoveanu 19	Romania	2005	3.2
Butt et al 20	Lahore	2006	4
Current study	larkana	2008	10

Out of 76 patients, 72 (95%) patients presented with pain in right hypochondriac region, of these 36 (47%) patients had dyspepsia, two patients had vomiting and fever (first attack of acute cholecystitis). While 04 patients were asymptomatic diagnosed with cholelithiasis on ultrasonography. None of the patients in our study had choledocholithiasis clinically or on ultrasonography.

Clinical presentations is shown in Table 2.

The concomitant disease were found in 29% (n= 11) patients, as shown in Table 3.

A total of 76 patients underwent laparoscopic cholecystectomy which was completed successfully in 66 patients, with mean operative time of 70 min. while 08 (10.5%) patients required conversion to open cholecystectomy or laparatomy. The most common reason for conversion was inability to define anatomy of calot's triangle due to severe adhesions (n=2) and inflamed contracted gallbladder (n=2), empyema of gall bladder (n=1), inflamed gallbladder stuck to stomach (n=1), technical difficulties due uncontrolled bleeding from cystic artery (n=1), from gall bladder bed (n=1), Shown in table 4.

All patients who underwent successful laparoscopic cholecystectomy had an uneventful postoperative recovery, with average hospital stay of one day, while patients converted to open cholecystectomy or laparotomy had relatively prolonged hospital stay with an average of 7.5 days. Postoperative complications were noticed in only 10 of these patients i.e wound infection in patients with concomitant diseases. Thus significant Predictive factors for conversion were previous abdominal surgery, thickened gallbladder, empyema gallbladder, co morbidities and uncontrolled hemorrhage.

DISCUSSION

Since its introduction in 1988,[1] clear benefits of early recovery, early ambulation, shorter postoperative hospital stay, and cosmetic acceptance have rendered Laparoscopic cholecystectomy as the procedure of choice for cholelithiasis.[5,6,7] Majority of the patients diagnosed with cholelithiasis are middle aged females presenting to outdoor clinics with history of right upper quadrant pain or dyspepsia, with only few presenting to emergency department with an acute attack in our setting. In our study about 97% (n=37) patients were admitted through outdoor clinics and only one patient through emergency, this is comparable to reports by Hawasali; 96% [8] bailey 91%.[9] Acute cholecystitis was initially considered as a relative contraindication to laparoscopic cholecystectomy[10] But with increasing expertise and proper peri operative evaluation and care, it is now considered safe to do laparoscopic cholecystectomy in acute cholecystitis within first 72 "Golden hours", in our case only one patient with acute cholecystitis was enrolled and operated upon safely and successfully as in other studies.[11,12]

Since gall bladder diseases occur more commonly in female population, a female to male ratio has been reported in literature to range between 3:1 to 5:1 [2,13,18, 19], a similar female predominance (F:M=9:1) is noticed in our study too. Further more in our study, the mean age at presentation was 45 years, which is also comparable to that reported in literature, ranging between 46.1 to 53 years[8,14], but the female patients with cholelithiasis are relatively younger than females in western countries, [15] as in our study.

Of total 76 patients enrolled in study, 68 patients underwent successful laparoscopic cholecystectomy, while eight (10.5%) patients were converted to open cholecystectomies or laparotomies. The average time for laparoscopic chlolecystectomy in our study was 70 minutes. This is similar to reports by other authors ranging between, 70-110 minutes [8,15,16] although it depends upon both surgeon and patient factors, i.e. the experience of surgeon, quality of assistance, status of patient, and nature of the disease. As the chances of unwanted surprises waiting for a surgeon (like adhesions, aberrant anatomy, uncontrolled hemorrhages) are same for laparoscopic cholecystectomy as for any other surgery, the chances for conversion from this minimally invasive to open procedure even at the hands of skilled surgeon are inevitable, since it is important to complete the procedure safely and not necessarily laparoscopically. In our study the conversion rate was 10% closer to rates reported earlier as shown in table. [17-21]

The high conversion rates represent patient selection issues, not problems with surgical skills. Whereas more inexperienced surgeons may have initiated many of the converted cases, in the majority of circumstances, the decision to convert was made after appropriate intra operative consultation of and assistance by more experienced colleagues.

The most common cause of conversion in our study was technical difficulties, like other studies.[21] These reflect a restriction, inherent to the procedure whether due to the disease process, equipment limitations, or patient factors. In our study, adhesions from previous surgery and inflammation accounted for 4 laparotomies. Inability to define anatomy resulted in the conversion of 2 cases, this is in accordance with the recommendation for conversion without fear in those cases in which the anatomy cannot be clearly delineated in order to avoid injury to hepatic artery, cystic artery and bile duct. . Furthermore conversion is also recommended in those cases in which intra operative complications occur, like hemorrhage which cannot be adequately controlled through the laparoscope, as in our study uncontrolled bleeding from cystic artery in one case and from gall bladder bed in another case required conversion to laparatomy.[22] In one of our case tumor was identified invading the lateral aspect of right kidney, the sub costal incision was made in that patient and extended laterally to perform a nephrectomy along with cholecystectomy. In another case gall bladder was stuck to stomach, was difficult to be separated. None of our patients had iatrogenic injuries to liver, stomach, intestine or vascular injuries this is in contrast to the literature, where billiary injuries are reported to be 7%,[17-21] vascular injuries to range between 4-8%[21], and bowel injuries 0-5%[23,24] of the patients converted to laparatomies, required NG intubation for 3-5 days. Only 10 patients (13%) developed postoperative complications of wound infection, the rest of the patients had an uneventful recovery, with an average hospital stay of 5.2 days. While none of the patients with laparoscopic cholecystectomy had severe postoperative complications and had an average postoperative hospital stay of 1-3 days. This compares well with the hospital stay reported to be 1-3 days from different centers around the globe.[5] Despite slightly higher rates of conversion none of our patient suffered severe morbidities and the mortality was 0%.

CONCLUSION

This study reviews the safety and efficacy of laparoscopic cholecystectomy, but like any other surgical procedure, there are limitations to its application to all patients. There are a number of factors which may necessitate conversion of this minimally invasive to a major procedure. If these factors like Increasing age, early diagnosis of acute cholecystitis to prevent natural progression of disease, history of previous upper abdominal surgery, aberrant anatomy, co morbidities are identified appropriately or preoperatively, unexpected conversion to major procedure, postoperative morbidity and mortality can be significantly reduced.

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