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Evaluation Of Feasibility Of Laparoscopic Cholecystectomy In Patients With Previous History Of (Either Upper Or Lower) Abdominal Surgery

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ABSTRACT:-

Background:

Laparoscopic cholecystectomy (L.C.) is gold standard surgery for gallstones. Their are risks have some surgeons from the laparoscopic procedure in patients with history of abdominal surgery. We aimed to investigate the effect of laparoscopic cholecystectomy by previous abdominal surgery.

Methods:

This study included 110 patients with gallstones who underwent laparoscopic cholecystectomy at our surgical department between August 2012 and July 2014. The patients were classified into groups: group 1, patients with a history of upper abdominal surgery (n=13); group 2, patients with a history of lower abdominal surgery (n=97). The data were collected and analyzed for adhesion found, adhesiolysis required, visceral organ injury, open conversion rates, operative times and hospital stay.

Results:

110 had undergone previous abdominal surgery (13 upper, 97 lower). Adhesiolysis required in 12 (n=13) patients in group 1 and 15 (n=97) patients in group 2. Visceral injury were more in group 1 .Conversion rate was higher in group 1 than group 2 due to difficulty in accessibility of gallbladder as adhesions were there. Our mean operative time was 37.4+/- 7.2 min in group 2 and 76.9+/- 16.1 min in group 1. Post operative hospital stay was increased in upper abdominal surgery.

Conclusion:

Gallbladder accessibility is important for feasibility of L.C. Previous upper abdominal surgery is associated with adhesions in and around the feild of work increased need for adhesiolysis, a higher open conversion rate, a prolonged operating time and a longer postoperative stay and risk of injuries to adjacent structures.

Key words: - gallstones, laparoscopic cholecystectomy, adhesiolysis.

INTRODUCTION:

Gallstones are very common disease worldwide encountered in general population about 10% has this disease and 1-2% has problems with gallstones. laparoscopic cholecystectomy began three decades ago when laparoscopic cholecystectomy was introduced. It did not take time for surgeons to label laparoscopic cholecystectomy as “the treatment of choice for many patients with symptomatic cholelithiasis”¹⁻². LC has served as the shine in the laparoscopic surgery explosion and has shows path for the more complex laparoscopic procedure which has become common place.

Previous abdominal surgery is also a significant predictive factor³⁻⁴. Upper abdominal surgery is reported to have high rate of conversion³ and attributed to dense adhesion⁴. Initially it was reported by **Ireland surgeons** as contraindication to do LC in previous operative abdomen in **1991**, but later increasing surgeon experience states that it is not a contraindication for LC⁵. In **1994 YUSC**⁶ et al states that LC can be performed safely in patient with previous operated abdomen .Later in **2005 NURSET**⁷ et al states previous upper abdominal surgery is associated with a prolonged operation time. Then **ERCAN M et al 2009**⁸ states that lower abdominal surgery group had fewer adhesions than in previous upper

abdomen surgery. Also in **2010 IBLESEEM BOUASKAR** et al⁹ states that previous upper abdominal surgery is associated with a higher rate of adhesions, an increased risk of operative complications, a greater conversion rate, a prolonged operating time and longer stay.

Our study has compared patients with previous upper and previous lower abdominal surgery history patients who undergone laparoscopic cholecystectomy in our institute. We compare the factors predict the feasibility of laparoscopic cholecystectomy in such patients. Factors like first port placement, intra abdominal adhesions found, and adhesiolysis required, gallbladder is accessible or not, conversion rate, post operative complication, post operative hospital stay and mean operative time.

PATIENTS AND METHODS

Our study has compared patients with previous upper and previous lower abdominal surgery history patients who undergone laparoscopic cholecystectomy in our institute. We compare the factors predict the feasibility of laparoscopic cholecystectomy in such patients. Factors like first port placement, intra abdominal adhesions found, and adhesiolysis required, gallbladder is accessible or not, conversion rate, post operative complication, post operative hospital stay and mean operative time.

Our results show that out of 110 patients 106 were female and 4 were male, most patients were in age group of 20-30 and 30-40 years age. Out of them 97 patients who had history of lower abdominal surgery and 13 had history of previous upper abdominal surgery. Most of lower abdominal surgery patients were having history of previous gynecology surgery. All patients have laboratory finding within normal range and have cholelithiasis in sonography. All patients underwent elective LC.

Strict selection criteria were applied. Patients with acute cholecystitis, current biliary pancreatitis, morbid obesity, common bile duct stones or more than one previous abdominal surgery, were not included in the study groups.

Surgeons performed the operations with standard 4-port techniques. First port was placed with standard veress needle in 87 patients of group 2, 15 patients with open technique, at palmer's point in 8 patients. Open technique and palmer's approach was used in patients with dense scar around umbilicus and with suspected high intra abdominal adhesions around umbilicus which involves entering the abdominal cavity under direct vision through a larger incision in the navel skin, the fascia, and the peritoneum, was used for the patients with previous abdominal surgeries. A finger was introduced and remove the adhesions and pursestring suture was placed to close the orifice around the cannula, which allows preservation of the pneumoperitoneum. Once the

peritoneal cavity was reached safely, only those adhesions that truly interfered with visualization of the area of interest were lysed. The electrocautery were used to divide the adhesions. If during the operation, the surgeon thought that an open cholecystectomy would be better, conversion to the open technique was performed.

Adhesiolysis required, pneumoperitoneum created, gallbladder accessibility, conversion to open, visceral injury, operative time and postoperative hospital stay were evaluated. In addition, the factors contributing to the conversion from a laparoscopic to an open procedure were evaluated to determine the impact of the prior surgery on conversion.

RESULTS

Adhesiolysis required was more in group 1, difficulty in creating pneumoperitoneum, and gallbladder accessibility was more in group 1 (Table 1). Conversion rate was higher in group 1, various causes for conversion illustrated in (table 2).

Four patients of group 1 were converted to open cholecystectomy, 3 with dense adhesions and obscured anatomy and 1 case with suspected bowel (duodenal) injury, in this case it was suspected to have deodeno-cholic fistula. Two cases with history of lower abdominal surgery were converted to open one due to suspected iatrogenic bile duct injury while performing

laparoscopic cholecystectomy, another case was converted to open due to suspected small bowel injury while placing trocar. Intra-operatively patients also had liver injuries while adhesiolysis which were managed laparoscopically. the mean operative time in group 2 and 1 were 37.4+/_12.4 min and 76.9+/- 16.2 min respectively. It shows that mean operative time is increased in cases with previous upper abdominal surgery. Post operative stay was more in group 1.

DISCUSSION

LC -the procedure of choice for symptomatic cholelithiasis. A number of absolute or relative contraindications have been indicated in regard to laparoscopic cholecystectomy. Previous upper abdominal surgery has been listed as one of them because of adhesion formation, which causes bowel or other abdominal structures to adhere to the surface of the abdominal wall. The potential for bowel injury during trocar placement or difficulty in visualization of the gallbladder once become contraindication for some surgeons from using the laparoscopic procedure in patients with previous history of abdominal surgery.¹⁰⁻¹¹ On the other hand, the chance of “surprises,” such as dense adhesions, during LC are the same as those encountered during open cholecystectomy. In our series, 110 patients had undergone previous abdominal surgery. In this study, our conversion rate group 1 was 30.1% and 2% in group 2. The p value was 0.002 (significant). This observation is

consistent with reports in previous published works^{8,12,13,14,15,16} as per table no.3

We believe that open insertion of the umbilical ports minimizes the risk of organ injury and allows adhesiolysis in patients with previous abdominal surgery. Once the peritoneal cavity has been reached safely, the presence and extent of any adhesions will become apparent^{7,12,17,18,19,20,21,22}. The surgeon must resist the common tendency to excessively eliminate adhesions. Only those adhesions that truly removed under visualization of the area of interest or would prevent the placement of subsequent cannulas under vision should be lysed.

In this study, adhesions were found in 92.3%, 74.2%, of patients, respectively, who had previous upper and lower previous abdominal surgery, with adhesiolysis required, respectively, in 92.3% and 15.5% of these cases. However, patients who had undergone abdominal surgery had increased difficulty during LC in terms of adhesions in the upper abdomen, statistically significant difference was noted in LC success rates between patients with previous upper or lower abdominal surgery in our study.our results are consistent with previous studies^{7,8,9,14}. We believe that with increased experience, surgeons will overcome this difficulty. Active participation of faculty members in the operating theater may have enhanced the learning experience^{24,25,26}

The number of complications was similar among groups. However, the nature of complications in patients with previous upper abdominal surgery compared with that in the other groups was more severe. The cases of pulmonary embolism and subphrenic abscess are likely explained by the fact that patients with previous upper abdominal surgery had long operative times and were most likely to have bacterial contamination.

In this study, operative time was longer in patients with previous upper abdominal surgery. Longer operative times are likely associated with an increased need for adhesiolysis. However, most of the patients with previous lower abdominal surgery were female, and most of the previous operations were gynecologic operations in this group. Therefore, the majority of adhesions from prior lower abdominal surgery were in the pelvic region and did not negatively impact the performance and operation.

Recent studies^{11,24,27} revealed that acute cholecystitis, pancreatitis, morbid obesity, and common bile duct (CBD) stones were the factors that might cause conversion to an open procedure and affect the hospital stay, operative time, and perioperative and postoperative complication rates. We excluded such cases in each group to determine the correct and objective probability of conversion to an open procedure in patients with previous abdominal surgery. The main purpose of this selection was to homogenize the groups. If we

had included these patients, conditions like pancreatitis, acute cholecystitis, morbid obesity, and CBD stones would have affected the conversion rate, the operation time, the perioperative complications, and the hospital stay.

CONCLUSION

We concluded that in patients with history of previous history of upper abdominal surgery is no more contraindication for laparoscopic cholecystectomy. Clear visualization of anatomic structures and landmarks, and scrupulous hemostasis are needed to perform a safe LC in these patients. First port placements with open technique and at left subcostal is safe and effective procedure that can help prevent unnecessary adhesiolysis.

However, previous upper abdominal surgery is associated with an increased need for adhesiolysis, a higher open conversion rate, a prolonged operating time and a longer postoperative stay.

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Table 1

	History of previous lower abdominal surgery (group 2)	History of previous upper abdominal surgery (group 1)	P value
Adhesions found	72(74.2%)	12(92.3%)	0.15 (N.S)
Adhesiolysis required	15(15.5%)	12(92.3%)	<0.001 (S)
Pneumoperitoneum created	97 (100%)	11(84.6%)	0.13 (S)
Gallbladder accessible	97(100%)	9(69.3%)	>0.001(S)

Table shows comparison between intra operative adhesion found , adhesiolysis required, difficulty in creating pneumoperitoneum, and gallbladder accessibility.

Table 2

S.N.	REASONS FOR CONVERSION	PREVIOUS UPPER ABDOMINAL SURGERY	PREVIOUS LOWER ABDOMINAL SURGERY
1	DENSE ADHESION; OBSCURED ANATOMY	3(23.1%) (n=13)	0
2	DENSE ADHESION; OBSCURED ANATOMY; SUSPECTED CBD INJURY	0	1(1.1%) (n=97)
3	DENSE ADHESION WITH SUSPECTED BOWEL INJURY	1(7.6%) (n=13)	1(1.1%) (n=97)

Table 2 shows reasons for conversion of laparoscopic cholecystectomy to open cholecystectomy

Table 3

STUDIES	Previous history of lower abdominal surgery	Previous history of upper abdominal surgery
DIEZ J et al 1998¹²	0%	20%
KWON et al 2001¹³	0.9%	10%
KARAYIANNAKIS AJ et al [2004]¹⁴	3.3%	19%
JENKIN et al 2007¹⁵	-	22.7%
ERCAN et al 2009⁸	2.82%	27.27%
Yamamoto H et al[2013]¹⁶	LOWER	HIGHER
OUR STUDY	2.1%	30.8%

Table shows the comparison of our results with other studies.