

Conversion of Laparoscopic to open cholecystectomy - six years experience at Shalamar Hospital, Lahore

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Background: Laparoscopic Cholecystectomy (LC) is the gold standard treatment for symptomatic Gall Stones. The identification of factors that reliably predict the likely need to convert LC to open procedure would decrease the incidence of intraoperative complications and help in patient counseling about LC before surgery. **Methods:** Between 2001 and 2006, 300 elective Laparoscopic cholecystectomies were performed from a total of 470 elective cholecystectomies. The change in conversion rate between 2001 to 2003 and 2004 to 2006 was analysed. Factors predictive of higher risk for conversion were also identified. **Results:** Twelve LCs (4.0%) required conversion. History of acute attack for more than 72 hrs was a strong predictor of conversion even if patient has minimal signs and symptoms. The conversion rate from 2001 to 2006 was only slightly changed i.e.; it has decreased for last 3 years. **Conclusion:** The conversion rate over the last 6 years has decreased with no incidence of intraoperative complications. Age ≥ 50 years, male patients and acute cholecystitis are the major predictors of conversion.

Key words: Laparoscopic Cholecystectomy, Conversion of Lap chole.

Laparoscopic cholecystectomy was first performed in France in 1987, since then it is gaining popularity and now it has become the first line surgical treatment of calculous Gall bladder disease¹. It offers the substantial advantage over open cholecystectomy of markedly decreased pain and disability without apparent increased mortality or overall morbidity². Accidental injuries to the bile duct and bowel are significant risks of Laparoscopic surgery³, and sometimes require conversion to open surgery. The overall incidence of conversion of LC to open cholecystectomy is 2 to 15%⁴.

Aims and objectives

To see the incidence of conversion in our setup, the important factors leading to conversion of LC to open cholecystectomy, and finally the trend for conversion from LC to open cholecystectomy over the period of 6 years.

Patients and methods

Between 2001- 2006, 470 elective cholecystectomies were carried out by one consultant surgeon at Shalamar Hospital Lahore. Since 2001 a database has been maintained prospectively for all cholecystectomies. Open cholecystectomy was planned and performed in 170 patients and 300 patients were scheduled for LC. Among those who underwent LC, there were 42 (14%) male and 258 (86%) were female patients, with median age of 38 years (range 16-75y). Patients presented with the following condition:

Biliary colic with normal anatomy 288 (76%), Acute cholecystitis 45 (15%), Chronic cholecystitis 26 (8.66%). A patient with gall bladder polyp. All patients underwent routine blood testing before surgery, including liver biochemical assessment and abdominal

ultrasonography of the hepatobiliary system. In patients with CBD stones, routine pre-operative endoscopic sphincterotomy was carried out and if patients are not jaundiced then LC was attempted early, but in case if patients is having disturbed liver functions biochemically then LC was attempted after 2 weeks till LFT'S were normal. Patients with H/O upper abdominal surgery were not selected for LC.

In case of acute cholecystitis, patients who presented within 48 hours of onset of symptoms like Rt. Upper Quadrant or epigastric pain, had right upper quadrant tenderness with localized peritoneal signs and had confirmatory ultrasonic evidence of acute cholecystitis were attempted for LC on next day. Among those patients who presented after 72 hours of onset of features of acute cholecystitis, only those were considered for LC who had no fever and with mild tenderness in Rt. Upper Quadrant, while those with more severe clinical features were considered for either open cholecystectomy or interval cholecystectomy i.e; after 6-8 weeks.

All LCs were done by one surgeon using Standard 4 ports, two hand technique, Drain was not routinely used, Post operatively patients were kept admitted overnight and usually discharged on next day. Routine follow-up was done as 5 days, 2 weeks, 3 months and then 1 year after surgery.

Statistical analysis

Table 1: Case processing summary

S	Cases					
	Valid		Missing		Total	
	N	%	N	%	N	%
Cholecystitis	300	100.0%	0	.0%	300	100.0%
Lap chole						
Gender lap	300	100.0%	0	.0%	300	100.0%
Chole						

Conversion of Laparoscopic to open cholecystectomy

Table 2:

Cholecystitis	Lap Chole		Total
	Completed	Converted to open	
Biliary colic	226	2	228
Early acute cholecystitis	30	5	35
Late acute cholecystitis	8	3	11
Chronic cholecystitis	24	2	26
Total	288	12	300

Symmetric Measures

Table 3:

	Value	Asymp. Std. Error ^a	Approx. T ^b	Approx. sig
Interval by interval Pearson's R	.215	.067	3.804	.000 ^c
Ordinal by ordinal spearman correlation	.272	.062	4.879	.000 ^c
N of valid cases	300			

a) Not assuming the null hypothesis.

b) Using the asymptotic standard error assuming the null hypothesis.

c) Based on normal approximation.

Table 4

Gender	Lap chole		Total
	Completed lap chole	Converted to open	
Male	39	3	42
Female	249	9	258
Total	288	12	300

Table 5: Symmetric Measures

	Value	Asymp. Std. Error ^a	Approx. T ^b	Approx. sig
Interval by interval Pearson's R	-.065	.072	-1.119	.264 ^c
Ordinal by ordinal spearman correlation	-.065	0.72	-1.119	.264 ^c
N of valid cases	300			

a) Not assuming the null hypothesis.

b) Using the asymptotic standard error assuming the null hypothesis.

c) Based on normal approximation.

Table 6

Valid	Frequency	%	Valid %	Cumulative %
Biliary colic	228	76.0	76.0	76.0
Early acute cholecystitis	35	11.7	11.7	87.7
Late acute cholecystitis	11	3.7	3.7	91.3
Chronic cholecystitis	26	8.7	8.7	100.00
Total	300	100.0	100.0	

SPSS Version 11 was used for data analysis.

Result

Reasons for conversion: Twelve patients (4.0%) (3 male 9 female patients) with median age of 50 years underwent conversion to open cholecystectomy. The most common reason for conversion (Table 07) was inability to define anatomy in 8 (66.66%) patients with acute cholecystitis having gangrenous/oedematous, thick walled gall bladder or dense adhesions of the gall bladder to either the duodenum or the CBD. Among these 8 patients, 5 patients (14.28%) were those who presented within 48 hrs of

onset of symptoms and 3 patients (30%) were those who presented late i.e. after 72 hrs of onset of symptoms.

Two patients (16.66%) of chronic cholecystitis were having short & wide cystic duct. One patient (8.33%) was having stone impacted at junction of cystic duct with common hepatic duct and one patient (8.33%) was converted due to technical reason.

There was no intra-operative complication like CBD injury, duodenal injury, colonic injury or hemorrhage. So there was 0% conversion due to complications. Reasons for conversion to open cholecystectomy in 300 patients

Table 7: (n=12)

	=n
Severe inflammation or dense adhesions	8. (66.66%)
Chronic cholecystitis (short & wide cystic duct)	2(16.66%)
Stone impacted at junction of CD with CHD	1(8.33%)
Technical Reasons	1(8.33%)

Factors predisposing to conversion:

The correlation of various pre-operative and intra-operative characteristics with conversion is shown below:

Table: 8

	Conversion	LC
Age ≥50 year	8	76
Male sex	3	39
Early acute cholecystitis (within 48 hrs)	5	30
Late acute cholecystitis (after 72 hrs)	3	8
Chronic cholecystitis	2	24
Multiple gall stones	11	269

On single variable analysis, factors that significantly predicted conversion were

Age ≥50 years, male sex and a history of acute cholecystitis.

Change in conversion rate over 06years interval: Table 09 gives a comparison of the conversion rate between the two groups of patients. Although the proportion of patients treated by LC was almost same in the two groups but the conversion rate has decreased from 4.82% in 2001-2003 to 3.22% in 2004-2006. The only significant change was in the selection of patients. Those with history of acute attack for more than 72 hrs were treated by open cholecystectomy.

Table 9: Comparison of cholecystectomies performed in 2001-2003 and 2004-2006:-

	2001-2003	2004-2006
Total cholecystectomies	225	245
Attempted LC	145	155
Completed LC	138	150
Converted to open	7(4.82%)	5(3.22%)

Discussion

LC enabled a more rapid return to normal activities than open surgery^{5,6}. However the incidence of bile duct injury remained higher than for open cholecystectomy^{7,8,9}. Bile duct injury is a complex management problem and results

in significant post operative morbidity. Therefore it is important to view conversion as a sign of experience that enables the avoidance of duct injury⁴. The overall conversion rate of 4.0% in this study is in the same range as in other studies^{4,11,12}. The most common cause of conversion from lap to open in this and other studies as well, was unclear anatomy secondary to acute cholecystitis^{4,11,12}. Among those patients of acute cholecystitis who presented early and operated within 72hrs of onset of symptoms had less conversion rate, while those who presented after 72hrs had high incidence of conversion^{14, 15, 16, 17}. Conversion rate among male and elderly patients is also high^{17, 19}. In this series our policy for patients of acute cholecystitis was that only those patients who presented within 48hrs of onset of symptoms or who presented after 72hrs with minimal signs and symptoms should undergo LC trial. In this study there is decrease in conversion rate^{12,11,23}, and this decrease in conversion rate and no incidence of bile duct injury^{20, 21,22} might be due to better selection of patients, early conversion of lap to open cholecystectomy and no doubt the experience and skill of Surgeon, while other studies have been conducted at centres where trainees and junior consultants also do LC⁴.

In conclusion this study demonstrated a decrease conversion rate over a period of 6 years with no intraoperative complication. However age ≥ 50 years, male patients and presentation with acute cholecystitis after 72hrs, are the major predictors of conversion. Conversion of LC to open cholecystectomy is better option than having disastrous complication of bile duct injury.

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