

Factors responsible for prolonged postoperative hospital stay after laparoscopic cholecystectomy

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ABSTRACT

Objective: To identify various factors which prolong post-operative hospital stay after laparoscopic cholecystectomy.

Methodology: This is an observational prospective study conducted at a teaching hospital over a period of five years (Jan 2005-Dec 2010) and includes 580 patients of symptomatic cholelithiasis, admitted and treated by laparoscopic surgery. All patients were observed from 1st postoperative day to date of discharge and different operative, postoperative and patient related variables were recorded on a proforma which were found responsible for an unduly prolonged post-operative stay in the hospital. The duration decided for short stay was 48 hours and duration more than that was considered as prolonged stay.

Results: Out of 580 patients, 187 (32.24%) had prolonged stay extending from 3-28 days. Majority of patients presented in 4th & 5th decade (60.52%) with pain in right hypochondrium (58.79%) and pain in right hypochondrium combined with pain in epigastrium (27.6%) as main clinical features. Twenty eight variables were identified comprising of 10 patients related (15.86%), 12 surgery related (16.55%) and 6 post-surgery related (16.38%) which contributed to prolong the hospital stay. Patients having co morbid conditions, difficult operative procedure and major postoperative complications were main factors for prolonged stay.

Conclusion: The prolonged post-operative hospital stay can be reduced by careful pre-operative assessment, meticulous surgery and proper post-operative management.

KEY WORDS: Laparoscopic cholecystectomy, Complications, Hospital Stay, Co morbidity, Factors for prolonged stay.

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INTRODUCTION

Postoperative hospital stay is one of the best parameters to assess outcome of any surgical procedure. Short stay reduces cost of surgery, decreases

psychological trauma and determines early return to work. Whereas long stay increases morbidity, psychological problems and makes it more cost effective.¹

Minimal invasive surgery has been advocated as a means of shortening hospital stay, morbidity and mortality.² Laparoscopic cholecystectomy is currently the most common minimally invasive elective procedure performed globally as a model of minimal invasive surgery. It can be performed as a day case surgery, as an ambulatory procedure^{3,4} or as an outpatient laparoscopic cholecystectomy.^{5,6}

The gallstones are major cause of surgical morbidity as well as admission in hospitals.⁷ They affect

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10-15% of adult population in USA and 17% in UK with over all incidence of 3-20%.^{8,9} The estimated prevalence of gallstones in Pakistan is 15% and is reported to be responsible for 22% of admissions in surgical units.^{10,11} They are being treated by traditional open cholecystectomy since past 100 years and now by laparoscopic procedure since 1990, thereby reducing hospital stay from minimum of one week to 1-2 days.^{12,13} It is estimated that 75-95% of all cholecystectomies in different health care systems are nowadays performed by minimal invasive technique.^{14,15}

METHODOLOGY

This is a prospective observational case series carried out on 580 diagnosed patients of cholelithiasis from January 2005 to December 2009 in the department of surgery Liaquat University of Medical & Health Sciences, Jamshoro, Pakistan. All patients were explained about the procedure and inducted as study subjects after getting valid consent.

The routine assessment and investigations were completed in every patient. Main stress was given on different variables for prolonged hospital stay. These variables were divided into patient's related factors, surgery and post-surgery factors. All parameters were recorded on a proforma. The results were analyzed by SPSS version 17. The Patients with obstructive jaundice, pancreatitis and malignancy of gallbladder were excluded from study. The duration of short stay was considered 48 hours and more than 48-hours as prolonged stay. As all study variables were of categorical type, therefore association of factors with prolonged hospital stay was determined by applying Chi-square test. P-value up to 0.05 was considered significant.

RESULTS

Total 580 patients of cholelithiasis in duration of 5 years were assessed for different parameters responsible for prolonged post-operative hospital stay. In the present study mean hospital stay was 3.75 days. The median age was 43.5 years and female to male ratio was 4.52:1. The various patient related factors are shown in Table-I.

The mean operative time was 47.75 minutes. Surgery related factors comprising of surgeon status and various other operative problems encountered during surgery are shown in Table-II. Post-surgery related factors included postoperative recovery factors and postoperative major and minor complications as shown in Table-III.

After analysis of combined 28 variables from all categories of patients, only 187 (32.24%) had long post operative stay due to one or the other factor.

DISCUSSION

Laparoscopic cholecystectomy offers many advantages to the patients over conventional method such as shorter hospital stay, early return to work and less morbidity. These benefits of patients and cost effectiveness are highly attractive to surgeons, and hospital administration also.¹⁶ This study has highlighted number of the factors which have proved to be responsible for prolonged post-operative stay and therefore will help to many surgeons to achieve the goals of procedure.

The patients related variables (n=10) included age, gender, ASA risk classification, co morbidity and previous abdominal surgery. Elderly patients more likely present with complicated gallstone disease and have different co morbid conditions therefore may

Table-I: Patients Related Variables.

<i>Patients Related Factors:</i>	<i>Total</i>	<i>Prolonged stay</i>	<i>P-value</i>
ASA III & IV Score	47	15 (2.58%)	0.96
Gender (Males)	105	23 (3.96%)	0.012*
Old age (above 60 years)	66	13 (2.24%)	0.021*
Obesity	20	07 (1.21%)	0.788
Diabetes mellitus	23	05 (0.86%)	0.271
Hypertension	32	09 (1.55%)	0.608
IHD	09	03 (0.52%)	0.944
COPD	13	03 (0.52%)	0.475
DM + HTN	11	04 (0.69%)	0.768
Previous abdominal surgery	35	10 (1.72%)	0.632

IHD=Ischemic Heart Disease, COPD=Chronic Obstructive Pulmonary Disease, DM=Diabetes Mellitus, HTN=Hypertension. *=Statistically significant.

Table-II: Surgery Related Variables.

<i>Peri-operative Factors:</i>	<i>Total</i>	<i>Prolonged stay</i>	<i>P-value</i>
Operation by Senior consultants	310	07 (1.20%)	<0.001*
Operation by junior consultants.	270	25 (4.3%)	<0.001*
Dense adhesions around G.B	23	08 (1.38%)	0.790
Thick wall gallbladder.	29	5 (0.86%)	0.076
Acute cholecystitis.	16	6 (1.03%)	0.648
Empyema of gallbladder.	26	9 (1.55%)	0.791
Perforation of G. Bladder	10	3 (0.52%)	0.878
Spillage of stones.	7	2 (0.34%)	0.834
Bleeding.	35	16 (2.76%)	0.079
CBD Injury.	9	5 (0.86%)	0.132
Cystic Duct avulsion.	12	4 (0.69%)	0.935
Duration of procedure (more then 2 hour).	75	13 (2.24%)	0.003*

*=Statistically significant.

be expected to have prolonged stay.² In our study 2.24% of patients above the age of 60 years had long stay. We report an increased hospital stay in the male gender (3.96%) in this study. This is consistent with the findings of Al-Mulhim AA.¹⁷ In the current study 2.58% of cases with ASA score III & IV have longer stay which is comparable with results of Issa ME et al.¹⁸ Patients with previous upper abdominal surgery have higher conversion rate and therefore long hospital stay.¹⁹ This study shows 1.72% of cases with previous abdominal surgery responsible for long stay.

The surgery related variables (n=12) were experience of surgeon (Junior/Senior), presence of complicated gallstone disease, duration of operation and difficulties encountered during surgery. In this study 2.24% of cases operated for more than 2 hours, 1.38% of patients with dense adhesions, .86% with thick walled gallbladder, 1.03% with acute cholecystitis, 1.55% with empyema and .52% with perforation of gallbladder had prolonged stay. These findings are almost similar to the reports of Lyass S et al and Tsang YY et al.^{20,21} Experienced surgeons with careful dissection might help to reduce the intra operative complications and therefore help to decrease the hospi-

tal stay. This study shows 4.3% of cases operated by junior and 1.20% by senior consultants, 2.76% with intra operative bleeding, .86% with CBD injuries and 0.69% with cystic duct avulsion had prolonged stay. The length of stay can be affected by the number and severity of complications and time to recovery in uncomplicated as well as other patients.²² Postoperative pain (20%) and nausea and vomiting (70%) are known distressing factors for long stay after laparoscopic cholecystectomy. In our study 2.93% (17 cases) and 2.59% (15 cases) with postoperative pain and nausea and vomiting respectively had long stay however Tsang YY et al²¹ found 29 patients with wound pain and 19 cases with postoperative nausea and vomiting.²¹ Early mobilization significantly improves faster recovery after laparoscopic cholecystectomy.^{23,24} In our series laziness of patients in 2.24% and operation phobia in 2.59% of cases were responsible for delayed recovery and therefore prolonged hospital stay. Major post-operative complications are also important cause for prolonged stay in elderly and as well as in the younger patients.² In this study 4.31% with major complications (bleeding & biliary leaks, biliary peritonitis, intestinal obstruction and conversion to open cholecystectomy) and 1.72% of

Table-III: Post Surgery Variables.

<i>Postoperative Factors:</i>	<i>Total</i>	<i>Prolonged stay</i>	<i>P-value</i>
Post-Operative Pain.	75	17 (2.93%)	0.057
Post-Operative Nausea Vomiting	87	15 (2.59%)	0.001*
Laziness.	95	13 (2.24%)	<0.001*
Operation Phobia.	65	15 (2.59%)	0.093
Minor Post -operative complication.	85	10 (1.72%)	<0.001*
Major Post -operative complications.	25	25 (4.31%)	<0.001*

*=Statistically significant.

cases with minor complications (mild bleeding and billiary leaks, chest infection and port site sepsis) had prolonged stay.

About 67.76% of cases had short stay (1-2 days) whereas 32.24% had prolonged stay (3-28 days) with mean stay of 3.75 days. However in study by Tsang YY et al²¹ 44.2% of patients were discharged within 24 hours having short stay and 55.8% after 24 hours having long hospital stay which is higher than this study. The mean hospital stay given by Rooh-ul-Muqim et al²⁵ was 2.06 days which is shorter than our study because we have included complicated as well as uncomplicated cases.

CONCLUSION

Proper pre-operative assessment of patients, technically sound surgeon, early mobilization and timely management of postoperative complications can minimize the unduly prolonged post-operative hospital stay.

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