

Outcome of Laparoscopic Cholecystectomy as a Day Case Procedure

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ABSTRACT

Introduction: Gallstone disease, a condition caused by the development of stones in gall bladder, usually presents with pain in upper abdomen, is one of the most common diseases of digestive system. It can be treated by the surgical removal of gall bladder, either through open cholecystectomy or by laparoscopic cholecystectomy (key hole surgery); the latter allows patients to be discharged from hospital on the day of their surgery, a concept known as day case surgery.

Material and Methods: It was a descriptive case series in which 100 patients were selected through non probability, consecutive sampling. Inclusion and exclusion criteria were applied. Patients were assessed by anesthetist and consultant surgeon before undergoing laparoscopic cholecystectomy. After surgery, patients were encouraged intake of liquids and were discharged from the hospital as soon as they fulfilled the discharge criteria. Unplanned overnight admissions determined the outcome of this study.

Results: 86% patients were discharged on the same day of surgery and 14% patients had an overnight stay after surgery. There were no readmissions but 3% of the patients presented for an unexpected consultation. Post stratification values of overnight admissions with age and BMI were found to be statistically significant while those for gender and duration of symptoms were found to be statistically insignificant.

Conclusion: Patient selection is an important factor that affects the outcome of laparoscopic cholecystectomy, which is mostly an effective procedure. This study will help in the adoption of laparoscopic cholecystectomy as a day case procedure which is an effective way of reducing burden on health care resources.

Keywords: Cholecystectomy, day case laparoscopic cholecystectomy (DCLC), laparoscopic surgery (LC).

INTRODUCTION

Gallstone disease, referring to the pain in upper abdomen and other symptoms caused by the stones that develop in gall bladder, is one of the most common of all digestive diseases and affects about 6.3 million men and 14.2 million women of age group 20 to 74 years in United States⁽¹⁾. Treatment of this condition involves surgical removal of gall bladder through various techniques, one of which is laparoscopic cholecystectomy or the key hole surgery. Laparoscopic cholecystectomy has emerged as more effective and safe procedure when compared to open cholecystectomy and is now the gold standard treatment of choice for gallstone disease⁽²⁾. Currently, there is significant increase in the total number of gall bladder procedures performed laproscopically⁽³⁾.

Laparoscopic cholecystectomy has superiority over open cholecystectomy in terms of short hospital stay, reduced post-operative pain, early recovery, reduced chances of postoperative infections⁽⁴⁾ and minimal scarring⁽³⁾. However lack of tactile perception, two-dimensional view, the delicate instruments and indirect control of bleeding limit the effectiveness of the procedure. In addition to this, it is comparatively costly⁽⁵⁾ and maintenance of equipment is time taking.

Laparoscopic surgery may require patients to stay in hospital overnight, but it is also possible to discharge patients from the hospital on the day of surgery few hours after completion of procedure. This approach, referred to as day case surgery is now being preferred as compared to overnight stay in hospital after surgery⁽⁶⁾. This concept, widely accepted in countries like United States of America and Canada, is not a common practice in our local community yet. One of the reasons explaining this can be the conflict in data put forward by various researches. Mahmood et al showed overnight re admission rate of 10% while Hamid et al showed overnight admission rate of 15%^(7,8). This is in contrast with 31% over night admission rate by Akoh et al⁽⁹⁾. In addition to this, a meta-analysis by Cochrane failed to prove the superiority of day case laparoscopic cholecystectomy versus overnight admission surgery (19.3% vs. 20.1%)⁽¹⁰⁾.

This controversial data formed the basis for more research on this topic. The objective of our study was to determine the

frequency of unplanned overnight admission in laparoscopic cholecystectomy as a day case procedure.

MATERIALS AND METHODS

This descriptive case study was carried out at East Surgical Ward, Mayo Hospital during a time period of six months (30 July, 2019 to 30 January, 2020). 100 patients, selected by non probability, consecutive sampling technique, were included in this study. Sample size was estimated by using 95% confidence interval, 8% absolute precision with expected percentage of overnight admission to be 15%⁽⁷⁾. Males and females, belonging to age group of 18-75 years, who provided their contact numbers, who were documented to belong to ASA grade 1 and 2 by an anesthetist, and had symptomatic gallstones requiring surgery were assessed by a consultant surgeon who then took the decision of laparoscopic cholecystectomy, thus fulfilling the inclusion criteria of this study. Patients with BMI>25, those who had co-morbidities requiring monitoring such as chronic kidney disease, cirrhosis or cardiac failure, those who had mental and physical disabilities and those who were found to have acute cholecystitis, mucocele and empyema preoperatively were excluded from this study. Patients who resided at places that were more than 1 hour drive from hospital, those who had no adult caretaker to monitor them in first 24 hours after discharge from hospital and pregnant ladies were among those who fulfilled the exclusion criteria of this study. Informed written consent was taken. According to the principles of ERAS protocol, all patients received carbohydrate load of 100g on the evening before surgery followed by 50g carbohydrate load 2 hours before surgery. All patients were operated during the morning list before 2 pm and same team of consultant surgeon performed all these surgeries. Laproscopically assisted TAP (transverse abdominis plane) block was applied by infiltrating 20 ml 0.5% Bupivacaine at both costal margins and four port standard laparoscopic cholecystectomies with critical view of safety were done. Patients were encouraged to take a liquid diet after being free from anesthetic effects and were discharged as soon as patients fulfilled the discharge criteria. Patients who were hemodynamically stable after surgery and had GCS 15/15,

tolerated oral feed, passed urine, had their pain controlled with oral analgesics and had no signs and symptoms of peritonitis after surgery, were considered fit for discharge. Patients were given written instructions along with a telephone number of two resident doctors for emergency, who assessed them in case of an emergency and managed them according to their complaints. Outcome was determined by unplanned overnight admissions of patients who did not fulfill the discharge criteria, unexpected consultations and readmission. All the collected information was entered into SPSS version 22. Quantitative variables like age were presented as mean and standard deviation. Qualitative variables like gender, unplanned overnight admission, unexpected consultation and readmission were presented as frequency and percentages. Stratification of data was done according to age, gender, BMI and duration of symptoms using post stratification Chi-square test. P value < 0.05 was considered to be significant.

RESULTS

Out of total 100 patients, 85 (85%) were females and 15 (15%) were males. Mean duration of symptoms was 8.2900 ± 11.00234 months (range 0.5-48months). Mean age was $43.1300 (21-75) \pm 12.38250$ years. Mean BMI was $22.3786 (18-28) \pm 2.14614$. Out of the total 100 patients, 86 (86%) were discharged on the same day and 14 (14%) had overnight admission. Out of 85 female patients, 73 were discharged on the same day and 12 had overnight admission. Out of 15 male patients, 13 were discharged on the same day and 2 had overnight admission. None of the patients required readmission, however, 3 out of 100 patients had to go through an unexpected consultation. Stratification of overnight admission with gender (table 3) revealed P value of 0.936 and with duration of symptoms (table 4) revealed P value of 0.715, both of which were statistically insignificant. P values of stratification of overnight admission with BMI (P=0.049) and with age (P=0.022) were found to be statistically significant (table 4)

Table 1: Frequency of gender

Gender	Frequency	Percentage
Male	15	15%
Female	85	85%
Total	100	100%

Table 2: Frequency of unplanned overnight admission, unexpected consultation and readmission

Unplanned admission	Frequency	Percentage
Yes	14	14%
No	86	86%
Total	100	100%
Unexpected consultation	Frequency	Percentage
Yes	3	3%
No	97	97%
Total	100	100%
Readmission	Frequency	Percentage
Yes	0	0%
No	100	100%
Total	100	100%

Table 3: Stratification of overnight admission with gender

		overnight admission		Total	P value
		No	yes		
Gender	Female	Count	73	12	85
		% of Total	73.0%	12.0%	85.0%
	Male	Count	13	2	15
		% of Total	13.0%	2.0%	15.0%
Total	Count	86	14	100	
	% of Total	86.0%	14.0%	100.0%	0.936

Table 4: Stratification of overnight admission with BMI, age and duration of symptoms

	overnight admission	N	Mean	Std. Deviation	P value
BMI	No	86	22.2088	2.09672	0.049
	Yes	14	23.4214	2.22924	
Age	No	86	41.9884	11.98773	0.022
	Yes	14	50.1429	12.90115	
Duration of symptoms	No	86	8.4535	11.18839	0.715
	Yes	14	7.2857	10.10467	

DISCUSSION

Day case laparoscope cholecystectomy (DCLC) has emerged as a safe, viable and cost effective procedure and has largely been adapted by the Western countries. Its benefits in terms of patient satisfaction and cost effectiveness has made it a preferable procedure in patients of gall stone disease⁽¹¹⁾. Low rates of complications during intraoperative and immediate post operative add on to the advantages of this procedure. Most of the data in support of laparoscopic cholecystectomy is coming from developed countries. In developing countries like Pakistan, data is still lacking, although available data favors this procedure to be safe, feasible, acceptable to patients and with social and economic benefits⁽¹²⁾.

Patient selection is very important for ensuring day case laparoscopic surgery to be a safe procedure⁽¹³⁾ and thus to reduce the rate of unplanned overnight admissions. It has been concluded in studies that appropriate patients selection lowers failure rate and patients most likely to fulfill the criteria of DCLC are patients of ASA grade I and II, with no previous abdominal surgery, no history of acute cholecystitis and a procedural duration of shorter than 90 min⁽¹⁵⁾. Contrary to this, Robinsons et al⁽¹⁴⁾ reported to have achieved success rate of 70% in an unselected group of patients. This could be due to majority of patients naturally fulfilling the criteria of DCLC mentioned above.

A study conducted in United Kingdom included 258 patients out of which 201 were females and 57 were males with mean ages of 44.23 ± 1.02 and 52.0 ± 1.83 respectively⁽⁹⁾. This was comparable to our study where total numbers of patients were 100, out of which 85(85%) were females and 15(15%) were males with mean ages of 41.94 ± 12.4 years and 49.87 ± 9.9 years respectively. Similarly, a study conducted in India included 80 patients, out of which 65 (81.25%) were females and 15 (18.75%) were males with mean age of 37.9 years⁽⁷⁾. In addition to this, a study conducted in a private hospital of Lahore, Pakistan included 50 patients, among whom 43 (84%) were females and 7 (14%) were males. The majority of patients undergoing laparoscopic cholecystectomy at the age of 40-45 years can be explained by the increased occurrence of gallstones among this age group due to increased smoking and alcohol consumption among this age group. Gender propensity of gallstones for females can be explained by the influence of hormones like estrogen and progesterone on the disease process, hence majority of patients undergoing laparoscopic cholecystectomy being females.

In the study conducted in United Kingdom, 69% of patients were discharged on the same day and 31% of patients were admitted in hospital for overnight stay and were discharged next day⁽⁹⁾. However, our study reported that 86% patients were discharged on the same day and 14% patients needed overnight admission. In contrast to this, in the study conducted in India, 75 patients (93.75%) were discharged on the same day of surgery, whereas 5 patients (6.25%) had overnight admission⁽⁷⁾. Similarly, in the study conducted in the private hospital of Lahore, Pakistan, out of 50 patients, 5 (10%) had to stay overnight and 45 (90%) were discharged on the same day of laparoscopic surgery⁽⁸⁾. The differences in the rate of overnight admissions can be explained if we keep in view patient factors like pain and vomiting, inability to tolerate oral feed and non availability of a care taker at home, thus making overnight stay at hospital necessary.

This study adds to the limited published material from Lahore, Pakistan that favors laparoscopic cholecystectomy to have safety benefits with low frequency of unplanned overnight admissions that can further be reduced by carefully assessing the patients before surgery. This emphasizes the need to consider patient factors thoroughly before surgery to ensure that only suitable patients undergo the surgery and to adopt laparoscopic cholecystectomy as a day case procedure for patients with gall stone disease.

The limitation of the study is that it is a descriptive case study and analysis of the patient satisfaction was not done. Further, variables like unexpected consultation, readmission and the need for a second surgery have not been added. However,

data stratification was done and an attempt was made to explore patient factors like age, gender, BMI and duration of symptoms to be possible effect modifiers. The limitations of this study provide an area on which future researchers can work on.

CONCLUSION

Day case laparoscopic cholecystectomy is a feasible, safe and cost effective procedure with high success rate in carefully selected patients who have uncomplicated symptomatic gallbladder disease. Patient selection has a major impact on the success of a day-case laparoscopic cholecystectomy. Better management of early postoperative complications can further improve the success rate of day case laparoscopic cholecystectomy.

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