Short Hospital Stay for Laparoscopic Cholecystectomy, Review of Indications and Outcomes of Day Care Surgey

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ABSTRACT

Background: *laparoscopic cholecystectomy is the recognized procedure for the treatment of gallbladder related illness. The expression "day surgery", includes admission for an elective surgical procedure and discharge in the same day of admission.* ***Aim:*** *The aim of this study is to assess the laparoscopic cholecystectomy as day case procedure with review of the inclusion indications and outcomes.* ***Patients and Methods:*** *A retrospective review from March 2015 to December 2016 of 114 patients who needed laparoscopic cholecystectomy, 62 of were randomly included as day surgery procedure per certain inclusion and exclusion criteria including American Society of Anathesiologists (ASA) classification, Body Mass Index(BMI), and co-existing morbidities. Analysis of operative time, total hospital stay, presence of comorbidities, post-operative discharge criteria and Post discharge follow up.* ***Results:*** *Among 114 cases presented with gall bladder disease, 62 cases had laparoscopic cholecystectomy on day surgery basis according to the inclusion criteria, 29 (46.8%) males and 33 (53.2%) females were included, Age was (23-59, Mean 38.35 Years), BMI was (20.21 – 36.1, Mean 31.15 Kg/m2). 44 patients (71%) of the patients had no comorbidities, while 18 (29%) had controlled diabetes mellitus and/or hypertension. Hospital stay was (9-15, Mean 12 Hours), operative time was (32-140, Mean 64.5 minutes) post-operative start of oral intake was (230 – 490, Mean 290 minutes). In 4 patients (6.4%) single episode of vomiting was observed. All the patients were discharged with pain scale (0-2/10) using Wong-Baker FACES Pain Rating Scale. 17 patients (27.4%) needed pre-operative intramuscular NSAID injection, while in 33 patients (53.2%)) additional 3-4 hours post-operative Paracetamol infusion was needed, moreover in 12 patients (19.4%) Addition of tramadol injection were given. All the patients were discharged safely with was no reported case of conversion to open surgery, fever, vomiting or need for overnight stay.* ***Conclusion:*** *Laparoscopic cholecystectomy is a safe day care procedure based on good patients' selection and adherence to proper perioperative surgical and anaesthetic management.*

Key Words: *Laparoscopy – Cholecystectomy – Day care.*

INTRODUCTION

Gall bladder stones and gall bladder related diseases are quite common surgical problem, in adult population it is estimated that about 10-15% have gall stones, and nearly four percent of them yearly may turn into a symptomatic acute cholecystitis with its sequalae.[(1)]

Since late 1980s laparoscopic cholecystectomies has turned into the recognized procedure for the treatment of gallbladder related illness. [(2)]

The advantages of laparoscopic surgery including mini incisions with fast patients' recovery with less pain and early return to normal bowel and body activities have aided very obviously in reducing the hospital stay and in turn greatly help in reduction of the health care expenses for both health facilities and patients as well with better psychological concerns.

The expression "day surgery", alludes to the act of precisely chosen non-urgent surgery and patients' discharge in the same day of that surgery. [(3)]

Despite the fact that the day surgery idea has been adopted since 1909[(4)], the wide spread of day surgery concept started in USA and UK about fifty years ago with progressive popularity and implementation due to the advances of perioperative anaesthesia and surgical techniques and in turn attributing medical facilities' advantages of increase patients flow due to better surgical scheduling system avoiding long waiting lists, reduce incidence of cancellations together with reduction of the cost proposed for the personnel and medical services, in addition the

combined patients' benefits from less surgical site infections, early ambulation and in result reduction of venous thromboembolism as well as better care and attention compared to in inpatient basis admission and less morbidity and mortality rates as well.[5]

Nowadays almost ninety percent of elective surgical procedures are based on day care surgery in USA and Canada. [6]

The advancing progression of minimally invasive surgery is permitting more surgical interventions to be executed as day surgery and significantly, higher rates ought to be conceivable. [7]

The aim of this study is to assess the laparoscopic cholecystectomy as day case procedure with review of the inclusion indications and outcomes.

METHODS

A retrospective review from March 2015 to December 2016 of patients who were presented with symptomatic gall bladder diseases to surgery clinic and eligible for laparoscopic cholecystectomy were randomly selected for day surgery procedure.

The suitability for the day case concept was identified per certain patients' inclusion criteria which are: American Society of Anathesiologists (**ASA**) classification I and II. (Table. 1) BMI less than 40, In addition to the proximity of the patient to the medical facility, and the availability of relative or bystander in the early post-operative period.

Table (1): American Society of Anathesiologists (ASA) classification [8]

Grade	Description
ASA I	A normal healthy patient
ASA II	A patient with mild systemic disease
ASA III	A patient with severe systemic disease
ASA IV	A patient with severe systemic disease that is a constant threat to life
ASA V	A moribund patient who is not expected to survive without the operation
ASA VI	A declared brain-dead patient whose organs are being removed for donor purposes

While Exclusion criteria were: (ASA) classification III and above, (BMI) above 40, previous upper abdominal surgery, high-risk patients for thromboembolic disorders and documented diagnosis of acute cholecystitis. Moreover, patients who deemed to have proved or suspected element of obstructive jaundice, altered liver functions and associated pancreatitis with/without evidence of sepsis were not included in the patients selection.

Preoperative imaging and laboratory studies included abdominal ultrasound to document the diagnosis, laboratory investigations include liver function assessment, serum amylase/lipase beside the needful haematological studies including bleeding profile and complete blood picture.

A detailed informed consent explaining the procedure and the admission process with clear date and time of the procedure, operative steps, together with the possible complications including the possibility of conversion to open surgery and transfer to inpatient facility if overstay is needed.

In addition, A clear printed preoperative instructions of pre anathesia check-up, proper fasting time and other special considerations.

On the day of the operation all patients were instructed to be NPO 6 hours preoperative for solid food and 4 hours for clear fluids, and admission to the day surgery facility was one hour prior to the proposed surgery time, preoperative intravenous prophylactic antibiotics, single dose Intramuscular Non-Steroidal Anti Inflammatory Drug (NSAID) injection combined with intravenous Proton Pump Inhibitor (PPI) in addition to peri-operative thromboembolic prophylaxis measures initiated on admission. All the included patients were scheduled to be done as first cases during early morning in order to give proper time for recovery.

Intraoperative special considerations were done including the use of pre and post incision port sites local anathesia infiltration, minimal blood loss during dissection specially in the Callot's area with proper identification of both cystic duct and artery with special care to the critical view of safety, avoidance of the gall bladder contents spillage, proper suction irrigation of sub hepatic and sub phrenic spaces, extraction of the specimen through endo-bag in order to avoid intra-abdominal and port site contamination, ensure gastric suction in order to reduce post-operative gastric dilatation incidence,

together with extraction of the ports under vision to guard against post-operative port site bleeding.

Post-operative assessment of vital signs, conscious level with early ambulation, pain degree assessment using Wong-Baker FACES Pain Rating Scale [(10)], urine output, with start of oral Intake once patients can tolerate oral intake with monitoring of post-operative nausea and vomiting (PONV).

Patient discharge criteria were: complete consciousness, stable vital signs all through post-operative period, tolerated oral fluids and soft diet, urine pass, tolerable controlled post-operative pain and the confirmation of the availability of family member bystander.

Full instructions for the post discharge follow up, alarming signs (including progressive uncontrolled pain, repeated vomiting, drowsiness, fever, dark urine and jaundice), and hospital emergency contacts were discussed with the patients and their bystanders.

Analysis and assessment of patients' categories, co-morbidities total hospital stay, operative time, post-operative complications, pain control and discharge criteria (oral intake, proper control of pain) were done.

RESULTS

Among 114 cases presented with gall bladder diseases amenable for laparoscopic cholecystectomy 65 patients were offered to do the surgery on day case basis however 62 patients (95.3 %) agreed for the concept and the other 3 patients were included in the inpatient group. 52 patients were admitted on inpatient basis. However, 33 patients (63.5%) of this group needed less than 24 hours hospital stay, and 19 patients (35.5%) required more than 24 hours inpatient stay, 4 of them (21%) had associated pancreatitis, 3 (15.8%) had passed stones with obstructive jaundice needed preoperative ERCP followed by cholecystectomy, 7 patients (36.8%) had acute cholecystitis, beside this 5 cases (26.4%) had uncontrolled co-morbidities (DM, Hypertension, etc.) necessitated pre-operative admission for proper control and post-operative monitoring.**(Fig.1)**

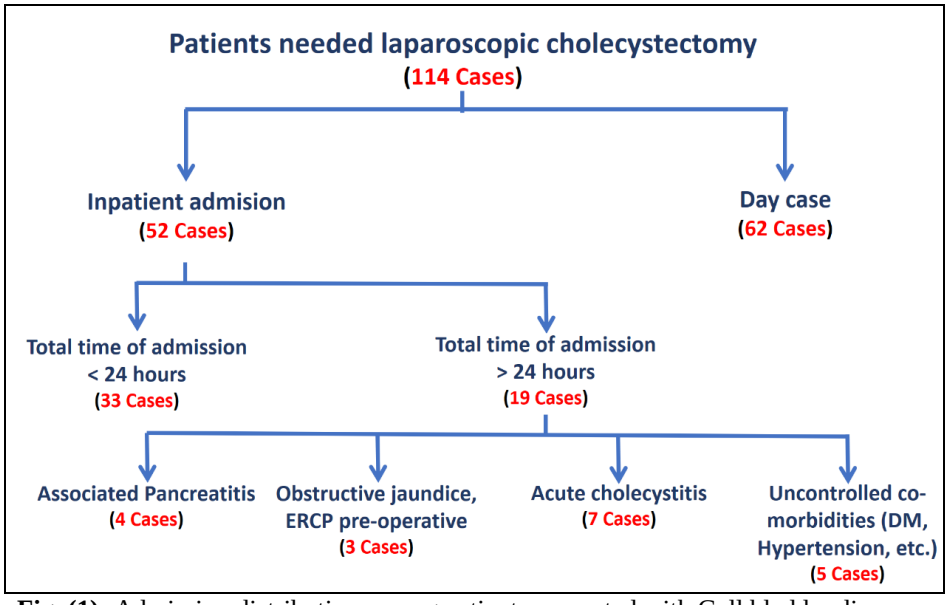

Fig. (1): Admission distribution among patients presented with Gall bladder diseases.

Fig. (2): Radiological findings of patient presented with Gall stones in US (a) with pain and jaundice, MRCP indicates Dilated CBD with abrupt cut at the distal end of CBD (b) CT scan document presence of pancreatic edema with peripancreatic fluid collection , radio opaque shadow distal CBD (c) Abdominal X-ray post ERCP showing Stent position.

Regarding the study patients who had laparoscopic cholecystectomy on day surgery basis per the inclusion criteria, 29 (46.8%) males and 33 (53.2%) females were included, Age was (23-59, Mean 38.35 Years), BMI was (20.21 – 36.1, Mean 31.15 Kg/m^2).

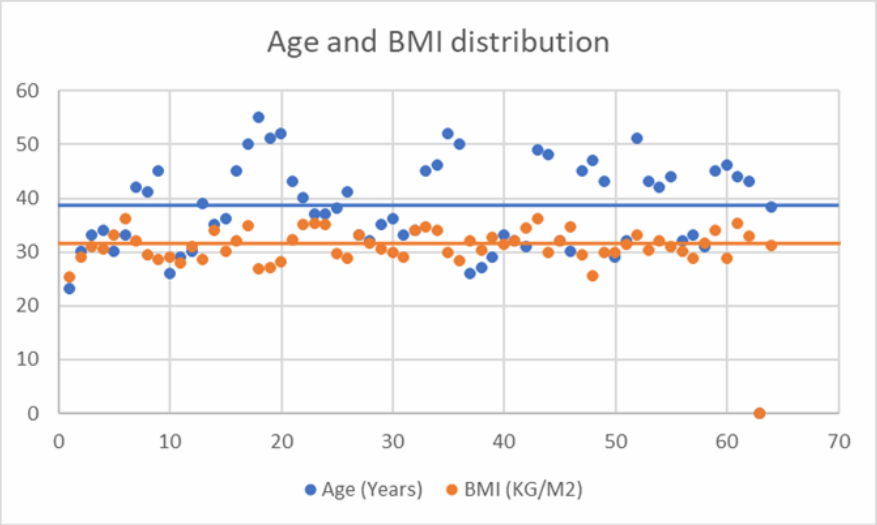

Fig. (3): Age and BMI distribution

44 patients (71%) of the patients had no comorbidities, while 18 (29%) had controlled diabetes mellitus and/or hypertension.

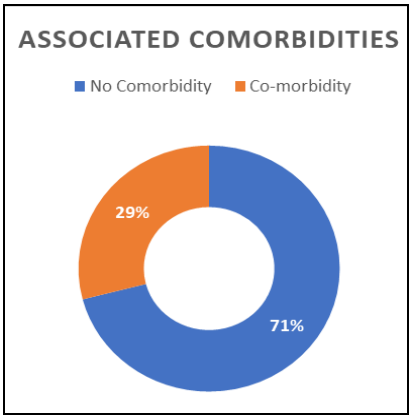

Fig. (4): Associated Comorbidities in patients included for Day surgery basis

Hospital stay was (9-15, Mean 12 Hours) include preoperative preparation, operative procedure, and post-operative care. While operative time was (32-140, Mean 64.5 minutes) (Fig. 4)

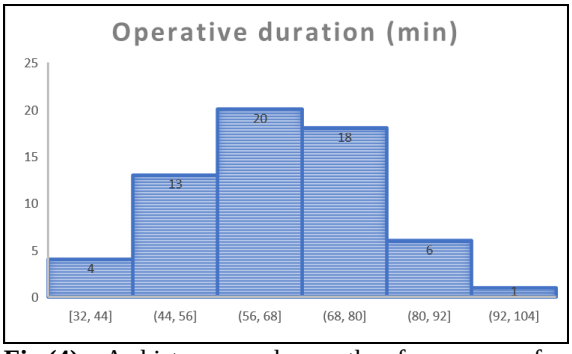

Fig.(4): A histogram shows the frequency of operative duration in minutes within the studied patients

Post-operative start of oral intake based on audible intestinal sound and/or the patients' wellness to start oral fluids was (230 – 490, Mean 290 minutes). However in 4 patients single episode of vomiting was observed and was relieved by single dose of intravenous Ondansetron injection.

Regarding the pain control all the patients were discharged with pain scale (0-2/10) using Wong-Baker FACES Pain Rating Scale. In addition to the routine use of pre-and post-surgery local anathesia infiltration Lidocaine 2% it was observed that in 17 patients (44%) pre-operative intramuscular NSAID injection and, while in 33 patients (48%) additional 3-4 hours post-operative Paracetamol infusion was needed, moreover in 12 patients Addition of tramadol injection were given. (Fig.5)

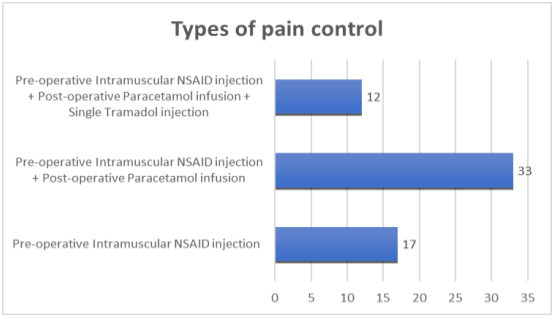

Fig. (5) Clustered bar chart shows the type of perioperative analgesia needed for proper pain control

All the patients were discharged safely as planned with was no reported case of conversion to open surgery, fever, vomiting or need for overnight stay extension. In addition, there was no reported case of hospital re-admission.

DISCUSSION

Day surgery nowadays is considered a high-quality care for the patients with excellent patients' contentment. in form of reduced hospital stay, and rate of related morbidities together with the benefits of less waiting time and cancellations. [(5)] Despite the concerns about the effectiveness and safety of day care or outpatient practice for patients indicated for laparoscopic cholecystectomy [(15-17)], in this study the adoption of day surgery laparoscopic cholecystectomy was safe and efficient for the patients with no effect on the patient's safety with no apparent directly related morbidities or mortalities and on the medical practice in form of rate of shift to overnight inpatient hospital stay or hospital re-admission.

Nowadays, the concept of day case laparoscopic cholecystectomy is widely evolving and accepted, with evident cost effectiveness as well as reduction of patients' anxiety. [(4)] However careful arrangements and setting the groundwork is the key point to achieve best outcomes

including less complications rate and increase patients' satisfaction as well. [11]

Proper pre-operative patients' evaluation and selection per a strict inclusion criteria are the most crucial steps in the implementation of day case concept in laparoscopic cholecystectomy as in shown in this study there were no recorded cases of overnight stay or readmission due to the adherence to the inclusion criteria. On review of the literature an increase in the rate of conversion to inpatient and readmission was due implementation of the day surgery concept without a definable patients' selection [18]. Similarly, old diagnosis of acute cholecystitis and/or biliary pancreatitis are more likely indicate prolonged post-operative stay [14], which drive our study towards the act of excluding both high risk patients and those apparently need tedious surgeries.

Another seemingly important factor is the patient acceptance of the concept of performing the surgery with the availability of ready accompanying person who can take care of the patient specially in first postoperative period, in our study (95.3%) of the patients agreed for the day surgery concept which is similar to the published rate of acceptance and satisfaction. [18]

In our study the main concern beside the adoption of safe standardized surgical technique was to achieve proper post-operative pain control and reduce incidence of post-operative nausea and vomiting (PONV) which are considered as significant problems in day surgery surgical patients. [19,20]

For pain control, there were flexibility to use a step wise pain control system starting from the routine pre-operative single dose of intramuscular NSAID and local anathesia infiltration of the incision sites pre- and post-operative, and proceeding to intravenous Paracetamol or Tramadol Injection in order to achieve (0-2/10) of the pain grading system at the time of patients discharge which was apparently a helpful point in order to reduce the overnight stay or readmission to the hospital.

On the other hand, the routine preoperative administration of PPI and ondansetron, minimal bowel manipulation together with gastric suction aided in the marked reduction of the rate of (PONV) to (6.4%) in comparison with up to (30%) in some studies. [21]

However, there were variable different rates of conversion to inpatient admission in the previous studies and those with higher rates were attributed to the suboptimal pathways to overcome pain and nausea problems. [14]

Despite that in our study there is no reported cases of shift to inpatient stay or conversion to open surgery, yet ready inpatient medical facility should be available regarding to the published studies of readmission rate. [5]

CONCLUSION

Laparoscopic cholecystectomy is a safe day care procedure based on proper patients' selection and adherence to proper perioperative surgical and anaesthetic management. Advances in minimally invasive techniques and settings promotes the continuous implementation of such systems specially with the rising demands of health problems related cost reductions without jeopardization of the patient safety concept. Moreover, the gradual involvement of more inclusion criteria including operating on high BMI and ASA III will be possible as well. However, a continuous audit should be implemented together with more randomized studies.

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