

Ambulatory laparoscopic cholecystectomy in a private hospital in Oman. Is it possible?– A single surgeon's experience

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Abstract

Aim ; The aim of the study is to analyse the results of Ambulatory Extended Recovery Laparoscopic cholecystectomy Surgery in a 20 bedded private hospital in Oman which is in nascent stage .

Methods. Retrospective study in which patients data were collected from hospital records for a period 4.6 years and reviewed. Patients demographics, indications ,criteria for ambulatory surgery , postoperative complications , readmission rates , failure and success rates were studied.

Results: Out of 124 patients, 102 patients successfully subjected to AmbulatoryLaparoscopic Cholecystectomy .The success rate was 82.2% with no major complications, no conversion rate ,nil readmission rate , and nil mortality rates.

Conclusion : Ambulatory Extended Recovery laparoscopic cholecystectomy is possible even in smaller setup hospital and shows encouraging results provided sound surgical expertise is available.

Key words: Ambulatorysurgery , extended recovery ,laparoscopic Cholecystectomy, Oman

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I. Introduction

It is well established that Laparoscopic Cholecystectomy(LC) is the gold standard procedure for gall stone diseases. Daycare Surgery by definition is patient recovers from surgery and fit to return home within a day (24 hrs.)¹ .According to International Association of Ambulatory Surgery(IAAS), Ambulatory surgery/procedure – extended recovery is defined as a patient treated in ambulatory surgery / procedure center /unit ,freestanding or hospital based who requires extended recovery including overnight stay, before discharge the following day within 24hrs¹²³. Ambulatory surgery with extended recovery is also known as 23 hrs. surgery or overnight surgery³. Introduction of ambulatory surgery extended recovery of Laparoscopic cholecystectomy (AERLC) is really challenging for us to initiate this concept in a private hospital in southern Oman.Improvement in the operative techniques, education of nursing staff ,better anesthetic management and awareness to patients has made to us standardize LC as an AERLC surgery in this part of the country. The low rates of complications ,high success rates and nil readmission rates ,have made this procedure as an acceptable AERLC procedure in our setup.

II. Materials and Methods

This is a Retrospective analysis of prospectively collected data over a period of 4.6 years, between 2013 January and June 2017 from a private hospital in Salalah, a place in southern Oman.

In our surgical unit,all cases of gall bladder stone disease, either emergency or elective were considered for AERLC surgery.Elective LC was done for all patients with symptomatic gall bladder stone disease with normal Liver function tests, amylase levels and normal caliber of Common bile duct in ultrasound examinations. Patients with difficult cholecystectomies, where the drain tube kept are excluded from our study as they generally stay for more than 48 hrs period.Difficult LC includes when the gall bladder is transected , or wide cystic duct which is ligated ,or a difficult dissection and surgeon places a drain postoperatively are excluded from the study.

2.1 Inclusion criteria for AERLC

2.1.1 Gall bladder stone disease with or without infection

2.1.2 Normal liver function test and amylase levels.

- 2.1.3 ASA grade 1 – 11
- 2.1.4 Patient with prior history of biliary colic or cholecystitis
- 2.1.5 BMI less than 45kg/m²
- 2.2 Exclusion criteria for AERLC
- 2.2.1, Drain placed Laparoscopic Cholecystectomy .
- 2.2.2 ASA 111 and 1v.
- 2.2.3 Patient lives more than 150 kms away from the hospital .

III. Operative procedure

The patient gets admitted on the day of surgery as either in the morning 10AM and surgery carried out at 11 am or else admitted around 2 pm and surgery done at 6 pm. The morning surgery patient gets discharged the next day morning before 10 am and the evening surgery patients were discharged by next day noon. The surgery was performed by a single surgeon assisted by 2 nurse's .one acts as camera nurse and another as main nurse .4 port standard technique is followed . Capnoperitoneum created through open technique in the umbilicus by 10 mm port , 30 Degree telescope passed , one retraction port of 5mm placed in the right anterior axillary line subcostally , 2 dissection ports 10mm and 5mm were placed in the epigastric and right midclavicular line respectively. The operating surgeon stands on the left side of the patient ,camera nurse besides on the left side , the main nurse stands on the right side of the patient. Two monitors are kept,one for the operating surgeon and another facing the main nurse .Maryland dissectors and hooks were used for dissection . The fundus of gall bladder was retracted , dissection done to delineate cystic duct gall bladder junction, cystic artery was dissected .cystic duct,cystic artery are doubly clipped individually and cut .Gall bladder was dissected free from liver using hook.Gall bladder is removed through an endobag via epigastric 10mm port .We don't have advanced equipment's like Harmonic Scalpel for the surgery.

Subtotal laparoscopic cholecystectomy was carried out if there is difficulty in identifying Gall bladder- cystic duct junction (Critical view of Safety) , gangrenous gall bladder , either frozen or distorted Calots triangle anatomy .In these subsets of patients, the gall bladder stump transected and residual stump approximated by intracorporeal suturing technique with 2 oVicryl sutures .Sub hepatic drainage tubes routinely kept for these patients . Drains removed after 2 days with follow up Ultrasound abdomen and liver function tests.These groups of patients are not considered for AERLC. skin approximated with Subcuticular Vicryl sutures and the edges of the thread is cut short ,so suture removal is not needed later .

IV. Anaesthetic Care

To ensure patient induction maintenance and recovery smooth and minimise post op morbidity, all our patients planned for LC undergoes preanesthetic check up and if medically fit convenient dates for surgery is planned . Investigation done routinely were Complete blood count ,Liver function tests, Amylase levels, Random Blood Sugar .Viral markers, ECG,ChestXray, Coagulation Profile, Sickling test (for Arabs only) ASA 1 and ASA 2 case selected for AERLC ,patients are routinely premedicated with ranitidine 150mg and metoclopramide 10mg,DNS started as they are advised to fast 6 hours prior to admission. Patient is induced with propofol and midazolam , atracurium for muscle relaxation .Intubated with cuffed ETT and connected to ventilator in IPPV mode. Analgesia is provided with remifentanyl infusion. Intra operatively patient is maintained with o2/sevoflurane/N2O/remifentanyl and atracurium.morphine is given intravenously to provide post operative analgesia at a dose of 0.05mg/kg. inj paracetamol is given prior to extubation.Port sites were infiltrated with 0.25% levobupivacaine to minimize postoperative pain intensity .

Postoperatively when the patient is conscious and maintaining airway, shifted to recovery room.additional analgesia is provided depending on visual analog scale(VAS). I/v Tramadol and diclofenac sodium is preferred during postoperative period. Patients are allowed to take oral feeds after four hours of extubation . A Single shot of third generation cephalosporin is given 30mts before surgery. We follow a standard protocol of thromboprophylaxis for all patients of with BMI > 30Kg/m² with intermittent pneumatic compression stockings and single dose of low molecular weight heparin (LMWH) . Patients observed in the postoperative care unit for 6 hours and then shifted to a private room . Generally nurses inform the anesthetist and the surgeon before shifting the patient to private room .These patients were conscious, oriented, stable vital parameters , pain well controlled with analgesics, with no vomiting and nausea episodes. They should be able to take liquids and passed urine .Moreover ,they should be able to walk without support .

Discharge summary given to all the patients and the prescription contains tablet Diclofenac sodium 50mg three times daily with Pantoprazole 20mg once daily for 1 week. The Povidoneiodine powder spray is advised for the wound care. Advised to attend in the outpatient clinic after 1 week.Patient and bystanders were informed to contact the emergency if there is any increase in pain , vomiting , fever or any other discomfort. The surgeon's personal phone number is provided to all the patients .

V. Results

Out of the 102 patients , 26 were male patients and 76were female patients. Youngest patient was 14yrolld female and the oldest is 68 yr old male. The mean age at operation was 36 years and . The mean body mass index was33 kg/sqm2 and it's within the range of 26 to 44 kg/sqm2 in our AEDCLC group patients . Operative time, mean duration of standard LC was 45 minutes (35 mts-2hrs 15 minutes) in our hospital. We never do combined surgeries with standard LC.

Table 1: Different nationalities who underwent LC as AEDCLC surgery

Nationality	Number of patients
Omani	60
Indian	16
Philippine	16
Others	10
Total	102

The Total number of patients couldn't undergo AERLC was 22 as there was a difficult Calots tri-angle dissection ,subsequently drain were placed and excluded from the study. Out of 88 patients ,6 patients come from a distance of more than 150kms away from Salalah.3 patients had moderatepain in the postopera-tive day one and 2 patients preferred to stay for morethan 24 hours.One patient is 68 yrold male with post trau-matic paraplegiawho underwent LC developed urinary retention, bladder catheterized and stayed more than 24 hrs

Variables	Values
Male	26(25.5%)
Female	76 (74.41%)
ASA GRADE 1	32
ASA GRADE 2	70
BMI	25-45(range)
AGE	14-68 (range)

Table 2 : Demographic Table of the patients who underwent AERLC

5.1 Complications of laparoscopic cholecystectomy .

There were no major complications and three patients had minor complication and listed below. One patient is a 40 yrs old, Male, Omani nationality, Post Sleeve Gastrectomy who underwent LC developed epigastric port site hematoma extending to the subhepatic region, presented one week postoperatively with pain abdomen. He was managed conservatively, resolved 3 weeks later with serial follow up with ultrasound examinations. Second is a 36yr old female, Philippine nationality presented with pain abdomen after 7 days and detected to have subhepaticbilioma of 50ml managed conservatively. Resolved spontaneously and confirmed with regular ultrasoundexaminations.

Third is a 38yrs old male , Philippine nationality presented to us with severe acute abdominal pain after 25 days on evaluation raised SGOT , SGPT ,enzyme levels with normal bilirubin and alkaline phosphatase levels,USG doesn't show any dilatation of biliary system .He settled without any further intervention and remained asymptomatic with normal liver function tests .In our study, no patient got readmitted ,zero mortality and no reoperation rates .

Table 3 : Shows success, failure and readmission percentages of various series

Study	Total patients	Success rates %	Failure rates %	Readmission rates %
Selim et al ⁹	200	90	10	10
Taylor et al ⁷	108	87	13	NA
Robinson et al ³	387	70	30	NA
SS Bal et al ⁴	313	92	8	3
Ibrahim et al ⁵	70	100	0	1.5
Chauhan et al ⁶	287	96	4	3
Athar et al ¹⁰	50	92	8	2

Kama et al ⁸	10	95	5	NA
Ahi et al ¹⁵	50	90	10	4
Our study	102	82.2	17.8	0

VI. Discussion

Ambulatory surgery has been widely practiced in the developing countries with good results especially in established day care laparoscopic centres^{11,12}. The ambulatory surgery in the private hospitals of Oman is in nascent stage and is new to this country. Untilldate, there are no such articles regarding ambulatory Cholecystectomy from Oman has been published in the medical literature. Saud¹³ et al from Riyadh, Saudi Arabia has published a study in 1140 cases from a single institution of 5 years duration ,it seems the largest series so far from the Arab peninsula.

Paulo Lemos et al in the textbook from the International Association of Ambulatory Surgery defines a patient who stays 23 hrs overnight or single night or gets discharged within 24hrs is defined as ambulatory surgery with extended recovery². Also, it was interesting to note that most of our patients especially the native Oman nationalities prefer to get operated in the evening ,that made us to follow the Ambulatory Extended Recovery Surgery (Overnight Surgery) concept more than the ambulatory surgery(day care surgery). Ramezantakia et al selected the inclusion criteria for day-case LC as patients with symptomatic gallstones, ASA grades 1, 2 and 3 who had adult company at home for the first 48 hours and a history of un complicated gallstones (no previous episodes of severe pancreatitis or cholecystitis or percutaneous cholecystostomies)¹⁴. We have set a defined inclusion criteria and exclusion criteria for the study and enabled us to achieve better results. In our unit, generally we advise urgent Laparoscopic Cholecystectomy for all patients with infected gall bladder stone disease .The subsets of patients should be hemodynamically stable with blood parameters. Moreover, we have not included the ASA GRADE 3 type critically ill patients with infected gall bladders in our study.

We did a teaching program about ambulatory cholecystectomy to the operation theater nurses, post-operative nurses and to all sections of nursing staffs in the different departments .We started Laparoscopic Cholecystectomy in 2009 but ambulatory surgery came into place only in 2013. Adequate surgical technique, good postoperative outcome, less complication rates with good acceptability rates are necessary before embarking on the AERLC. Age, Sex, ASA Grade, BMI were the different variables in our study. We found that that Age and Sex have no effect on the ambulatory surgery outcome, whereas ASA grade and BMI definitely effect the outcome.

The limitations of our study were the less number of patients (102 eligible patients). Our results were reasonably well with success rate at 82.2% with no readmission rates, no major complications, and no mortality rates with negligible minor complications. We believe that this remarkable result may be due to less number of patients, eliminated the drain placed LC and handled patients with only ASA Grade 1 and ASA Grade 2. Moreover, this is an early report from a private hospital in Oman with a limited number of patients. The advantages of ambulatory surgery are less hospital stay, stress free patient, rapid recovery, less incidence of venous thromboembolism and decreased rate of hospital acquired infections¹⁶. Ahmed et al studied that Ambulatory laparoscopic Cholecystectomy can be performed safely for selected patients, with reduced cost and a high level of patient satisfaction¹⁷. Most of our patients are oman nationalities ,demand an early discharge and were much satisfied in the ambulatory surgery concept. We are aware that the ambulatory surgery concept has to be followed with standard surgical discipline and the ultimate goal is the “patient safety”. In the world where litigation against doctors are on the rise ,we need to practice ambulatory surgery concept with cautious note. Metanalysis of randomized control trials on the safety and effectiveness of daycare laparoscopic cholecystectomy by Guruswamy and authors have concluded that there is no significant difference between day case and overnight stay with respect to morbidity, prolongation of hospital stay, readmission rates, pain, quality of life, patient satisfaction, and return to normal activity and work¹⁸. Hence we argue that overnight extended recovery surgery is equally as effective as day care surgery in Laparoscopic cholecystectomy .

VII. Conclusion

Overnight surgery or ambulatory surgery -extended recovery should be performed by surgeons with adequate expertise in routine laparoscopic cholecystectomy , to reduce the unwanted readmission rates or complications. We strongly believe that ambulatory surgery for laparoscopic cholecystectomy would be a big boon to the patient and expect more studies and advancement in the future.

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