

# Intent at Day Case Laparoscopic Cholecystectomy in Owerri, Nigeria: Initial Experiences

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## ABSTRACT

**Background and Objective:** Laparoscopic cholecystectomy has been the default operation for cholelithiasis at Federal Medical Centre, Owerri for the past 2 years and the outcomes have been good. The duration of post operative stay has been decreasing. We therefore initiated a preliminary 2-year prospective study in May 2010 to determine the feasibility of carrying out day case laparoscopic cholecystectomy in our hospital. **Materials and Methods:** Patients undergoing laparoscopic cholecystectomy were included in the study if they satisfied the following criteria: Age < 65 years, body mass index < 35 kg/m<sup>2</sup>, American Society of Anaesthesiology physical status class I and II, patient residence within 20 km radius of the hospital, patient acceptance of the procedure and absence of previous complicated upper abdominal surgery. **Results:** Twelve patients (10 females, 2 males) were worked up with the intent of achieving same-day discharge of the patients. Five of the patients (41.7%) were discharged on the day of operation. The reasons for overnight stay included inadequate pain control, insertion of drain and patient wishes. There was no conversion to open surgery, no major complications and no case of readmission to the hospital. **Conclusions:** Day case laparoscopic cholecystectomy in our environment could be safely promoted but will depend on improved facilities and patient enlightenment.

**KEYWORDS:** Day case, laparoscopic cholecystectomy, cholelithiasis

## INTRODUCTION

Laparoscopic cholecystectomy is the preferred operation for cholelithiasis.<sup>[1]</sup> Over the years, the increasing need for cost savings and the safety of the procedure has led to this procedure being carried out on a day case basis. This has been shown to be quite effective in the developed countries where there are well established day surgery facilities.<sup>[2,3]</sup> Developing countries have also shown the feasibility and safety of conducting day case laparoscopic cholecystectomy.<sup>[4,5]</sup> Laparoscopic cholecystectomy has been the default operation for symptomatic gall stones in our health facility since 2007. The duration of operation has reduced remarkably and outcomes have been very good. Most patients are being discharged within 48 hours of surgery. We therefore initiated this prospective study to determine the feasibility of

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conducting day case laparoscopic cholecystectomy, even in the absence of an autonomous day case surgery unit.

Our centre is a major hospital in a State with over 4 million inhabitants. It is also one of the few hospitals that carry out minimal access general surgery in Eastern Nigeria.

## MATERIALS AND METHODS

### Patient selection

All patients who had symptomatic ultrasound-confirmed cholelithiasis from May 2010 to April 2012 were evaluated for possible inclusion in this study. The eligibility criteria set out in conjunction with the anaesthetic department were:

1. Age < 65 years
2. Body mass index < 35 kg/m<sup>2</sup>
3. American Society of Anaesthesiology (ASA) physical status classification: Class I and II
4. Patient's place of temporary or permanent residence within 20-kilometre drive from the hospital
5. Patient acceptance of the procedure
6. Presence of a responsible adult to accompany the patient to his/her residence

Patients who had acute cholecystitis or previous history of complicated upper abdominal surgery were excluded from the study. Also excluded, were patients with a previous history of jaundice, pancreatitis or cases where there was a suspicion of stone in the common bile duct. The operating surgeon counselled the patients on the

experimental nature of the study and also obtained consent from the patient.

## Anaesthetic management

The patient attended anaesthesiology consultation prior to surgery, where the ASA score was assigned. Patients were prescribed 10 mg diazepam to be taken on the night before surgery. On the day of surgery patients were told to present themselves for admission before 7.00 a.m. Eligible patients were listed first on the day's operation list. Premedication was not routinely given. General anaesthesia was induced with propofol 2.5 mg/kg. For maintenance, propofol and halothane were utilized. Muscle relaxation was achieved with atracurium. Intravenous ceftriazone, 1 g, and metoclopramide, 10 mg, were given at induction of anaesthesia. Intramuscular diclofenac, 75 mg or intravenous pethidine 1 mg/kg was given intra-operatively. The nasogastric tube and urethral catheter inserted after induction of anaesthesia was removed at the end of the surgical procedure.

## Surgical technique

All the cases were done by the same consultant surgeon. Pneumoperitoneum was created with the aid of veress needle. Standard four-port technique was utilized: 10 mm infraumbilical port for the 0° laparoscope, 10 mm sub-xiphoid port, and 5 mm subcostal ports at the right mid-clavicular and anterior axillary lines. Peritoneal pressure was maintained in the range between 12 and 15 mmHg. Electrosurgical current attached to Maryland forceps was used for initial dissection to create a critical view of the Calot's triangle. The cystic duct and artery were ligated with titanium clips. A hook dissector was used to dissect the gallbladder from liver bed. The gallbladder was retrieved from the sub-xiphoid port. At the end of the procedure, saline lavage was done at the discretion of the surgeon. Drains were not routinely inserted. Closure of port site was with subcuticular absorbable sutures.

## Postoperative management

Intravenous fluids were continued in the post-anaesthetic care unit. Pethidine was used as rescue analgesia. Patients were transferred to the surgical wards on regaining full consciousness. The objective was for the patient to ambulate and take oral fluids within 4 hours of the operation. Patients were evaluated by the surgical team in the ward and discharged if established criteria are met: Awake and oriented, adequate pain control, ability to tolerate fluids, ability to ambulate and pass urine as well the patients' desire to go home. On discharge, patients were given oral diclofenac or tramadol for post operative analgesia. They were also given a phone number for any emergency requirements. Patients were reviewed at surgery outpatient clinic on the ninth postoperative day where an assessment of port sites was made.

## Study objectives and data analysis

The primary study endpoint is the unintended admission rate. Secondary endpoints include readmission rate and safety

of the procedure. Data analysis was done with IBM SPSS Statistics 19.0.

## RESULTS

A total of 17 patients underwent laparoscopic cholecystectomy within the study period, out of which 12 patients (10 females and 2 males) were worked up with the intent of achieving same-day discharge of the patient. A summary of the patient details is given in Table 1.

There was no case of conversion to open cholecystectomy. The duration of the operation ranged from 48-137 mins. Five of the patients were discharged home on the day of the surgery while six were discharged after overnight stay. One patient, who had a drain, was discharged on the 2<sup>nd</sup> postoperative day. The reasons for overnight stay are given in Table 2. There was no case of readmission to the hospital. There was no case of major post operative complications. Three patients had minor umbilical port site infections. One of the patients was an obese patient, who had spillage of intra-peritoneal bile and stones; the others were attributable to improper closure of the port site with braided polyglactin 910 suture. The average age of patients discharged on the day of operation was 46.4 years compared to 50.6 years for those who were admitted. The duration of operation was longer in the patients that were eventually admitted (91.9 vs. 67.8 minutes), as shown in Table 3.

**Table 1: Summary of data of 12 patients intended for day case laparoscopic cholecystectomy**

Age (years)*	48.8 (33-61)
Sex; Female:Male	10:2
BMI (kg/m <sup>2</sup> )*	28.1 (20.5-33.9)
Previous lower abdominal surgery	2
Duration of operation (minutes)*	81.8 (48-137)
Unintended admissions	7 (58.3%)

\*Data values are expressed as mean (range). BMI: Body mass index

**Table 2: Reasons for failure of same-day discharge**

Reasons for failure of same-day discharge	Number of patients
Insertion of drain	1
Postoperative vomiting	1
Inadequate pain control	2
Delayed operation	1
Patient's wish	2

**Table 3: Comparison of patients discharged same day vs. patients admitted**

Details	Same day discharge (n=5)	Unintended admission (n=7)
Age (years)	46.4±6.7	50.6±9.8
BMI (kg/m <sup>2</sup> )	27.5±2.4	28.6±4.3
Operation duration (minutes)	67.8±20.4	91.9±29.0

BMI: Body mass index

## DISCUSSION

Day surgery procedures ideally should be carried out within the framework of a day surgery unit.<sup>[2,6,7]</sup> This is more convenient for the patient and more cost-effective for the hospital in the face of competing demands for available bed spaces. This is not the case in Nigeria where most day surgery cases are managed in general surgical wards.<sup>[8]</sup> The clinical and nursing staff are not attuned to the demands of carrying out day-care surgery. The patients as well, are not enlightened about its benefits. It is thus understandable that output will be significantly lower in such circumstances.

Two major complications of laparoscopic cholecystectomy are bile duct injuries and cystic arterial bleeding.<sup>[7]</sup> These can be detected during surgery, and their incidences have been decreasing as proficiency increases. Avoiding these major complications will reduce the chance of conversion to open operations, prolonged admission and readmission rates. Our conversion rate and readmission rate were zero. This could be attributed to our painstaking approach to the surgery, especially in the early cases. The flip side is that prolonged surgery makes it difficult to achieve the aim of day case surgery.

Outpatient laparoscopic cholecystectomy is safe and cost-effective in a select group of patients. In fact, up to 70% of patients with symptomatic cholelithiasis undergoing laparoscopic cholecystectomy may be good candidates for same-day discharge.<sup>[7]</sup> We may have a long way to go in achieving this target. However, this study is an exploratory drive in that direction. There is some difficulty, particularly, working against the mindset of patients who consider laparoscopic cholecystectomy a major surgical operation that must be followed by postoperative admission for observation. Two of our patients were not comfortable being discharged early. This could also be a reflection of inadequate control of pain in these patients. We did not have ready access to plain bupivacaine for infiltration at the trocar sites, neither did we instil any intraperitoneal local anaesthetic. Incisional and intraperitoneal instillation of long acting local anaesthetics have been found useful in the multimodality management of postoperative pain especially in the setting of ambulatory care.<sup>[9,10]</sup>

The duration of surgery is an important factor in determining unplanned admissions after laparoscopic cholecystectomy. This is not only a reflection on the experience of the surgeon, but also the difficulty encountered in cases with thickened gallbladder and adhesions.<sup>[11]</sup> Operating times exceeding 60 minutes potentially increase unplanned admission rates by four-fold.<sup>[12]</sup> The average duration of operation in our series was 82 minutes and this would have adversely affected early discharge. The prolonged duration of anaesthesia also increases the chances of postoperative nausea and vomiting.

We did anticipate that delay in starting operations may defeat the aim of achieving successful same-day discharge. And we defined late operations as those commencing after 10.00 a.m. This was

done so that the patient can have 4-6 hour postoperative recovery time before discharge. The timing was quite conservative when compared to findings in more experienced centres with day surgery units, where late operations are defined as operations starting after 1.00 p.m.<sup>[11]</sup>

A potential drawback of this study is the relative paucity of patients, which presents difficulties in drawing conclusions. However, there is a relative rarity of gallstone disease in our region, in comparison to Asian and Western populations.<sup>[13]</sup> The admission rate of 58.3% is quite high when juxtaposed with current literature.<sup>[4,6,11,14]</sup> Since this is a preliminary report, we believe that lessons learnt in this early phase will improve the outcome in future patients. These patients will also benefit from ondansetron, which has been shown to be highly beneficial against postoperative emesis.<sup>[15]</sup>

## CONCLUSION

The demonstrable safety of laparoscopic cholecystectomy in our setting is a spur that will continue to make the case for outpatient operation. This will be boosted by establishment of day surgery unit in our hospital as well as increased proficiency of the clinical staff.

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