

Laparoscopic Cholecystectomy at Shree Birendra Hospital

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Abstract

Introduction: Since its introduction in Shree Birendra Hospital, laparoscopic cholecystectomy has gradually replaced its open counterpart. Along with its superior results, surgeons had to deal with the difficult challenges of managing bile duct injuries.

Methods: A prospective study of all laparoscopic cholecystectomies performed in the General surgical unit of Shree Birendra Hospital from January 2003 to December 2010 was carried out from case records in a separate register kept for laparoscopic surgeries.

Results: Out of the total number of 786 patients who underwent laparoscopic cholecystectomy during the study period, 21 (2.67%) required conversion to open procedure with the most common indication being unclear anatomy at Calot's triangle. There were 14 major post operative complications (1.78%) with bile duct injuries occurring in 7 patients (0.89%). Among these injuries, 3 injuries were recognized during the primary operation. Laparotomy with t tube placement for 6 weeks was the mode of treatment in 2 patients with Strasberg type D injuries detected post operatively. Delayed repair after 3 months were carried out in 2 injuries- one hepaticojejunostomy (Type E2) and the other required anastomosis to the left hepatic duct (Type E3). In follow up, these patients have remained anicteric and comfortable so far.

Conclusion: Bile duct injuries continue to remain a major morbidity factor in laparoscopic cholecystectomy and its management a challenge to the surgeon. Though repair in a specialized hepatobiliary center is recommended, in the absence of such center in our country, it is being done in SBH with good results.

Key words: Bile duct injury, Complications, Laparoscopic cholecystectomy

Introduction

Since its introduction, laparoscopic cholecystectomy has gained worldwide acceptance within a short period of time to become the gold standard treatment for cholelithiasis¹. However, along with the advantages of a minimal invasive procedure, came the inherent drawbacks of performing surgery in a new and unfamiliar way. The incidence of bile duct injuries were definitely increased compared with the open technique². Subsequent improvements in the equipment and the technique, as well as training in the laparoscopic technique, resulted in the progressive decrease of this incidence. Nevertheless, global incidence of CBD injury has remained fairly constant around 0.5%, as reported by various meta-analyses studies over a 15-year period^{3,4}. Furthermore, it continues to be two to three times more common compared to published major bile duct injury

rates for open cholecystectomy which indicates that this is still an incompletely resolved problem^{5,6}.

In this context, lap cholecystectomy was introduced in Shree Birendra Hospital in the year 2001 with the help of senior surgeons from Tribhuvan university teaching hospital. After an initial learning curve, and the difficulties associated with starting such a new procedure in the background of limited resources and skilled manpower, it has gradually replaced open technique as the method of choice by both patients and surgeons. Along with the boon of a minimal invasive surgery, came the bane of bile duct injuries. In the lack of a specialized hepatobiliary center in Nepal, the management of such injuries was carried out successfully in this hospital itself.

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Methods

Shree Birendra Hospital is the central army hospital providing medical support to the entire Nepalese Army personnel and their dependents. Being the only army hospital in the entire country, it combines the functions of a primary level hospital with that of a tertiary level referral centre as well.

Laparoscopic cholecystectomy (LC) was introduced in this hospital in early 2001. Since the early days, prospective records of all cases undergoing laparoscopic surgeries were kept in separate audit book. Hence, after completing 10 years of this remarkable procedure, an analytical study of all the laparoscopic cholecystectomies performed in the General surgical unit of Shree Birendra Hospital from January 1, 2003 to December 31, 2010 was performed. The records of intra operative findings, complications and difficulties faced during the operation are routinely recorded for all procedures in this audit book. For the purpose of this study, we went through the register recording patient details with special note of all conversions and immediate repair of bile duct injuries recognized intra op were noted. From the patient information obtained from this register, subsequent post operative details were obtained from hospital records, including immediate post operative complications, readmissions for late complications, and procedures undertaken to rectify the complications. Data obtained were then analyzed.

Results

During the study period of eight years, a total number of 786 patients were taken up for laparoscopic cholecystectomy. Out of these 786 patients, 592 were female and 194 male giving a female predominance of approximately 3:1. The age distribution, as shown in the fig1, revealed predominance in the middle ages of 31-40 year age group. The youngest was an 8 year old boy and the eldest, an 84 year old lady.

USG diagnosed cholelithiasis remained the most common indication for surgery (in 770 patients), however in 8 patients it was misdiagnosed on USG as no stones were evident in the Gall bladder removed after surgery. Hence the false positive rate of USG for cholelithiasis in this study remained 1.02%. The remaining 16 patients underwent the surgery for Gall bladder polyps. Interestingly, an incidental finding of T1A stage GB carcinoma was reported in Histopathological Examination in 1 patient.

Of all the patients undergoing surgery, 21 (2.67%) required conversion to open procedure with the most common indication being unclear anatomy at Calot's triangle. Other reasons for conversions are detailed in the table shown. Of these, 4 conversions were for suspected bile duct injury, of which, 3 indeed had injury and all 3 underwent operative repair at the same sitting.

Table 1: Reasons for conversion to open cholecystectomy

	Cause of conversion	No.
1.	Unclear anatomy at Calot's triangle	12
2.	Suspected bile duct injury	4
3.	Technical fault of instruments	2
4.	Bleeding from cystic artery	2
5.	Cardiac arrhythmia after pneumoperitoneum	1

A single mortality was reported during this entire study period: a sixty year old lady, on her second post operative day, suddenly collapsed while going to the bathroom. The death was attributed to pulmonary embolism though post mortem was not carried out.

There were 14 major post operative complications (1.78%) with bile duct injuries occurring in 7 patients (0.89%). Minor bile leak was present in 5 patients which were managed with USG guided drainage. One patient had a jejunal perforation which was detected on 2nd post operative day and managed with laparotomy and repair. Another patient had a recurrent umbilical sinus due to a retained calculus at the umbilical port site. The patient presented after 9 months after the initial surgery and was managed with excision of the sinus and removal of the retained calculi.

Table 2: Complications of lap cholecystectomy

	Complication	No.
1	Bile duct injury	7
2	Minor Bile leak	5
3	Jejunal perforation	1
4	Umbilical sinus	1

Among those with bile duct injuries, 3 injuries were recognized during the primary operation (Strasberg Type D, E1 & E2)². Type D injury was managed with primary repair with a t tube placement, while hepaticojejunostomy was performed in the type E injuries. 3 patients presented in the post op period with features of biliary peritonitis of whom, 2 had type D injuries managed with laparotomy

with t tube placement for 6 weeks. Delayed repair after 3 months, in the form of hepaticojejunostomy, was carried out in the third patient having type E2 injury. The most severe injury was detected in a patient who was

readmitted on the 8th post op day with jaundice. She had a type E3 injury requiring anastomosis to the left hepatic duct. In follow up, these patients have remained anicteric and comfortable so far.

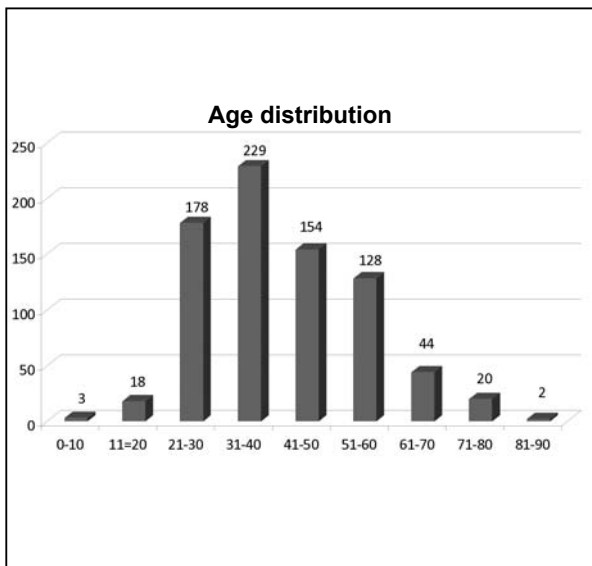


Fig 1: Age distribution of patients undergoing lap cholecystectomy

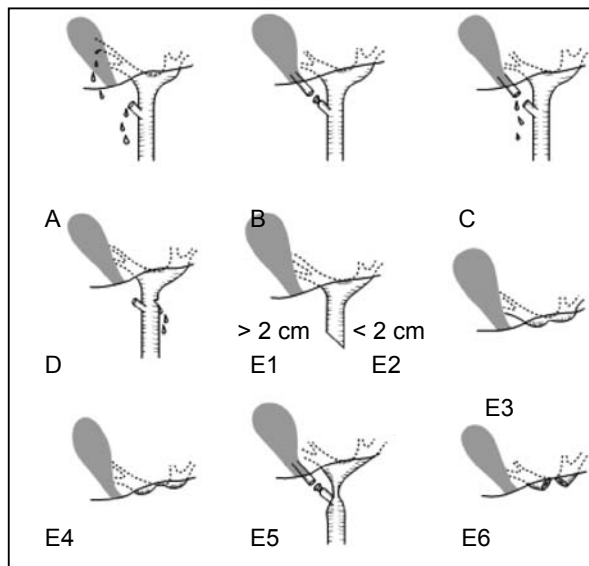


Fig 2: Schematic representation of Strasberg classification of Bile Duct Injuries²

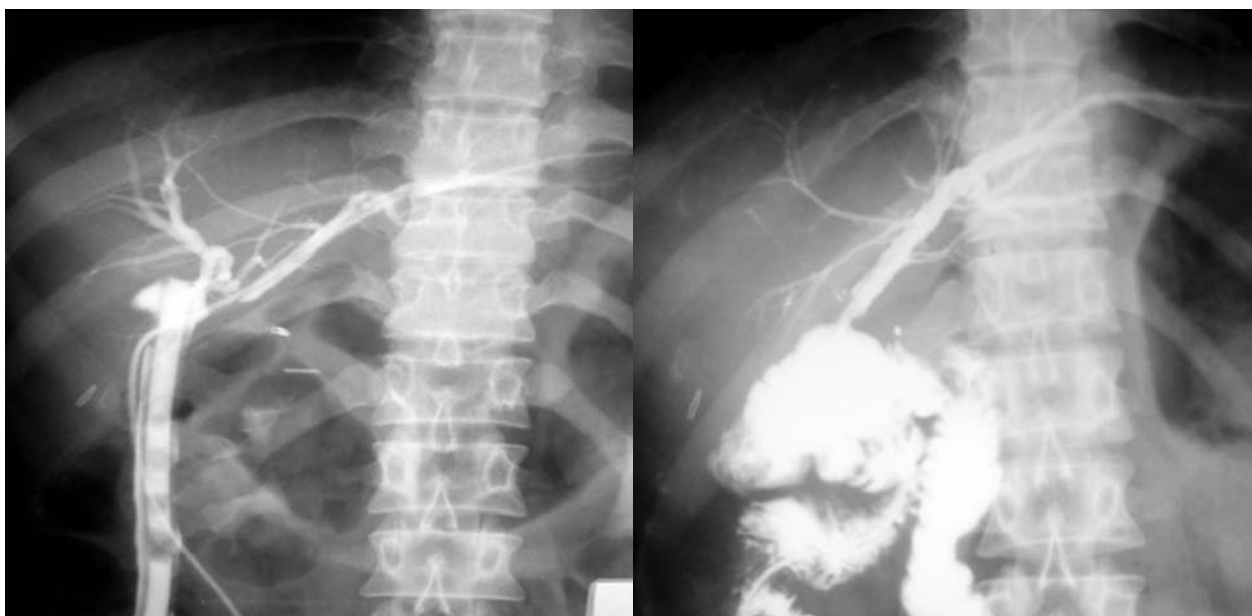


Fig 3: Before and after bilioenteric anastomosis for a BDI

Discussion

Since its introduction, laparoscopic cholecystectomy has rapidly replaced its open counterpart, not only in the developed countries, but also in developing countries^{7,8}. Though questions had been raised in the past regarding the economical viability of the procedure in a developing country, the rapid acceptance of the procedure in one

of the world's poorest countries like Nepal, indicate the global acceptance of this procedure.

In the initial period of the study, patients remained skeptical of this new procedure and required detailed counseling regarding the safety of the procedure.

However, it has withstood the test of time with patients willing to wait in queue for an average of 5 months for this procedure in deference to an open procedure being offered for an average waiting time of only 1 month.

The demographic profile of the patients undergoing this procedure is in par with the general age and sex distribution of cholelithiasis with higher incidence in the females and in middle ages. The negative findings in 1.02% cases indicate fallacy of the diagnostic procedure as well as difficult clinical assessment attributing dyspeptic symptoms to cholelithiasis. There was only one incidental finding of early CA GB giving an incidence of only 0.001.

The most common indication for conversion to an open procedure remained unclear anatomy at the Calot's triangle. The rate of conversion of 2.67% is low compared to other studies showing rates of 2.85 to 3.5%^{9, 10}.

Morbidity following bile duct injury after LC is a source of major concern as it remains significantly high (0.1-1.1%) in comparison to the open cholecystectomy in various studies^{11, 12}. In our experience, it has remained comparable at 0.89%. As this figure includes injuries that occurred during the initial learning curve of the surgeons, we believe it is within acceptable limits. Results of a National Survey reported from the US in 2001 show that most injuries occur within the surgeon's first 100 laparoscopic cholecystectomies, one-third happen after the surgeon has performed more than 200¹³.

The role of intraoperative cholangiography in lap cholecystectomy is undoubtedly reserved for detection of biliary injuries. However in our setting, it is not routinely performed, and it is remarkable to note that out of the 7 patients with bile duct injuries, 3 were detected at the time of the primary operation and managed in the same sitting.

Bile duct injuries should ideally be managed in a specialized high volume centre^{14, 15}. This has been proved by a number of studies showing better results when such injuries are managed in a high volume centre experienced in managing such injuries^{16, 17}. But in our context, in Nepal, where there are no such referral centre reporting specializations in the management of bile duct injuries, it would mean referring all such cases to a foreign country. So our surgeons took up this challenge of managing such difficult cases. The good results obtained even after bilioenteric anastomosis

carried out at intrahepatic level in a type E3 injury speak volumes of the efforts laid down by the operating team.

Conclusion

Laparoscopic cholecystectomy has withstood the test of time even in the context of a developing country like ours due to its superior outcomes. The complications of this procedure especially bile duct injuries, are inherent to this procedure. Despite an increasing awareness of this problem, yet more attention should be paid both to prevention and to early recognition of such injury. Early referral to a hepatobiliary centre is definitely associated with a better outcome. However, in our context, where such centres are lacking, such surgeries are being performed in the surgical department of SBH with good results. The need for a hepatobiliary centre at the National level however has to be strongly reiterated.

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