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## Open conversion of laparoscopic cholecystectomy at Al-Sadder teaching hospital, a descriptive study

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### Abstract

**Background:** Laparoscopic cholecystectomy (LC) is getting popularity in developing countries especially in Iraq. Conversion is also common. This study intends to evaluate the causes of conversion from LC to open procedure and to establish the safety and efficacy of the procedure.

**Method:** This is descriptive case series conducted in general surgical department at Al-sadder teaching hospital in Mayssan city from January 2014 - December 2015. Patient of more than 20 years of age presented with symptomatic gall stones where included in the study. Patient with jaundice dilated common bile duct where excluded.

**Result:** A total of 300 patient where included. 262 patient (87.3% where female and 38 patient (12.6% where male). Twenty one patient (7% where converted to open cholecystectomy (OC). The most common cause of conversion was dense adhesions followed by obscure anatomy at Calot's triangle. Other common causes were bleeding bile leakage. Adjacent visceral injury and instrument failure.

**Keywords:** Laparoscopic, cholecystectomy, instrument

### Introduction

Gall stone disease is a major health problem not only in Iraq but worldwide. Cholecystectomy is the treatment of choice. Advancement in technology has revolutionized the field of surgery. Minimally invasive surgery is getting popularity today. Till 1987 open cholecystectomy for gall bladder disease was the treatment of choice, but now lap chole is the gold standard [1]. At centers where lap surgery is available open chole has been almost replaced by lap. Chole [2]. Lap chole has reduced the unnecessary and unrequired surgical trauma to the patient, and there is no need for cutting abdominal wall and surgery is performed through small holes. It causes less pain and gives good cosmetic result, patient recovery is quick and can go home earlier as compared to open chole [3]. Some centers performed lap chole as day case surgery. Major complications are less frequent in lap chole and are less than 5% [5], it is considered as safe procedure not only in elective but also in emergency bases as well. However in difficult cases sometimes becomes necessary to convert lap. Chole to open chole in order to avoid major Morbidity, and Mortality, and as the only option to save the patient [6]. The factors responsible for conversion may be three dimensional; patient factors such as unclear anatomy, adhesions, excessive bleeding or visceral trauma, surgery related such as level of expertise, and equipment related such as electricity or equipment failure [7]. In different studies about 1.5-19% conversion rate has been reported [8]. The conversion rate is strongly related to the experience of a surgeon, patient selection and quality of the equipment, a decrease in complication rate has been reported in different studies [9]. Laparoscopic surgeon should be trained in minimally invasive skill lab. initially then under the supervision of a trained laparoscopic surgeon for some time as a steep learning curve still exist for this type of surgery especially in under developed countries like Iraq [10]. Most of lap. Latrogenic injuries can be successfully avoided by trained lap. Surgeon; by appreciating their own limitation especially during the dissection of Calot's triangle before dividing the cystic anatomy and cystic duct, most surgeons often training can perform this procedure in a short period of time with a minimally conversion rate [11]. After the introduction of lap. Chole various surgeons have conducted studies at their centers to evaluate different complication and conversion rate from lap. Chole to open chole. In order to establish the factors due to which this procedure can be made safe and cost effective for the patient, the aim of this study is to determine the causes of conversion of lap. Chole to open chole in our teaching hospital.

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## Materials and Methods

This is descriptive study conducted in the department of general surgery at an adder teaching hospital in our city. From "January 2014 to December 2015" patient of more than 20 years old. Presenting to the outpatient clinic with symptomatic gall stones were included to the study. Patients with choledocholithiasis, as dilated CBD diameter more than 8, history of jaundice, history of abdominal or pelvic surgery, acute cholecystitis. Malignancy and mass in the area of porta hepatis, were excluded from the study. Patient were admitted to the hospital one day before surgery. For preoperative preparation. Calots triangle was exposed to identify the cystic artery and duct and clamped with metallic clips of medium size separately and the gall bladder was removed through the 10mm epigastric port was left in sub hepatic space in some selected cases when irrigation and suction was required for bleeding and bile leakage from the gall bladder bed or perforation. This is kept for a period of 24 hours after operation and removed if there is no significant leakage adrain discharge; All the complication during surgery or post operatively was noticed with special emphasis on the conversion of lap chole to open chole, most pt were discharged postoperatively on next day of surgery.

Fellow up of the patient was carried out in surgical clinic at one week intervals to see any complication. The data were collected on and analysed accordingly.

## Result

Three hundred patients were included in the study. Out of the total 272 (87.33) % were females and 38 (12.67%) were males giving to a female to male ratio of 6.9:1, ages ranged from 20 to 70 years, which mean of 42.69 years, majority were in the fourth (37.29%) and fifth (24.8%) Decade of life. Twenty one patient were converted to open cholecystectomy 7% among those: 21 patient 4 were male and 17 were females "table 1" 8 patient: (2.6) converted to open surgery because of dense adhesions the gall bladder due chronic infection. This represented in the most common cause. In 5 patients (1.6%) conversion was made because of difficulty to identify the cystic duct. Cystic artery and CBD at Calot's triangle. Two (0.67) % conversion was because of bleeding. In one patient Metallic clip was slipped from it is site of cystic artery and the other because of Rt hepatic artery. Both had started massive bleeding. Two patients (0.67%), were due to faulty instruments. One injury was due to (0.33%) CBD injury. One patient (0.33) was due to Bile leakage from a slipped Metallic clip of cystic duct stamp. Shows late conversion due to massive Bile collection at sub hepatic area table [2].

**Table 1:** Gender

Gender	No. of patient	No. of complication	% of complication
Males	38	4	10.5 %
Females	262	17	6.4 %
Total	300	21	7 %

**Table 2:** Causes of conversion of lap chole to open chole

Complication	No. of patient
Adhesion	8
Absecure anatomy at calots $\Delta$	5
Bleeding	2
Visceral injury duodenum and colon	2
Instrument failure	2
CBD injury	1
Bile leakage	1
total	21

## Discussion

Laparoscopic cholecystectomy is one of the most common

surgery performed in general surgical department. Conversion from L.C to open chole. Changes the outcome of patient to prolong hospital stay [17]. Although it's not the failure of the procedure but done affect the patient satisfaction the conversion rate from L.C to O.C is mainly dependent on the exceptive of the surgeon, quality of equipment, and the clarity in the anatomy of the calot's triangle. That may be observed because of multiple attacks of cholecystitis or previous upper abdominal surgery. However with the advancement in the technology more expert lap equipment and instrument with safety measures are available and surgeons are better trained the conversion rate is reduced. However in some cases conversion to open procedure remain unavailable [13]. Conversion should not be considered as a complication of lap. Chole rather it should be considered earlier for the safety of the patient [14]. Bleeding post operatively and intraoperatively Bile leakage. Gall Bladder perforation bile duct injeryor adjacent inscenal injury and considered as a trace complication [15].

In our study the conversion rate is 7% which similar with various studies. In most of the recent studies reported (8-16) % conversion rate vary between (1.5 – 9)%. Conversion rate is low in developed countries as compared to developing countries properly this due to availability of the latest Laparoscopic and better training of the surgeons. It is also seen that with increase in experience of surgeons in Laparoscopic surgery, then will be decrease in rate of conversion. MAHIOLI *et al.* in last study reported a decrease in conversion rate from 10% trained surgeons to 2.8% in highly skill surgeon [17]. SHAMIM reported conversion rate range from 9-6% this range was observed in our study. In local literature most common cause of conversion was adhesion around the Gall blaader. Adhesions made dissection difficult although in most of the cases adhesion were separated with careful dissection with the help of country. In the national studies prevail reported 2.38% and Tanveer reported 1.7% conversion because adhesion. In our study: adhesion (2.6%) where most common cases. It is consistent with most local studies, however in the majority of international studies the reported rate is low comparatively and it is second or third commonest cause followed by acute cholecystitis. This is probably due to the fact that in majority of local studies cases of acute cholecystitis were excluded from the study. LEVH reported conversion rate because of adhesion in 0.71% patients [20]. In our study, obscure anatomy (1.6%) at Calot triangle was the second most common causes of conversion of lap. Chole to open chole. Which is similar with national and international studies. Bleeding is also observed acouse of conversion. The increase of use of Harmonic scalpel and ligasuse has reduced the incidence of bleeding. However in developing countries where lap. Surgery is still performed with primitive lap tools and the surgeon still relay on liga chips for cnorolling the bleeders. sometimes application of ligaclips Is not successful resulting in massive bleeding and making varision more difficult. Then the only option left for Haemostasis is to convert the procedure into open cholecystectomy. In our study bleeding is observed 0.6%.wich is nearly similar to other studies. Nizam, Tanveer and Volkan reported 0.65% 0.39% 0.27% conversion rate in their studies because of bleeding [15, 16, 17]. Visceral injuries are also observed as a complication of Lap surgery. Sometimes resulting in conversion to open cholecystectomy. Development of safety trocars, and insertion of trocars under version has reduced the visceral injuries.in our studies duodenum and colon injuries observed in (0.67%), CBD injury in (0.3)% and bile leakage in 0.3%.wich is similar with most of the national and international studies. Nizam, Tanveer and volkan reported 0.6% 0.5% 0.12%

respectively. Instrument failure as a cause of conversion to open cholecystectomy was not observed on developed countries, however in the initial era of lap. Surgery there are some cases reported in the literature [18]. However the conversion to open surgery is still reported in the local literature as high as reported by Pervaiz in this study up to 2.9%. The most common cause of these conversion are the use of refurbished Laparoscope, lack of backup support and failure of power supply. Momen reported (0.16%) conversion because of equipment. In our study (0.67%) cases were converted to open. Nizam also reported equipment failure during Laparoscopic surgery but backup support and replacement of instrument avoided the conversion [16].

### Conclusion

1. Most common cause of conversion from Lap. Chole was dense adhesions.
2. The second most common cause was obscure anatomy at Calot's triangle with the increase in experience of surgeons in Laparoscopic surgery the rate of conversion to open chole was reduced. In difficult situation a surgeon should seek consultation from a senior colleague and if it is not available, then the decision to convert to open procedure should be made earlier for the safety of the patient.

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