

# بسم الله الرحمن الرحيم





# شبكة المعلومات الجامعية التوثيق الالكتروني والميكروفيلم





# جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

## قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها  
علي هذه الأقراص المدمجة قد أعدت دون أية تغيرات



## يجب أن

تحفظ هذه الأقراص المدمجة بعيدا عن الغبار





# Laparoscopic Cholecystectomy after Endoscopic Retrograde Cholangiopancreatography

Thesis

Submitted for Partial Fulfillment of  
Master Degree in **General Surgery**

By

*Ahmed Kamal Mohammed Mohammed*  
*M.B.B.CH*

Under Supervision of

**Prof.Dr.Abd El Ghany Mahmoud El Shamy**

*Professor of General Surgery*  
*Faculty of Medicine, Ain Shams University*

**Dr. Ahmed Magdy Ahmed Farrag**

*Lecturer of General Surgery*  
*Faculty of Medicine, Ain Shams University*

Faculty of Medicine  
Ain Shams University  
2021



# **Laparoscopic Cholecystectomy after Endoscopic Retrograde Cholangiopancreatography**

## **Thesis**

Submitted for Partial Fulfilment of  
Master Degree in **General Surgery**

**By**

**Ahmed Kamal Mohammed Mohammed**  
M.B.B.CH

**Under Supervision of**

**Prof. Dr. Abd El Ghany Mahmoud El Shamy**

Professor of General Surgery  
Faculty of Medicine, Ain Shams University

**Dr. Ahmed Magdy Ahmed Farrag**

Lecturer of General Surgery  
Faculty of Medicine, Ain Shams University

**Faculty of Medicine  
Ain Shams University**

**2020**

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

قالوا

سببنا انك لا تعلم لنا  
إلا ما علمتنا إنك أنت  
العليم العظيم

صدق الله العظيم

سورة البقرة الآية: ٣٢

# Acknowledgments

*First and foremost, I feel always indebted to  
Allah the Most Beneficent and Merciful.*

*I wish to express my deepest thanks,  
gratitude and appreciation to Prof.Dr.Abd El  
Ghany Mahmoud El Shamy, Professor of  
General Surgery, Faculty of Medicine, Ain Shams  
University, for his meticulous supervision, kind  
guidance, valuable instructions and generous  
help.*

*Special thanks are due to Dr. Ahmed Magdy  
Ahmed Farrag, Lecturer of General Surgery,  
Faculty of Medicine, Ain Shams University, for  
his sincere efforts, fruitful encouragement.*

*I would like to express my hearty thanks to  
all my family for their support till this work was  
completed.*

**Ahmed Kamal Mohammed Mohammed**

## ABSTRACT

**Background:** Laparoscopic cholecystectomy (LC) post Endoscopic retrograde cholangiopancreatography (ERCP) with endoscopic sphincterotomy(ES) is generally accepted as the treatment of choice for patient with choledococystolithiasis. Previous studies have shown that LC after ERCP is associated with a high conversion rate. The aim of the present study was to assess the complexity of LC after ERCP compared with standard LC for symptomatic uncomplicated cholecystolithiasis.

**Objectives:** So the aim of this study is to assess the complexity of LC post ERCP compared to elective LC without previous ERCP.

**Method:** The study is a prospective cohort study of two groups of patients: patients who had undergone a previous ERCP for choledocolithiasis (PES) and patients with cholecystolithiasis who had no previous intervention prior to LC (NPES).

**Results:** The PES group consists of 25 patients and the NPES group consists of 25 consecutive patients, patients in the PES group had a higher risks for longer (more than 35 min) duration of operation, the conversion rate in the PES group and the NPES group (12% versus 0%, respectively) were not significantly different, duration of post-operative hospital stay in the PES group was longer than NPES group, there was more difficulty in achieving the critical view of safety in the PES group (easily achieved in 48%) than NPES group(easily achieved in 92%).

**Conclusion:** A laparoscopic cholecystectomy after ES is longer and more difficult than in uncomplicated cholelithiasis and should therefore be performed by an experienced surgeon.

**Keywords:** Laparoscopic Cholecystectomy, Endoscopic Retrograde, Cholangiopancreatography



# List of Contents

Title	Page No.
List of Tables.....	i
List of Figures .....	ii
List of Abbreviations.....	iv
Introduction .....	1
Aim of the Work .....	3
Review of Literature .....	4
Surgical Anatomy of gall bladder and biliary tree.....	4
Pathology of gall bladder and Biliary tree .....	8
Management of choledocholithiasis.....	17
Difficulties of laparoscopic cholecystectomy .....	24
Laparoscopic cholecystectomy post ERCP .....	35
Patients and Methods.....	39
Results.....	44
Discussion .....	53
Summary .....	57
Conclusion .....	59
References .....	60
Arabic Summary	

# List of Tables

Table No.	Title	Page No.
<b>Table 1:</b>	ERCP outcomes .....	44
<b>Table 2:</b>	Patient characteristic of patients undergoing a laparoscopic cholecystectomy.....	45
<b>Table 3:</b>	Procedural charactarestics of patients undergoing a laparoscopic cholecystectomy .....	46
<b>Table 4:</b>	Comparison between conversion rate in the PES group and NPRS group .....	47
<b>Table 5:</b>	Comparison between PES and NPES according to complication and post- operative hospital stay. ....	48
<b>Table 6:</b>	Complication and post- operative hospital stay of patient undergoing laparoscopic cholecystectomy.....	49
<b>Table 7:</b>	Comparison in amount of drained fluid post operative .....	50
<b>Table 8:</b>	Comparison between two groups according to difficulty to achieve critical view of safety .....	52
<b>Table 9:</b>	Comparison in diffulty to achieve critical view of safety according to stent .....	52

# List of Figures

Fig. No.	Title	Page No.
<b>Figure 1:</b>	Anatomy of hepatic duct and common bile duct .....	5
<b>Figure 2:</b>	Anatomy of Hepatopancreatic ampulla, receiving the common bile and pancreatic ducts and entering the duodenum at the major duodenal papilla.....	6
<b>Figure 3:</b>	Anatomy of the cystic artery in its typical location within the hepatobiliary triangle.....	7
<b>Figure 4:</b>	Classification of gallstones.....	9
<b>Figure 5:</b>	MRCP showing a filling defect in the common bile duct due to an intraductal calculus .....	13
<b>Figure 6:</b>	ERCP confirming Mirizzi syndrome with the guidewire in the gallbladder (GB) .....	15
<b>Figure 7:</b>	Diagnostic criteria for acute cholecystitis .....	17
<b>Figure 8:</b>	Endoscopic retrograde cholangiography for bile duct obstruction by a prepapillary stone.....	21
<b>Figure 9:</b>	Following the introduction of the guidewire in the bile duct by the surgeon.....	23
<b>Figure 10:</b>	Markedly thickened gallbladder wall necessitating conversion to open procedure .....	26
<b>Figure 11:</b>	Gall bladder and omentum adherent to anterior abdominal wall.....	29
<b>Figure 12:</b>	Single giant gallstone measuring 95 mm × 60 mm × 45 mm .....	32
<b>Figure 13:</b>	Empyema of gall bladder .....	32
<b>Figure 14:</b>	Standard four trocar technique for laparoscopic cholecystectomy.....	41
<b>Figure 15:</b>	Comparison between laparoscopic cholecystectomy post ERCP and laparoscopic cholecystectomy without previous ERCP regarding age.....	45

## List of Figures cont...

Fig. No.	Title	Page No.
<b>Figure 16:</b>	while dissecting through calot's triangle.....	41
<b>Figure 17:</b>	After achieving critical view of safety.....	41
<b>Figure 18:</b>	Comparison between laparsopic cholecystectomy post ERCP and laparsopic cholecystectomy without previous ERCP regarding conversion to open. ....	47
<b>Figure 19:</b>	Comparison between laparoscopic cholecystectomy post ERCP and laparoscopic cholecystectomy without previous ERCP regarding postoperative hospital stay .....	48
<b>Figure 20:</b>	Comparison between laparoscopic cholecystectomy post ERCP and laparoscopic cholecystectomy without previous ERCP regarding postoperative uncontrollable bleeding during operation .....	49
<b>Figure 21:</b>	Difficulty in achieving critical view of safety due to severe adhesions in PES group.....	51
<b>Figure 22:</b>	Easy access to critical view of safety in NPES group. ....	51



# List of Abbreviations

Abb.	Full term
<i>ALT</i> .....	<i>Alanine aminotransferase</i>
<i>ASGE</i> .....	<i>American Society for Gastrointestinal Endoscopy</i>
<i>AST</i> .....	<i>Aspartate aminotransferase</i>
<i>BMI</i> .....	<i>Body mass index</i>
<i>CBD</i> .....	<i>Common bile duct</i>
<i>CHD</i> .....	<i>Common hepatic duct</i>
<i>ELC</i> .....	<i>Elective laparoscopic cholecystectomy</i>
<i>ERCP</i> .....	<i>Endoscopic retrograde cholangiopancreatography</i>
<i>ES</i> .....	<i>Endoscopic sphincterotomy</i>
<i>EUS</i> .....	<i>Endoscopic ultrasonography</i>
<i>GB</i> .....	<i>Gall bladder</i>
<i>IOC</i> .....	<i>Intraoperative cholangiography</i>
<i>LC</i> .....	<i>Laparoscopic cholecystectomy</i>
<i>MRC</i> .....	<i>Magnetic resonance cholangiography</i>
<i>TUS</i> .....	<i>Transabdominal ultrasound</i>
<i>UGI</i> .....	<i>Upper gastrointestinal</i>

## INTRODUCTION

Endoscopic retrograde cholangiopancreatography (ERCP) is indicated for those patients who have clinical features and radiologic evidence of CBD stones (*Patreson et al., 2009*).

Elective laparoscopic cholecystectomy (ELC) has an increased risk of complications after ERCP, with reports of longer operating times, increased bleeding, and higher rates of conversion to open surgery (*Chandio et al., 2009*).

Previous studies have shown that LC after ERCP is more difficult than LC for uncomplicated cholelithiasis (*Bostanci et al., 2010*).

The conversion rate after a previous ERCP has been reported to be as high as 8–55% versus lower than 5% in patients with uncomplicated disease (*Salman et al., 2009*).

The aetiology is thought to be because of disruption of the sphincter of Oddi and subsequent bacterial colonization of the biliary tract leading to inflammation and subsequent scarring of the hepatoduodenal ligament hindering dissection of Calot's triangle, This theory of reflux and bacterial colonization is strengthened by the finding that bile in patients who have undergone a sphincterotomy is colonized in approximately 60% of patients (*Reinders et al., 2011*).

Laparoscopic cholecystectomy is more difficult after a previous ERCP it might be beneficial to have these patients operated on by an experienced laparoscopic surgeon to minimize the risk of conversion and subsequent morbidity (*Ellen et al., 2013*).