

Single Versus Multi Port Laparoscopic Cholecystectomy

Thesis

Submitted for partial fulfillment of MD degree in
General Surgery

By

Islam Mohammad Noaman
M.B.B.Ch, M.Sc of general surgery

UNDER SUPERVISION OF

Prof. Dr. Moumen Mohamed Shafeek Abou Shellou
Professor of General Surgery
Faculty of Medicine, Ain Shams University

Prof. Dr. Abdul Rahman Mohamed Al Maraghi
Professor of General Surgery
Faculty of Medicine, Ain Shams University

Dr. Ahmed Mohammed Kamal
Assistant Professor of General Surgery
Faculty of Medicine, Ain Shams University

Dr. Wafi Fouad Salib
Assistant Professor of General Surgery
Faculty of medicine, Ain Shams University

Dr. Mahmoud Saad Farahat
Assistant Professor of General Surgery
Faculty of Medicine, Ain Shams University

Faculty of Medicine
Ain Shams University

2013

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

عَقْدُ الْبَيْتِ

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

Acknowledgment

Praise be to **ALLAH**, the lord of the worlds. May He grant us the wisdom to find the truth and the strength to make it endure.

I would like to thank my esteemed **Professor Doctor Moumen Abou Shellou** for his unwavering support during the preparation of this work. May his wisdom grace our practice of surgery for many years to come. Both as a mentor and a man, you are indeed a role model.

I would also like to thank my revered and honored **Professor Doctor Abdul Rahman Al Maraghi** for showing me that order and discipline are the fastest routes to success. His continued guidance has been invaluable to me in showing how to become a great surgeon. Thank you for your patience with me, my esteemed professor.

I would also like to thank assistant **Professor Doctor Ahmed Kamal** for his contribution to this work and for his contribution to the improvement of myself both as a person and a surgeon. **Doctor Ahmad**, I would like to thank you deeply and sincerely for personally assisting me with my first ever common bile duct exploration. To you I owe a massive debt of gratitude.

I must also thank assistant **Professor Doctor Wafi Fouad**, for his massive effort in bringing together this study, for his effort in the phase of data collection and analysis, and for supporting me throughout the completion of this thesis. This work would never have seen the light of day without you, and for that I thank you my mentor.

I would like to also thank Assistant **Professor Doctor Mahmoud Saad** for his immense effort in reviewing this work despite his intensely constrained schedule. Thank you for finishing the reviewing of the thesis on such short notice.

I would like to thank my wife for her unwavering support and encouragement throughout this work, all the while taking care of our newly born son almost by herself. You need to know, **Lamya**, that whatever measure of success I have achieved or will achieve is impossible without you, so thanks for being there.

I would also like to thank my parents for putting up with my ungodly schedule, and for always pushing me to be all that I can be.

Finally, I would like to thank my son, **Adam**. Though he's too young to tell the difference between his elbow and an escalator, has no notion of danger or self preservation and considers all brands of hand cream (and anything else he can get his hands on) edible, he is the best reminder that God's best and most wonderful gifts sometimes come with a ribbon of tousled hair on top.

Islam Mohammad Noaman

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List of Abbreviations

AAC	: Acute Acalculous Cholecystitis
AC	: Acute Cholecystitis
ALT	: Alanine Aminotransferase
AP	: Acute Pancreatitis
APACHE	: Acute Physiology and Chronic Health Evaluation
ASA	: American Society of Anesthesiology
BMI	: Body Mass Index
BP	: Blood Pressure
BSEP	: Bile salt export pump function
BUN	: Blood Urea Nitrogen
CBD	: Common Bile Duct
CBDS	: Common Bile Duct Stone
CCK	: Cholecystokinin
CHD	: Common Hepatic Duct
CRP	: C reactive Protein
CT	: Computed Tomography
EHL	: Electrohydraulic Lithotripsy
ELSA	: Endoscopic and Laparoscopic Society of Asia
EN	: Enteral Nutrition
E-NOTES	: Embryonic natural orifice transumbilical endoscopic surgery
ERCP	: Endoscopic Retrograde Cholangiopancreatography
ES	: Endoscopic Sphincterotomy
EST	: Endoscopic Biliary Sphincterotomy
ESWL	: Extracorporeal Shockwave Lithotripsy
EUS	: Endoscopic Ultrasound
FGF	: Fibroblast Growth Factor
HDL	: High Density Lipoproteins
HIDA	: Hepatobiliary Iminodiacetic Acid
HMG	: CoA- Hydroxymethylglutaryl coenzyme A
ICU	: Intensive Care Unit
IDUS	: Intraductal ultrasonography
IOC	: Intraoperative Cholangiography
IV	: Intravenous

List of Abbreviations (Cont.)

LC	: Laparoscopic Cholecystectomy
LDL	: Low Density Lipoproteins
LESS	: Laparoendoscopic Single Site Surgery
LESSCAR	: Laparo-Endoscopic Single Site Surgery Consortium for Assessment and Research
LFT	: Liver Function Tests
MODS	: Multiple Organ Dysfunction Syndrome
MRCP	: Magnetic Resonance Cholangiopancreatography
MRI	: Magnetic Resonance Imaging
MRSA	: Methicillin Resistant Staphylococcus Aureus
MS	: Mirizzi Syndrome
MTBE	: Methyl Tetra Butyl Ether
NOSCAR	: Natural Orifice Surgery Consortium for Assessment and Research
NOTES	: Natural Orifice Transluminal Endoscopic Surgery
NOTUS	: Natural orifice transumbilical surgery
NPO	: Nothing per Os
OCBDE	: Open Common Bile Duct Exploration
OF	: Organ Failure
OPUS	: One Port Umbilical Surgery
PAS	: Periodic acid-Schiff
PP	: Pancreatic Pseudocyst
PTC	: Percutaneous Transhepatic Cholangiography
RHA	: Right Hepatic Artery
SILS	: Single Incision Laparoscopic Surgery
SIMPLE	: Single-incision multi-port laparo endoscopic surgery
SIRS	: Systemic Inflammatory Response Syndrome
SLaPP	: Single Port Laparoscopic Procedure
SOFA	: Sequential Organ Failure Assessment
SPA	: Single Port Access
TC-CBDE	: Transcystic common bile duct exploration
TPLC	: Three Port Laparoscopic Cholecystectomy
TPN	: Total Parenteral Nutrition
TVC	: Transvaginal Cholecystectomy

List of Abbreviations (Cont.)

UDCA	: Ursodeoxycholic acid
UK	: United Kingdom
US	: Ultrasound
VRE	: Vancomycin Resistant Enterococcus

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Introduction

Cholecystectomy is the most common major abdominal procedure performed in Western Countries. Carl Langenbuch performed the first successful cholecystectomy in 1882, and for more than 100 years, it was the standard treatment for symptomatic gallstones. Open cholecystectomy was a safe and effective treatment for both acute and chronic cholecystitis (*Oddsotir et al., 2010*).

In 1987, laparoscopic cholecystectomy was introduced by Philippe Mouret in France and quickly revolutionized the treatment of gallstones. It not only supplanted open cholecystectomy, but also more or less ended attempts for non invasive management of gallstones, such as extracorporeal shock wave and bile salt therapy. Laparoscopic cholecystectomy offers a cure for gallstones with a minimally invasive procedure, minor pain and scarring, and early return to full activity. Today, laparoscopic cholecystectomy is the treatment of choice for symptomatic gallstones (*Oddsottir et al., 2010*).

Since the introduction of laparoscopic cholecystectomy as the gold standard procedure to remove the gallbladder, many surgeons have attempted to reduce the number and size of ports in laparoscopic cholecystectomy to decrease parietal trauma and improve cosmetic results (*Hirano et al., 2010*).

Laparoscopic surgery has always had a focus on minimizing surgical trauma and improving cosmesis. Whilst by definition it is less invasive than open surgery, it still requires several incisions for port placement as well as an extraction site. Each of these is painful, impacts on the final cosmetic appearance and has the potential for bleeding, inter-fascial haematoma formation, visceral injury, sub-costal nerve irritation and in the long-term, incisional hernia development.