

POSTCHOLECYSTECTOMY SYNDROME

Essay

Submitted in Partial fulfillment
for the requirements of M.Sc., degree in
General surgery

Presented by

Mahmoud Fawzy Mahmoud Abdelgawad
MB. B.Ch,

Under Supervision Of

Prof. Dr. Mohamed Abdelmonem Ibrahim

Prof. of general surgery
Faculty of medicine
Ain Shams University

Dr. Mohamed Hamdy Hamouda

Assis Prof. of general surgery
Faculty of medicine
Ain Shams University

Dr. Mohamed Saad El Nagar

Lecturer of general surgery
Faculty of medicine
Ain Shams University

Faculty Of medicine
Ain Shams University

2014

Acknowledgment

First and foremost, I must acknowledge and thank The Almighty Allah for blessing, protecting and guiding me throughout this period. I could never have accomplished this without the faith I have in the Almighty.

I like to express my deepest gratitude and sincere appreciation to **Prof. Dr. Mohamed Abdelmonem Ibrahim**; prof. of general surgery, Ain Shams faculty of medicine, for his continuous encouragement and kind advice during the conduction of this work.

I really find myself so lucky to be supervised by **Dr. Mohamed Hamdy Hamouda**; assistant Prof. of general surgery, Ain Shams faculty of medicine, for his unlimited help and wise opinions throughout this work, really further beyond anyone imagination.

My deepest respect and greetings to **Dr. Mohamed Saad El Nagar**; Lecturer of general surgery, Ain Shams faculty of medicine, for his great effort to complete this work.

It gives me great pleasure in expressing my gratitude to all those people who have supported me and had their contributions in making this essay possible.

Sincerely,

Mahmoud fawzy

This is for you, Iyad

My Darling Son;

I love you so much.

CONTENTS

Title	Page
Introduction	1
Aim of the work	3
Anatomy of biliary system	4
Physiology of biliary system	22
Pathophysiology of Postcholecystectomy syndrome	44
Management of Postcholecystectomy syndrome	79
Summary	112
References	115
Arabic summary	

ABBREVIATIONS

ALT	Alanine aminotransferase
ALP	Alkaline phosphatase
AST	Aspartate aminotransferase
IBDI	Iatrogenic bile duct injury
CBD	Common bile duct
CCK	Cholecystokinin
CHD	Common hepatic duct
CT	Computerized tomography
CVS	Critical view of safety
DGR	Duodeno-Gastric Reflux
ERCP	Endoscopic retrograde cholangiopancreatography
EBS	Endoscopic biliary sphincterotomy
EUS	Endoscopic ultrasound
FGID	Functional gastrointestinal disorder
HIDA	Hepatobiliaryiminodiacetic acid
IBDI	Iatrogenic bile duct injury
IOC	Intraoperative cholangiography
LC	Laparoscopic cholecystectomy
LCBDE	Laparoscopic Common Bile Duct Exploration
LUS	laparoscopic ultrasonography
MRCP	Magnetic resonance cholangiopancreatography
NOTES	Natural Orifice Transluminal Endoscopic Surgery
OC	open cholecystectomy
PCS	Postcholecystectomy syndrome
PCBL	Postcholecystectomy Biliary Leak
PSH	Port-site hernia
PTC	Percutaneous transhepatic cholangiography
QOL	Quality of life
RHA	Right hepatic artery

SILC	Single incision laparoscopic cholecystectomy
SO	Sphincter of Oddi
SOD	Sphincter of Oddi Dysfunction
SOM	Sphincter of Oddi manometry
TUS	Trans-abdominal Ultrasound
UDCA	Ursodeoxycholic Acid
US	Ultrasonography
VBI	Vasculobiliary injuries

LIST OF FIGURES

Figure	Title	Page
1	Segmental and sectoral anatomy of the liver.	5
2	Anatomy Of The Biliary System.	7
3	Anatomy of sphincter of Oddi.	9
4	Gallbladder anatomy.	11
5	Hepatocystic triangle and triangle of Calot.	13
6	Blood supply to the bile ducts. Element 1	16
7	Blood supply to the bile ducts. Element 2	16
8	Blood supply to the bile ducts. Element 3	16
9	Schematic diagrams demonstrating aberrant anatomy of the right posterior sectoral duct	19
10	Lipid digestion and passage to intestinal mucosa.	24
11	Subtotal cholecystectomy	31
12	Management of a cholecystocholedochal fistula	33
13	The infundibular technique of ductal identification.	38
14	The critical view of safety technique	40
15	Bismuth's classification system of BDI.	55
16	Strasberg classification system of BDI.	56
17	Classical injury of right hepatic artery.	61
18	The final stage of the classical injury of right hepatic artery.	54
19	Diagnostic and therapeutic approach to postcholecystectomy syndrome.	79
20	Technique of biliary scintigraphy for diagnosis of sphincter of Oddi dysfunction.	82

LIST OF TABLES

Table	Title	Page
1	Sphincter of Oddi pressures.	27
2	Causes of Postcholecystectomy Symptoms.	47
3	Milwaukee classification of biliary SOD.	49
4	Bismuth's classification of BDI.	55
5	Strasberg's classification (1995).	56
6	Classification of bile duct injuries according to Neuhaus and co-authors (2000).	57
7	Amsterdam Academic Medical Center's classification, BDI (1996).	57
8	Proposed definition of major and minor bile duct injuries by McMahon et al (1995)	58
9	Stewart-Way classification of laparoscopic bile duct injuries.	59
10	Hannover classification of vasculobiliary injury.	59
11	Hogan-Geenen sphincter of Oddi classification system.	84

ABSTRACT

Cholecystectomy is one of the most commonly performed surgical procedures and is the standard of care in treating symptomatic gallstones. However up to a third of patients undergoing cholecystectomy will develop recurrent and persistent abdominal pain weeks to years after surgery. In the majority of patients, symptoms are mild and short lived but 2-3% will continue to have frequent debilitating pain, a condition referred to as the postcholecystectomy syndrome (PCS). It encompasses a widely varying group of disorders; including extrabiliary, organic biliary and functional biliary diseases. Since a PCS is of a diverse and complex pathogenesis; clinicians should employ a systematic approach to diagnose and treat a range of potential etiologies. The first step in the evaluation of a PCS should be a thorough history and physical examination to rule out common treatable conditions; which may have been previously overlooked. The workup should begin with differentiating functional pain from organic biliary pain. Treatment options for postcholecystectomy syndrome depend on the suspected etiology. If the workup is negative, a multidisciplinary approach with pain management and psychiatry may be appropriate. Always, the successful key of PCS management still prevention.
