

**Visualization of biliary tree during laparoscopic  
cholecystectomy by using Methylene blue  
intracholecystic injection**

Thesis

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surgery*

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ  
قَالُوا سُبْحَانَكَ لَا عِلْمَ لَنَا إِلَّا مَا عَلَّمْتَنَا إِنَّكَ  
أَنْتَ الْعَلِيمُ الْحَكِيمُ  
صَدَقَ اللَّهُ الْعَظِيمُ

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## **Abstract**

Gallstones are an extremely common condition, arising in approximately 10% to 20% of the adult population. 90% of cholecystectomies are done laparoscopically.

The incidence of bile duct injury in laparoscopic cholecystectomy is still high. In these, many factors have been incriminated in occurrence of bile duct injuries.

*Sari et al (2005)* described a technique by which the methylene blue is injected into the gall bladder to delineate the bile ducts. This seems to be easier to perform, without any radiation exposure and less time consuming than conventional IOC

### **(Key words)**

Bile ducts, Laparoscopic cholecystectomy, methylene blue, Gallstones, injection

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## LIST OF APPREVIATIONS

ASA.....	anterior Sectional Artery
CBD.....	Common Bile Duct
ERCP.....	Endoscopic Retrograde Cholangiography
CCK.....	Cholecystochynin
CHD.....	Common Hepatic Duct
CMV.....	Cytomegalovirus
GDA.....	Gastroduodenal Artery
HIDA.....	Hepatic Iminodiacetic Acid
HJ.....	Hepatico Jejunostomy
HLA.....	Human Leukocyte Antigen
IOC.....	Intra-Operative Cholangiography
IOUS.....	Intraoperative Ultrasound
Ku.....	Kursten number
LC.....	Laparoscopic Cholecystectomy
LED.....	Light Emitting Diode
MB.....	Methylene Blue
MRCP.....	Magnetic resonance cholangiopancreatography
PSA.....	Posterior Sectional Artery
PSPD.....	Posterior Superior Pancreaticoduodenal
PTC.....	Percutaneous Transhepatic Cholangiography
RHA.....	Right Hepatic Artery

SRB.....Sulfate Reducing Bacteria  
SSRIs.....Selective Serotonin Reuptake Inhibitors  
TPN.....Total Parenteral Nutrition

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# *INTRODUCTION*

## INTRODUCTION

Gallstones are an extremely common condition, arising in approximately 10% to 20% of the adult population, and as such pose an important public health problem. It has been recognized that the treatment for symptomatic gallstones is removal of the gallbladder, not because it contains stones, but because it causes them. For over 100 years the technique of cholecystectomy evolved little and required a generous abdominal incision to provide sufficient light and exposure to perform the operation safely. In the late 1980s, with the advent of improved optics, the technique of laparoscopic cholecystectomy was introduced and widely adopted by practicing general surgeons. Overall, over 90% of cholecystectomies are now done using the minimally invasive approach (*Fried et al, 2009*).

The incidence of bile duct injury in laparoscopic cholecystectomy (LC) is still two times greater compared to classic open surgery (*Sari et al, 2005*). Many factors have been incriminated in occurrence of bile duct injuries during LC. These are mainly anatomical misidentification of main hepatic duct, right hepatic ducts or of aberrant right hepatic duct, other anatomical variations or unidentifiable anatomy, surgeon's experience, technical difficulties, poor visualization of the operative field, acute and chronic inflammation of the gall bladder and local factors such as excessive fat tissue and hemorrhage (*Ahrendt and Pitt, 2005*). However, misidentification of the anatomy and surgeon's experience seems to be preliminary (*Flum et al, 2008*).

Laparoscopic cholecystectomy can be performed safely without routine Intraoperative cholangiography (IOC). Although there has been stress on the routine use of IOC in laparoscopic cholecystectomy to delineate the extrahepatic biliary anatomy and to know the status of the common bile duct (CBD),