



Ain Shams University
Faculty of Medicine
Department of Radiodiagnosis

***Role of Ultrasonography versus Multislice CT
in Diagnosis of Biliary Obstruction***

by

Ahmed Mohamed Hamdy Hashish

M.B.B.CH

*Submitted in Partial Fulfillment of the Requirements for Degree M.Sc in
Radiodiagnosis*

Supervised By

Prof. Dr. Mervat Mohamed El Gohary

Professor of Radiodiagnosis
Faculty of Medicine
Ain Shams University

Dr. Amany Emad El Din Rady

Assistant Professor of Radiodiagnosis
Faculty of Medicine
Ain Shams University

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Ahmed Mohamed Hamdy Hashish

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Dedication

With All My Love



محمد رسول الله
To

My Mother

This work without my mother love, support and encouragement, this essay and many of my individual accomplishments, would never have materialized.

*Ahmed Mohamed Hamdy Hashish
2010*

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List of Abbreviations

<i>CBD</i>	Common bile duct
<i>CCA</i>	Cholangiocarcinoma
<i>CCC</i>	Central cholangiocarcinoma
<i>CD</i>	Common duct
<i>CECT</i>	Contrast Enhanced CT
<i>CHD</i>	Common hepatic duct
<i>Cm</i>	Centimetre
<i>CT</i>	Computed tomography
<i>EHBDs</i>	Extra hepatic biliary ducts
<i>ERCP</i>	Endoscopic retrograde Cholangiopancreato- graphy
<i>EUS</i>	Endoscopic Ultra sonography
<i>FNA</i>	Fine needle aspiration
<i>GB</i>	Gall bladder
<i>GDA</i>	Gastro-duodenal artery
<i>HCT</i>	Helical Computed Tomography
<i>HCTC</i>	Helical Computed Tomography Cholangio- graphy
<i>HU</i>	Hounsfield unit
<i>IDUS</i>	Intra ductal Ultra sonography
<i>IHBDs</i>	Intra hepatic biliary ducts
<i>IVC</i>	Inferior vena cava
<i>LHD</i>	Left hepatic duct
<i>MDCT</i>	Multi-detector computed tomography
<i>MHz</i>	Mega hertz
<i>MIP</i>	Maximum intensity projection
<i>ML</i>	Mille litre
<i>MM</i>	Mille meter
<i>MPR</i>	Multi-planar reformation
<i>MPV</i>	Mean portal vein

<i>MRC</i>	Magnetic resonance cholangiography
<i>MRCP</i>	Magnetic resonance Cholangiopancreato-graphy
<i>MRI</i>	Magnetic resonance imaging
<i>NECT</i>	Non-Contrast Enhanced CT
<i>PD</i>	Pancreatic duct
<i>PSC</i>	Primary sclerosing cholangitis
<i>PTC</i>	Percutaneous transhepatic cholangiography
<i>PV</i>	Portal vein
<i>RAD</i>	Right anterior duct
<i>RHD</i>	Right hepatic duct
<i>RPD</i>	Right posterior duct
<i>RPO</i>	Right posterior oblique
<i>Sec</i>	Second
<i>SMA</i>	Superior mesenteric artery
<i>US</i>	Ultra sonography

Introduction

In patients with biliary obstruction, determining the level and the cause of the obstruction is essential because it can be a key factor for the next step in diagnostic or therapeutic intervention (*Kim et al., 2005*).

Many imaging modalities are available for the evaluation of patients with suspected biliary obstruction. Commonly used procedures include ultrasonography (US), Computed tomography (CT), Endoscopic retrograde Cholangiopancreatography (ERCP) and percutaneous transhepatic cholangiography (PTC). The limitation of these modalities has led to increasing popularity of magnetic resonance Cholangiopancreatography (MRCP) (*Upadhyaya et al., 2006*).

Sonography remains the primary imaging modality for the initial assessment of patients with biliary obstruction. As such, it often gives the first clues to the presence of a malignant hilar obstruction. Worldwide, sonography remains an important tool in the detection and staging of these lesions. The isoechoic nature of the some tumors and their propensity to grow in an infiltrative periductal pattern make their detection and the determination of their extent difficult. Often the location of the tumor is inferred from sonograms on the basis of the level of ductal obstruction and irregularity of the walls of the duct, whereas the actual borders of the lesion are not visualized (*Khalili et al., 2003*).

Conventional CT scan does not provide adequate information about the pancreaticobiliary ductal anatomy and its abnormalities because the orientation of these ducts is not suitable for axial images. For this reason, endoscopic retrograde cholangiopancreatography (ERCP) and percutaneous transhepatic cholangiography (PTC) have been used as the most sensitive and specific diagnostic modalities and moreover these techniques have therapeutic potential as well. However, ERCP and PTC are more invasive and time-consuming compared to CT scan. As a non-invasive modality, MR cholangiopancreatography (MRCP) has recently

become a well-established diagnostic tool for assessing the pancreatobiliary tree (*Hyun et al., 2007*).

Multi-detector row CT (MDCT) is a major advance in the field of diagnostic imaging because it allows a fast table speed, and when combined with thin slices, permits data collection that is well suited for workstation analysis. Cholangiopancreatographic images can be produced using a workstation with advanced post processing techniques such as multiplanar reformations (MPR) and minimum intensity projections (MIP). The MPR images using MDCT gives rapid assessment of the pancreaticobiliary ducts along different planes without losing information about the surrounding structures. By using the MIP technique, the fluid density, as contained in the pancreatobiliary duct, is picked up from the contrast enhanced vessel together with that of the enhanced hepatic and pancreatic parenchyma. The combined use of MPR and MIP techniques significantly improves the images of the pancreatic and bile ducts and their site of confluence compared with those obtained by the axial CT (*Hyun et al., 2007*).

Aim of the work

Is to highlight the role of ultrasonography versus multislice CT in diagnosis of biliary obstruction.