Evaluation of Magnifying Narrow Band Imaging Endoscopy in Portal Hypertensive Gastropathy in Cirrhotic Patients

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List of Abbreviations

AASLD	American association for the study of liver disease.
AFI	Autofluorescence endoscopy.
APC	Argon plasma coagulation.
BE	Barretts esophagus.
bpm.	Beat per minute.
CCD	Color charge-coupled device.
CE	Capsule endoscopy.
CLE	Columnar epithelium.
CLE	Confocal laser endomicroscopy.
CLE	Confocal laser endomicroscopy.
CME	Conventional magnifying endoscopy.
CV	Collecting venules.
CVC	Computed Virtual chromoendoscopy.
EBL	Elastic banding ligation.
EGD	Eosophagogastrodeudenoscopy.
ESD	Endoscopic submucosal dissection.
EV	Esophageal Varices.
EVB	Esophageal variceal bleeding.
EVL	Endoscopic variceal ligation.
FHVP	Free hepatic venous pressure (FHVP)
FICE	Fuji Intelligent Chromo Endoscopy.
GAVE	Gastric vascular ectasia.
GERD	Gastrosophageal reflux dsease.
GOV	Gastroesophageal varices.
Hb	Hemoglobin level.
HP	Helicobacter pylori.
HPSA	Helicobacter pylori stool antigen.
HRME	High resolution magnification endoscopy.
HVPG	Hepatic venous pressure gradiant.
IGV	Isolated gastric varices.
IPCL	The intra papillary capillary loop pattern.
ISMN	Iso-sorbide mono-nitrate.
IV	Intravenous.
IVC	Inferior vena cava.

List of Abbreviations (Cont…)

LBC	Light blue crest.
ME	Magnifying endoscopy.
ME-NBI	Magnifying endoscopy with narrow band imaging.
MLP	Mosaic like pattern.
MPEC	Multipolar electrocoagulation.
MS	Microsurface structure.
MV	Microvascular architecture.
NBI	Narrow-band imaging.
Nd:YAG	Neodymium:Yttrium garnet laser.
NERD	Non-erosive reflux disease.
NO	Nitric oxide.
NRH	Nodular regenerative hyperplasia.
NSBB	Non selective β-blockers.
OBI	Optimal band imaging.
OCT	Optical coherence tomography.
OCT	Optical coherence tomography.
PC/SD	Platelet count / splenic diameter.
PHG	Portal hypertensive gastropathy.
PO	Per oral.
PVD	Portal vein diameter.
RF	Radiofrequency.
RGB	Red-green-blue.
SAAG	Serum-ascites albumin gradient.
SCC	Squamous cell carcinoma.
SECN	Sub-epithelial capillary network pattern.
TIPS	Trans-jugular intra-hepatic portosystemic shunt.
VEGF	Vascular endothelial growth factor.
WHVP	Wedged hepatic venous pressure.
WLE	White light endoscopy.

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Introduction

Portal hypertension is one of the main consequences of cirrhosis. It can result in severe complications, including bleeding of esophagogastric varices as well as spontaneous bacterial peritonitis or hepatorenal syndrome as complication of ascites ***(Dib et al., 2006).***

The gastric mucosa of patients with portal hypertension is frequently subject to many endoscopic alterations, including Portal hypertensive gastropathy (PHG) and gastric antral vascular ectasia (GAVE), and these findings may cause gastrointestinal bleeding in those patients ***(Hayashi and Saeki, 2007).***

PHG is the term used to describe the endoscopic appearance of gastric mucosa with characteristic mosaic-like pattern with or without red spots; and the pathogenesis of PHG was proven to involve venous congestion with gastric mucosal capillary dilation and these findings was difficult to be seen by conventional endoscopy ***(Hayashi and Saeki, 2007).***

The narrow band imaging system is an endoscopic imaging technique for the enhanced visualization of mucosal microscopic structure and capillaries of the superficial mucosal layer, by changing the spectral features of the illumination used in the video endoscope system ***(Tahara et al., 2009).***

The narrow band imaging system obtain its images by using narrower bands of red, blue and green filters (R/B/G), which are different from conventional red, blue and green filters ***(Tahara et al., 2009).***

In endoscopic examination, lesions are identified by changes in color and irregularity of mucosal surface ***(Tajiri et al., 2002).***

The depth of penetration into the mucosa depends on the wave length used superficial for blue band and deep for red band and intermediate for green band ***(Sambougi et al., 2000).***

Combing narrow band imaging with magnifying system allow very clear images of the capillaries of the mucosal surface and microvascular architecture of the gastric mucosa in patients with liver cirrhosis ***(Sano et al., 2004).***

Aim of the Work

To evaluate the endoscopic microvascular architecture of the gastric mucosa in patients with liver cirrhosis by using the magnifying narrow band imaging system.

Portal Hypertension

Anatomy of the Portal Venous System

The portal vein is formed by the union of superior mesenteric vein and the splenic vein just posterior to the head of pancreas at about the level of the second lumbar vertebra**.** It extends slightly to the right of the midline for a distance of 5.5-8 cm before entering the liver at porta hepatic and then divides into right and left portal branches, which enter the corresponding lobes of the liver ***(Burroughs et al., 2011).***

The superior mesenteric vein is formed by tributaries from the small intestine, right colon and head of the pancreas and irregularly from the stomach via the right gastroepiploic vein. The splenic veins (5- 15 channels) originate at splenic hilum and join near the tail of pancreas with the short gastric vessels to form the main splenic vein, which proceeds in a transverse direction. The left gastroepiploic vein joins the main splenic vein near the spleen. The inferior mesenteric vein, bringing blood from left part of the colon and rectum, usually enters its medial third. Occasionally, however, it enters the junction of superior mesenteric and splenic veins ***(Burroughs et al., 2011).***

Additional contribution to the portal venous blood flow is provided by the left gastric (coronary) vein which drains the lesser gastric curvature and the gastroesophageal junction into the proximal part of portal vein ***(Krige and Beckingham, 2001).***