MANAGEMENT OF LOWER GASTROINTESTINAL BLEEDING

An Essay
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General Surgery

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List of Abbreviations

AVMs	Arteriovenous malformations
CRST	Calcinosis, Raynaud's, Sclerodactyly, Telangectasia
CT	Computed tomography
DBE	Double-balloon enteroscopy
DCBE	Double-contrast barium enema
ECG	Electrocardiographic
EGD	Esophagogastroduodenoscopy
FOBT	Fecal occult blood test
GI	Gastrointestinal
IBD	Inflammatory bowel disease
IMA	Inferior mesenteric artery
IMV	Inferior mesenteric vein
INR	International normalized ratio
LGIB	Lower gastrointestinal bleeding
MDCT	Multidetector computed tomography
NG	Nasogastric
NOMV	Nonocclusive mesenteric vasculopathy
NSAID	Nonsteroidal anti-inflammatory drug
PEG	Polyethylene glycol
SBFT	Small bowel follow through
SMA	Superior mesenteric artery
SMV	Superior mesenteric vein
TGF-beta	Transforming growth factor-beta
U	Units

Introduction

Introduction

Lower gastrointestinal bleeding (LGIB) is defined as an abnormal intraluminal blood loss from a source distal to the Treitz ligament. Lower GI bleeding is classified under 3 groups depending on the rate of blood loss: microscopic blood loss presents as hemoccult-positive stools manifests as microcytic hypochromic anemia; melena is black tarry stools; hematochezia is the passing of red blood via the rectum (usually from the lower gastrointestinal tract, but sometimes from a briskly bleeding upper gastrointestinal source), **(Rosen, 2005).**

Occult bleeding (i.e., gastrointestinal bleeding that is not visible to the patient or physician) typically is discovered when iron deficiency anemia is detected or the result of a fecal occult blood test (FOBT) is positive. Obscure bleeding is gastrointestinal bleeding from an unknown source that persists or recurs after a negative initial evaluation (e.g., colonoscopy, esophagogastroduodenoscopy [EGD]), **(Olmos et al, 2004).**

Acute lower gastrointestinal (GI) bleeding continues to be a frequent cause of hospital admission and is a factor in hospital morbidity and mortality. Mortality rates are reportedly 10-20% and are dependent on age (more than 60y), multiorgan system disease, transfusion requirements in

excess of 5 units, need for operation, and recent stress (e.g. surgery, trauma, sepsis), **(Jeffrey, 2002).**

LGIB can be due to numerous conditions, including diverticulosis (the most common cause as many as 60% of cases), angiodysplasias, anorectal diseases, carcinomas, colitis (including infectious, ischemic, or radiation-induced forms), inflammatory bowel disease (IBD), Meckel's diverticulum, and aortoenteric fistula. In about 10-15% of cases, the cause may be proximal to the ligament of Treitz. In these cases, nasogastric tube placement is frequently needed to confirm that the upper GI tract is the source of the bleeding and these patients eventually need esophagogastroduodenoscopy (EGD) in order to obtain a more specific evaluation of the upper GI tract **(Beejay and Marcon, 2002).**

Understanding of the pathogenesis, diagnosis, and treatment of LGIB has drastically changed during the last 50 years. In the first half of the 20th century, large intestinal neoplasms were believed to be the most common cause of lower GI bleeding. In the 1950s, lower GI hemorrhage was commonly attributed to diverticulosis. In this period, surgical treatment consisted of blind segmental bowel resections, with disappointing results. Patients who underwent blind segmental bowel resection suffered from a prohibitively high rebleeding rate (up to 75%), morbidity (up to 83%), and mortality (up to 60%), **(Olds et al, 2005).**

Surgical anatomy

Surgical anatomy of the lower gastrointestinal tract

Lower gastrointestinal tract is the portion of the gut distal to the insertion of the ligament of Trietz at the superior border of the duodenojejunal curve and a part of the ascending duodenum. It includes jejunum, ileum, caecum, colon, rectum and anal canal **(Susan, 2005).**

General structural features:

The jejunum and ileum (fig. 1)**:**

In life, the length of the small intestine is very much less than the 6 or 7 m, which is measured in the cadaver, with 3-5 being more realistic measurement. There is no anatomical division between the jejunum and ileum and the arbitrary convention is that the jejunum is the proximal two-fifths and the ileum is the distal three-fifths of the small bowel **(Claire et al, 2002).**

Most often the surgeon defines a particular loop by proceeding forwards from the duodenojejunal flexure or backwards from the ileocaecal junction. However, in certain circumstances the incision may not permit this certain identification. Therefore if the bowel is small, has mesenteric fat up to the wall and no circular mucosal folds can be palpated through the wall, then it is ileum which is being held. If it is important to know the direction of the loop then the fingers can be slid inwards keeping against the

mesentery until the posterior abdominal wall is reached. If there is no twist felt then the upper portion of the loop is the proximal portion of the loop. The difference in color between the two areas is related to blood supply which is much more abundant proximally in the small bowel **(Peter and Elliot, 2002).**

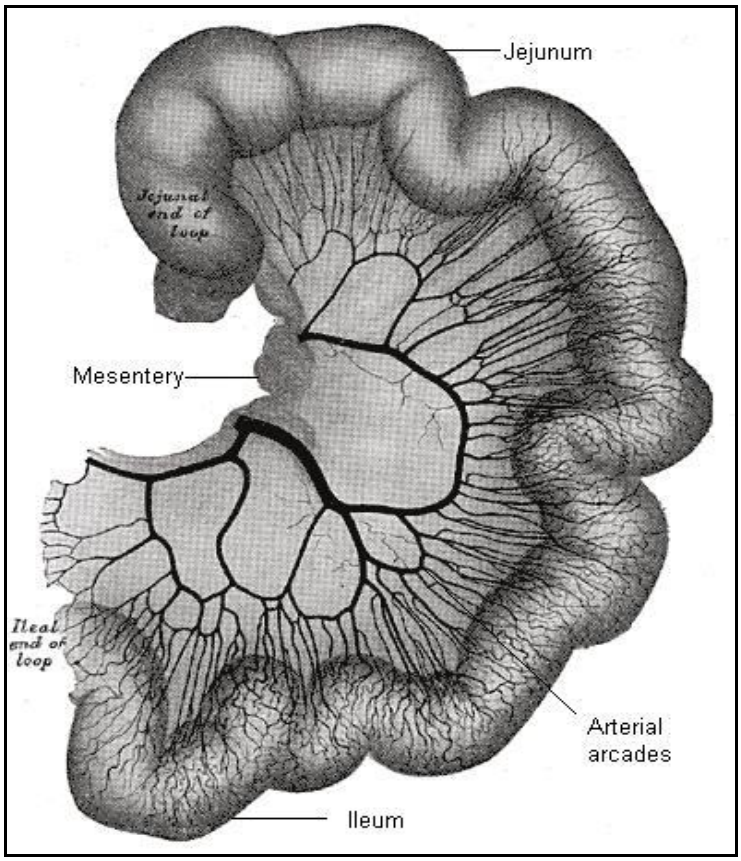

Fig (1): Jejunum and ileum **(Anne and Arthur, 2005)**

Nevertheless, if one takes the proximal part of the jejunum and compares it with the distal part of the ileum there are clear differences between the two **(Chummy, 2006).** These are outlined in the Table 1.

Table (1): Comparison of the proximal part of the jejunum with the distal part of the ileum:

Character	**jejunum**	**ileum**
• Size (diameter in cm)	3-4	2.5-3.5
• Circular mucosal folds	Prominent	Absent in terminal ileum
• Length of straight arteries (vasa recta)	Long	Short
• Vascular arcades	1-2	4-5
• Color	Pink	White
• Fat in mesentery	Does not reach bowel wall	Reaches bowel wall

(Chummy, 2006)

The small bowel has well formed serosal coat from the peritoneum and an outer longitudinal, inner circular muscle coat in common with the rest of the gastrointestinal tract. In keeping with the larger size of the jejunum, the small bowel is thicker proximally than distally. The submucosal layer is lax and allows considerable movement between the mucosa and the muscle layer, so that when the jejunum is rolled between finger and thumb and mucosa can be felt through the muscle coat like a shirt sleeve through a coat sleeve **(Claire et al, 2002).**