POST COLOSTOMY CARE

Essay

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CONTENTS
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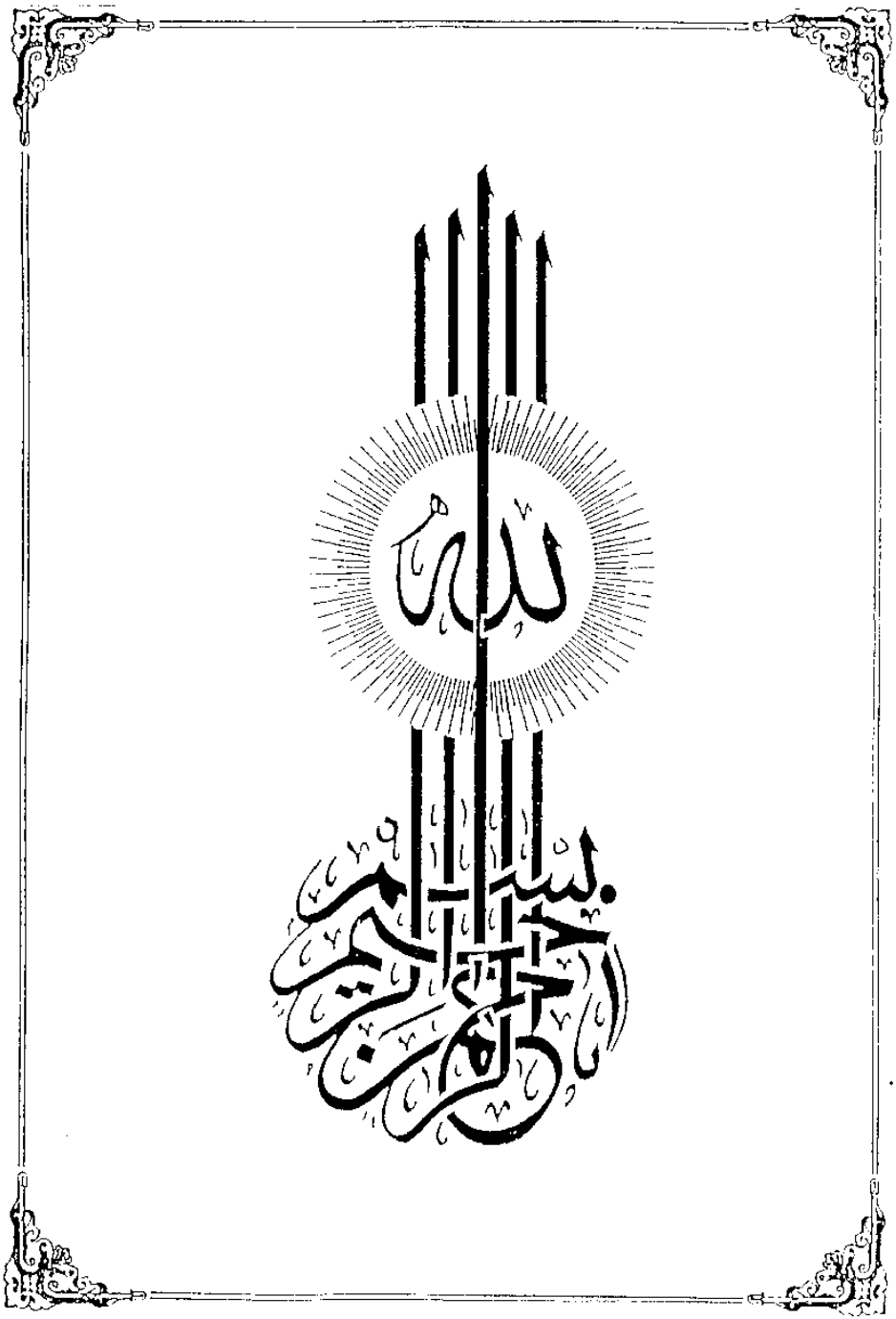

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TO MY MOTHER.

WHO SUFFERED A LOT FOR ME.

ANATOMY OF COLON

ANATOMY OF THE COLON

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The large intestine comprises the appendix, caecum, colon, rectum and anal canal. It is about 4.5 feet long. In its course it describes roughly an arch which surrounds the coils of small intestine. The large intestine is differentiated from the small gut by its large caliber, its sacculated appearence throughout most of its length, the presence of appendices epiploicae, its relative greater fixity, attachment of greater omentum to a part of it, and above all the presence of taeniae coli " abscent in the appendix and rectum " (Goligher, 1980).

THE CAECUM :

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It lies in the right iliac fossa above the lateral half of the inguinal ligament. Usually it is entirely enveloped by peritoneum but in 5 % of individuals the peritoneal covering is defecient posteriorly and the caecum rests in direct contact with the iliac fascia.

The vermiform appendix projects from the posteromedial aspect of the caecum and its tip lies about the pelvic brim, but both length and position are variable.

The level of the ileocaecal junction is accepted as an arbitary division between the caecum below and the ascending colon above. The ileocaecal junction is guarded by a valve consisting of an upper and a lower lip, which prevents regurgitation of caecal contents into the ileum (Last, 1981).

PARACAECAL FOSSAE : (Du Plessis, 1984)

Ileocolic fossa:

This is formed by a fold of peritoneum extending between the ascending colon and the terminal ileum " the ileocolic fold ". It is bounded anteriorly by the ileocolic fold containing the ileocolic vessels, posteriorly by the ileum and its mesentry, and laterally by the ascending colon. The fossa is open medially to the left.

Ileocaecal fossa:

This is formed by the ileocaecal or bloodless fold of Treves, which extends from the terminal ileum to the caecum and the mesentry of the appendix. It is bounded anteriorly and inferiorly by the ileocaecal fold, superiorly by the posterior surface of the ileum and its mesentry. and posteriorly by the mesentry of the appendix.

Retrocaecal or subcaecal fossa;

This is posterior to the caecum bounded anteriorly by the posterior surface of the caecum, laterally by the peritoneum of the right colic gutter, medially by mesentry, and posteriorly by the iliac fossa covered by parietal peritoneum. It often contains the appendix.

THE ASCENDING COLON :

It is about 15 cm in length, extends from the caecum to the hepatic flexure which lies on the lower pole of the right kidney in

contact with the inferior surface of the liver. The ascending colon posseses a serous coat in front and both sides, but posteriorly it lies in direct contact with iliacus, quadratus lumborum and the lower pole of the right kidney. Anteriorly it is in relation with coils of the ileum, right edge of the greater omentum and the anterior abdominal wall (Last, 1981).

THE TRANSEVERSE COLON:

Normally over 45cm long, extends from the hepatic to the splenic flexure in a loop that hangs down to a variable degree between these two fixed points. It is completely invested in peritoneum hanging free on the transverse mesocolon, which is attached fron the inferior pole or the right kidney across the second part of the duodenum and the pancreas to the inferior pole of the left kidney. Transverse mesocolon is a double fold of peritoneum in which the middle colic artey runs.
Behind it is related to the loops of small intestine and above it is related to the stomach. The greater omentum, hanging downwards from the transverse colon, is the continuation of the gastrocolic omentum.

The splenic flexure lies at a higher level than the hepatic flexure well up under cover of the left costal margin (Last, 1981).

THE DESCENDING COLON:

It is less than 30cm long, extends from the splenic flexure to the pelvic brim, and in its whole course it is plastered to the posterior

abdominal wall by peritoneum. It lies on the iliolumbar fascia.

It ends at the pelvic brim about 5cm above the inguinal ligament. The part lying in the left iliac fossa from the iliac crest to the pelvic brim, is sometimes called the iliac colon (Last, 1981).

THE SIGMOID COLON:

It extends from the iliac colon to the rectum. It forms a loop which varies greatly in length. It may be as short as 15cm or as long as 60 cm with the average length of 38cm. It lies mainly in the left half of the pelvic cavity. It is convex forwards and it is related to the loops of the small intestine, the bladder, the uterus and uterine adnexa It joins the rectum in front of the third piece of sacrum to the left of the midline. It is completely surrounded by peritoneum which forms the sigmoid mesocolon. This mesocolon is longer in the center and is shorter at the ends of the sigmoid colon so it enjoys a considerable range of mobility in its central portion. The base of the sigmoid mesocolon forms an inverted V-shaped attachment to the pelvic wall. The upper limb runs medially from the medial margin of the left psoas major muscle to the midline, it crosses the left ureter and left iliac vessels. The lower limb descends vertically in front of the sacrum (Goligher, 1980).

BLOOD SUPPLY OF THE COLON:

ARTERIES:

The arterial supply of the right colon-that is the caecum, ascending colon, hepatic flexure and the right third of the transeverse colon - is

derived from the superior mesenteric artery through its ileocolic, right colic and middle colic branches. The supply of the left colon is from the inferior mesenteric by means of its left colic and sigmoid branches.

As the main colic arteries proceed to the colon, they bifurcate and the resulting branches of neighbouring vessels unit to form archades about 2cm from the mesenteric border of the bowel. By means of these archades, a continuous chain of communicating vessels is formed. This is the marginal artery first described by Van Haller in 1786.

The long anastomosis of Riolan connects the left branch of the middle colic with the ascending branch of the left colic. The marginal artery connects the area of supply of the superior mesenteric artery with that of the inferior mesenteric artery.

Griffiths (1956) made a detailed study of the vascular anatomy of the distal colon. Although the vascular pattern of the colon is somewhat variable, the marginal artery was found in all cases. The middle colic artery was absent in 22% and the left colic artery absent in 6% of his series. In many cases the middle colic artery was double.

Marston (1977) and Billings & Nicholls (1984) have shown that although the marginal artery is a constant feature, the point of anastomosis between both mesenteric arteries at the splenic flexure may be critically narrow. Du Plessis (1984) reported that this occurs in about 5% of cases and ligature of the left or middle colic may thus endanger the blood supply of the splenic flexure region.

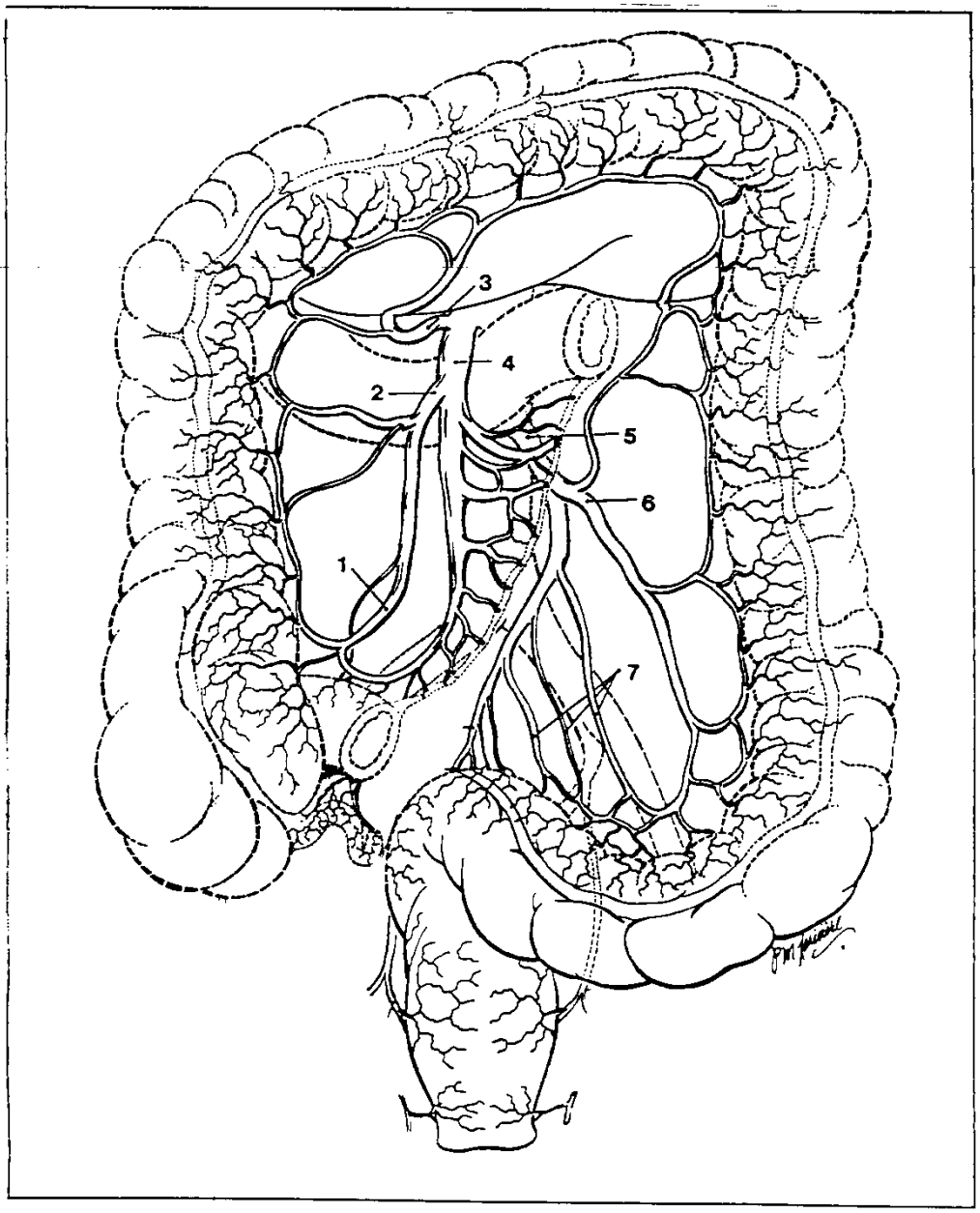

Figure 1 The arterial supply of the colon (1) ileocolic, (2) ileocolic artery giving off the right colic artery, (3) middle colic artery, (4) superior mesenteric artery, (5) inferior mesenteric artery, (6) left colic artery, (7) sigmoidal branches of the inferior mesenteric artery,

(after Ellis, 1985)

Sudek's critical point :

There was considerable controversy as regards the presence of a marginal anastomosis between the lowest sigmoid artery and the branches of the superior haemorrhoidal artery .

Sudek (1907), suggested that there was a failure at that point. Several subsequent workers such as Grifiths (1956) have demonstrated quite clearly by injection experiment that there is abundent anastomosis between the branches of the last sigmoid and those of the superior haemorrhoidal artery .

It has been shown by many surgeons in acual practice that after ligation of the inferior mesenteric artery flush with the aorta in the course of rectal excision, the blood supply through the marginal artery is perfectly adequate to nourish the left colon and no existance of this 'imaginary' point (Goligher, 1980).

The vasa recti :

The branches of the marginal artery supplying the wall of the colon are known as the vasa recti. They may be long or short ; the long ones divide into two branches to encircle the colon and lie deep to the taeniae to anastomose with one another on the antimesenteric border. The short branches arise from the marginal artery or from the long branches and supply the mesocolic two thirds of the bowel circumference. The appendices epiploicae receive small arterial twigs from the long vasa recti. It is important in tying these fatty appendages not to pull on them to avoid tying the long branch itself

with subsequent ischaemia and gangrene of the wall of the bowel (Goligher, 1980).

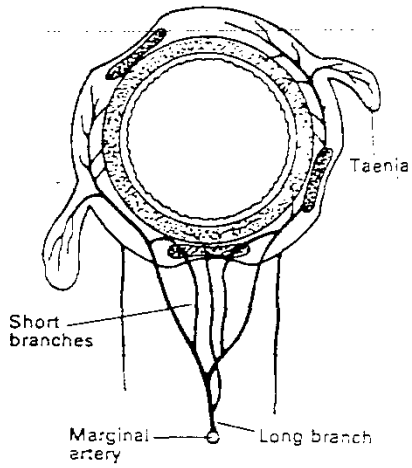

Fig 2 Diagrammatic cross section of colon and mesocolon showing the arrangement of the long and short vasa recti.

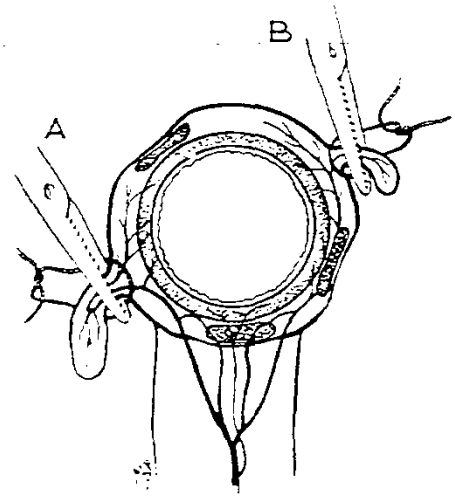

Fig. 3 Diagram to show the danger of damaging the long vasa recti in tying off appendices epiploicae. In (A) strong traction on the fatty appendage has drawn up a loop of the long colic branch which has been clamped by the artery forceps. In (B) by avoiding vigorous traction this danger has been averted.

(after Goligher, 1980)

VEINS:

They closely accompany the corresponding arteries. Those from the right colon open into the the superior mesenteric vein which lies to the right of the superior mesenteric artery, and evenually joins the splenic vein to form the portal vein benind the neck of the pancreas.

From the left colon the veins drain into the inferior mesenteric vein which lies to the left of the inferior mesenteric artery and continues

upwards for 5 to 8cm above the origin of the latter to the left of the fourth portion of the duodenum, behind the body of the pancreas to end by joining the splenic vein (Ellis, 1985).

Marginal anastomosis joining the veins draining the large intestine usually exists. There is always an excellent marginal vein in the left colon. However, in the right colon, 20% of persons have a defective marginal anastomosis between the major veins of the right colon which may cause colonic venous infarction if one of them is surgically interrupted (Du Plessis, 1984).

LYMPHATICS OF THE COLON:

The lymphatics of the colon could be considerd as being in two closely connected groups: the intramural and the extramural lymphatics.

INTRAMURAL LYMPHATICS:

They form continuous lymphatic plexuses in the submucosa and subserous layers of the bowel wall which are connected and drained into the extramural lymphatics.

EXTRAMURAL LYMPHATICS:

They consist of lymphatic channels and lymph nodes that accompany the colic blood vessels. The nodes are divided into four groups: epicolic, paracolic, intermediate and principal groups.

The epicolic nodes lie on the colon itself, the paracolic along the marginal artery between it and the colon, the intermdiate on the