

**EVALUATION OF CYTODIAGNOSIS OF THE
LOWER GASTROINTESTINAL TRACT**

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INTRODUCTION AND AIM OF THE WORK

It was Papanicolaou who stettled the solid grounds of cytologic diagnosis. Since then, trials were made all over the world to apply cytodiagnosis to the different lesions at different sites. The field of gastrointestinal cytology recived a good deal of attention, on the part of workers, long time ago. However, the reports issued showed great controversy as regards the methods used, results and validity of cytology as a diagnostic tool.

The aim of this work is to study the value of cytologic diagnosis applied to the lower gastrointestinal tract. The site was chosen because it represents a major site for diseases of the gastrointestinal tract in our country.

REVIEW OF THE LITERATURE

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ANATOMY OF THE LARGE INTESTINE

According to Boyd et al (1958), Ellis (1960), last (1972), and Morson and Dawson (1972), the following description is given:

The large intestine extends from the lower pole of the caecum to the anus. It may vary considerably in length in different subjects; The average is approximately 5 feet (150 cm). It differs from the small intestine in:

1. The transverse diameter is much greater than that of the small bowel, but like the latter diminishes continuously towards its distal end, except for the dilation known as the rectal ampulla.
2. Its longitudinal muscular layer forms three longitudinal bands called taeniae coli.
3. Since these taeniae coli are shorter than the gut to which they are attached, the colon becomes condensed into its typical sacculated shape.
4. The colon (but not the appendix, caecum or rectum), bears characteristic fat-filled peritoneal tags called appendices epiploicae scattered over its surface. These are especially numerous in the sigmoid colon.

The large intestine is divided into four parts:

1. The caecum.
2. The colon.
3. The rectum.
4. The anal canal.

I. The caecum:

The adult human caecum is an asymmetrical thin-walled sac situated in the right iliac fossa above the lateral half of the inguinal ligament. In most cases it is completely covered with peritoneum and is therefore freely mobile, but the posterior surface may be devoid of peritoneum so that it is fixed to the posterior abdominal wall. As in the rest of the colon, the longitudinal muscle of the caecum is restricted to three flat bands called taeniae, they lie one anterior, one posterior and one posterolateral all three taeniae converge on the base of the appendix. The vermiform appendix projects at the apex or lowest part of the caecum.

The relations of the caecum vary of course, with its position and the extent to which it is filled. Posteriorly it is related to the psoas and iliacus muscles with the femoral nerve between it and iliacus muscle, but if in the pelvic cavity, it

is related to the pelvic viscera e.g bladder and uterus.

When the caecum is distended, the anterior surface comes into contact with the anterior abdominal wall and can be palpated in the living subject. When empty its anterior surface is covered by coils of the small intestine. The medial surface is also related to the small intestine. The ileo-colic orifice is a transverse slit in the posteromedial wall of the caecum. The orifice of the appendix is situated about, one inch below the ileo-colic orifice.

II. The colon:

- a. The ascending colon: It is about 6 inches long, it extends from the caecum to the right colic flexure. It has usually no mesentery and is therefore relatively fixed. The upper part is covered in front by the coils of the small intestine, but its lower part may come into direct contact with the anterior abdominal wall.
- b. The right colic flexure (hepatic flexure) :
It lies in front of the lower part of the right lobe of the liver.
- c. The transverse colon: It is about 1.5 feet long. From the right colic flexure the transverse colon

forms a loop which is directed downwards and forwards and finally terminates at the left colic flexure in contact with the spleen. It lies in front of the hilum of the right kidney, the second part of the duodenum and the head of the pancreas. It is separated from the anterior abdominal wall by the anterior layers of the greater omentum. The convexity of the greater curvature of the stomach lies in its concavity, the two being connected by the gastro-colic omentum. The greater omentum hangs down from its lower convexity. The transverse colon is completely invested in peritoneum, it hangs free on the transverse mesocolon.

- d. The splenic flexure: It is higher than the right and it is in contact with the spleen, the greater curvature of the stomach, the tail of the pancreas and the anterior surface of the kidney. It is suspended from the diaphragm by the phrenico-colic ligament.
- e. The descending colon: It is about 10 inches long. It commences at the left flexure of the colon, descends on the posterior abdominal wall and crosses the left iliac fossa to become continuous with the pelvic colon at the pelvic brim. It has

a peritoneal covering except its posterior aspect, which lies on the lumbar fascia and the iliac fascia.

- f. The sigmoid (pelvic) colon: It is variable in length varying from 5-30 inches, average 15 inches. It extends from the iliac colon at the pelvic brim to the commencement of the rectum in front of the third piece of the sacrum. It is completely invested in the peritoneum and hangs free on a mesentery, the sigmoid (pelvic) mesocolon. There is no change in the gut wall between terminal sigmoid colon and upper rectum; the distinction is only of peritoneal attachment. Where there is mesentery the gut is called sigmoid. Where the mesentery ceases the gut is called rectum.

III. The Rectum:

It is about 5 inches long. It extends from the front of the third piece of the sacrum at the termination of the pelvic mesocolon to a point at the level of the apex of the prostate gland 1 to 1½ inches in front of the coccyx, at which it bends sharply backwards to become continuous with the anal canal. The rectum is moulded to the concavity of the sacrum and coccyx. At its junction with the anal canal it is

dilated to form the ampulla. The peritoneum covers the front and sides of the upper third of the rectum and the front of the middle third. The lower third is devoid of peritoneum.

IV. Anal canal:

It is about $1\frac{1}{2}$ inches long. It is a short canal connecting the rectum to the exterior acting mainly as a sphincter controlling the defaecation process. It is a slit-like canal when empty, but during the passage of the faeces it may become greatly distended. Laterally it is separated from the fat of the ischio-rectal fossa by the levator ani muscle and the external sphincter. Anteriorly, in the male, the canal is separated from the membranous urethra by the perineal body, while in the female it is related to the perineal body and the lower part of the vagina, posteriorly, it is related in both sexes to the ano-coccygeal body. For the greater part of its length the anal canal is surrounded by sphincteric muscles which control the mechanism of defaecation; The internal involuntary and external voluntary sphincter.

Blood supply of the large intestine:

Arterial supply: The large intestine is supplied

almost entirely by branches from the superior and inferior mesenteric arteries, except for the lower part of the rectum which receives additional branches from the internal iliac artery. The caecum, with the appendix, the ascending colon and the right or proximal two-thirds of the transverse colon, receive their arterial supply from branches of the superior mesenteric artery. The inferior mesenteric artery supplies the parts derived from the hind gut, viz. The distal third of the transverse colon, the descending and pelvic colon and the rectum. The inferior rectal artery supplies the anal canal. This artery terminates in the inferior haemorrhoidal plexus.

Venous return: Veins from the right colon open into superior mesenteric vein which lies to the right of the superior mesenteric artery and eventually joins the splenic vein to form the portal vein behind the neck of the pancreas. From the left colon veins drain into the inferior mesenteric and portal system and the middle and inferior haemorrhoidals which enter the systemic venous circulation via the internal iliac veins.

HISTOLOGY OF THE LARGE INTESTINE

According to Ham and Cormack (1979), the large intestine has four coats:

1. Mucous coat.
2. Submucous coat.
3. Muscular coat.
4. Serous coat.

I. The mucous membrane: It differs from that of the small intestine in several respects. It has no villi, it is thicker; hence the crypts of lieberkühn are deeper. The crypts contain no paneth cells (except in the young), but they usually have more goblet cells. The proportion of goblet cells increases from the beginning of the colon to the rectum. The ordinary surface epithelial cells have striated borders like those of the small intestine. Also enteroendocrine cells are present. At the base of the crypts in the colon and rectum, there are immature-looking cells believed to function as stem cells for the epithelium.

Crypts of lieberkühn are not found in the ano-rectal canal at the junction of rectal and anal epithelium. The stratified squamous anal epithelium is not keratinized and extends over about 2 cm. At