MANAGEMENT OF COLORECTAL CANCER

An Essay Submitted for the Partial Fulfilment of

the Master Degree in General Surgery

Ain Shams University

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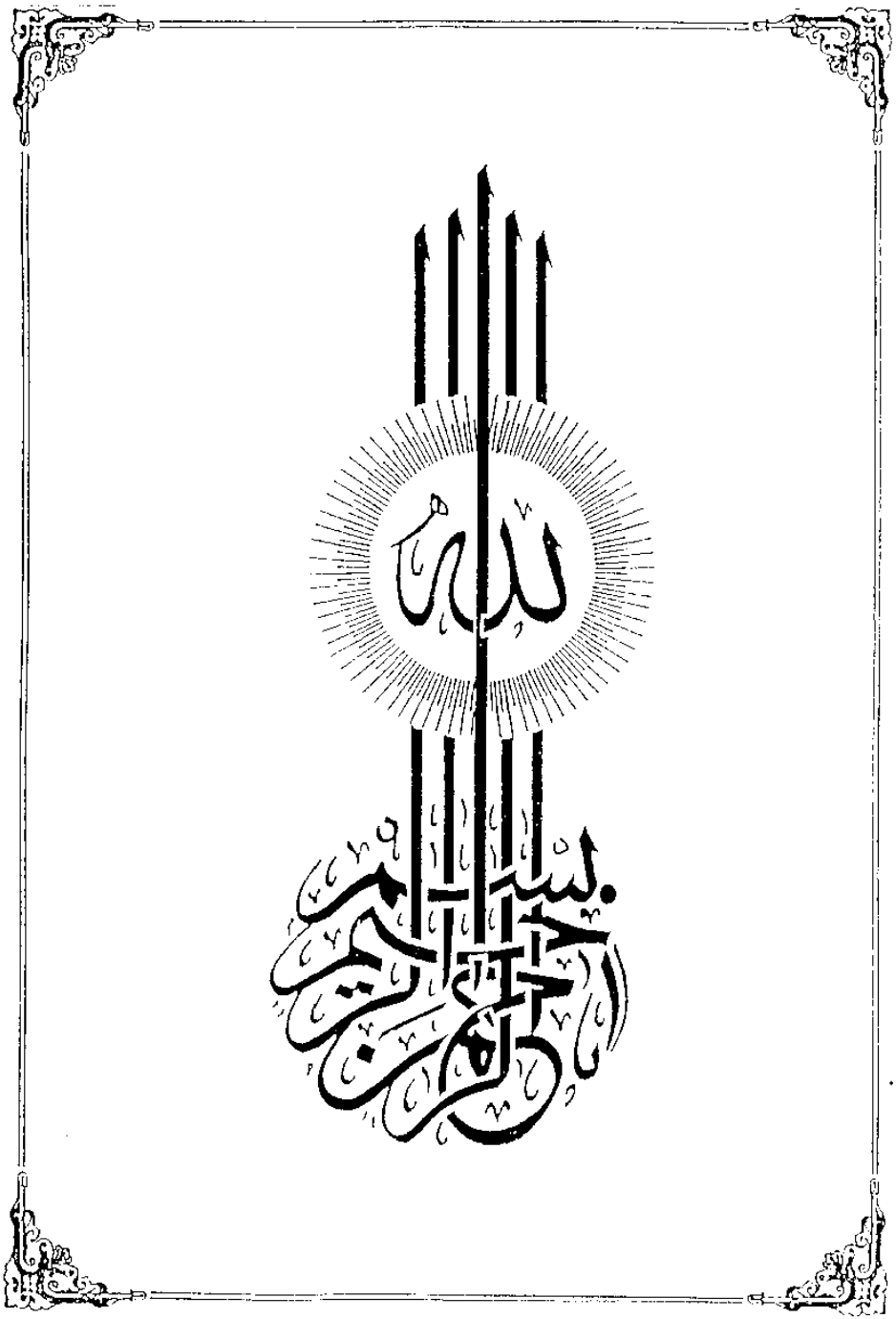
1985

ACKNOWLEDGEMENT

I would like to express my sincere gratitude to Prof. Dr. **Hamdy M. Abdalla,** Prof. of General Surgery, Faculty of Medicine, Ain Shams University, for his kind approval to register and supervise this work, and his constant advice and encouragement.

Help offered by Dr. **Reda Abdel Tawab,** Lecturer of General Surgery, Faculty of Medicine, Ain Shams University, is greatly appreciated.

Also, I greatly appreciate the efforts done by many members of Section (6) Surg. at El Demerdash Hospital in leading profitable discussions, collecting references and revision of the work.



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INTRODUCTION

Cancer of the colon and rectum is one of the world's major health problems. It competes with the lung as the leading sites of cancer in America and Western Europe. The frequency with which cancer of the colon occurs makes some knowledge of its course and therapy mandatory for all physicians.

Colorectal cancer is not an early symptomatizing disease and even its early symptoms are so familiar to the patient that he easily and commonly attributes them to a benign lesion rather than to a malignant one. The ease with which the proper diagnosis can be made in most instances and the significant effects that screening programmes and presymptomatic diagnosis have on mortality rates emphasize even further the importance to every physician of being on the lookout for this disease.

It is long known that cancer of the colon and rectum is a disease to be treated by surgical resection. However, revival of some old surgical procedures and appearance of new modalities other than surgery that proved helpful as an adjuvant to surgery or even compete with surgery as the only line of treatment entailed selectionof this subject as an interesting one.

ANATOMY

ANATOMY OF THE COLON, RECTUM AND ANAL CANAL

The large intestine comprises the caecum and appendix, colon, rectum and anal canal. It is about 135 cm inlength. Its calibre diminishes gradually as it is traced distally, then it dilates again in the lowermost part of the rectum which ends in the anal canal. General disposition and relations depend on the built of the individual, so that the transverse colon tends to occupy a horizontal position in men of broad built and it becomes more dependent in slim individuals. The large gut is differentiated from the small gut by its larger caliber, its sacculated appearance throughout most of its length, the presence of appendices epiploicae, its relative greater fixity, attachment of greater omentum to part of it and above all the presence of tenia coli (absent in the appendix and rectum).

The caecum lies in the right iliac fossa above the lateral half of the inguinal ligament. The caecum is enveloped by peritoneum. Posteriorly, the peritoneal covering is deficient in about 5 % of individuals, and the caecum rests in direct contact with the fascia covering the iliacus muscle. The vermiform appendix projects from the lowermost part of the caecum. The ileum joins the caecum on the medial and posterior aspect. The ascending

colon is about 15 cm inlength. It is covered by peritoneum on its anterior, lateral and medial surfaces. Posteriorly it lies in direct contact with iliacus muscle, quadratus lumborum, the aponeurotic origin of the transversus abdominis and the lower pole of the right kidney. Anteriorly, it is related to coils of the ileum, right edge of greater omentum and anterior abdominal parietes (Goligher, 1980).

The hepatic flexure lies just below the right lobe of the liver and is slightly overlapped by it. The hepatic flexure lies behind the peritoneum of the posterior abdominal wall and in front of the lower part of the right kidney.

The transverse colon is about 45 cm in length. The first 10 cm are closely applied to the front of the right kidney, the second part of the duodenum and the head of the pancreas behind the peritoneum of the posterior abdominal wall. The remainder is completely invested by peritoneum and connected posterosuperiorly to the lower border of the pancreas by the transverse mesocolon. This part lies below the stomach and lower pole of the spleen at extreme left. The duodenojejunal flexure and loops of small bowel lie behind this part. The greater omentum is hanging down from the greater curve of the stomach in front of the transverse colon, then ascends in front of the transverse colon to which it

is loosely attached as well as to the upper surface of the transverse mesocolon (Last, 1978).

The splenic flexure is a bent between the left end of the transverse colon and the descending colon. The splenic flexure forms a more acute angle than the hepatic flexure. It lies at a higher level and more posterior plane under cover of the ribs. The splenic flexure is covered with peritoneum in front. Posteriorly, it is in direct contact with the outer border of the middle of the left kidney. The phrenico colic ligament connects it laterally to the diaphragm (Goligher, 1980).

The descending and iliac colon extend from the splenic flexure to the pelvic brim. The part which extends from the splenic flexure to the iliac crest is called the descending colon. It is about 20 cm inlength. It is covered by the posterior parietal peritoneum. It rests directly against the left kidney, left quadratus lumborum and transversus abdominis muscle. The part which extends from the level of the iliac crest to the pelvic brim or to the medial border of the psoas major is called the iliac colon. It is about 10 cm in length and has a complete covering of peritoneum and a short mesocolon which connects its lateral aspect to the posterior parietal peritoneum of the left iliac fossa (Last, 1978). Almost invariably the lateral aspect of this part of the colon and its related

mesocolon is adherent to the posterior parietal peritoneum of the left iliac fossa (Goligher, 1980).

The sigmoid colon extends from the lower end of the iliac colon to the rectum. It forms a loop. It varies greatly in length, may be as short as 15 cm or as long as 60 cm. The average length is 38 cm. It lies mainly in the left half of the pelvic cavity. It is convex forwards and is related to loops of the small intestine, the bladder, the uterus and uterine adenexa. It joins the rectum in front of the third sacral piece slightly to the left of the midline. It is completely surrounded by peritoneum which forms the sigmoid mesocolon. This mesocolon is longer in the centre 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 (Last, 1978).

The rectum extends from the rectosigmoid junction in front of the third sacral piece to the anal canal. It is about 13 - 15 cm in length. The rectosigmoid junction is marked by a distinct flexure in cases with a fairly long loop of sigmoid colon which hangs down

into the pelvis. It turns sharply downwards then downwards and forwards. It is closely applied to the concavity of the sacrum and coccyx. It ends 2 - 3 cm in front of and below the tip of the coccyx, then, it turns abruptly downwards and backwards passing through the levator ani muscle becoming the anal canal (Last, 1978 and Goligher, 1980). The upper third or so of the rectum has a complete peritoneal covering except for a thin strip posteriorly where the peritoneum is reflected off it as the two leaves of a thick short mesorectum. As the rectum descends into the pelvis the mesorectum becomes broader and shorter and the peritoneum sweeps off at the sides of the rectum. The uncovered posterior portion becomes progressively wider until only the anterior aspect has a peritoneal coat. Finally, it becomes reflected forwards at the bottom of the rectovesical or rectouterine pouch on to the back of the seminal vesicles and bladder in the male, or of vagina and uterus in the female. The lower third or so of the rectum is left without any peritoneal covering. In the upper rectum the peritoneum is closely applied to the underlying muscle coat. The attachment becomes gradually looser lower down as a result of the inter-position of a layer of fatty tissue. The relative proportions of the intraperitoneal and extraperitoneal rectum vary considerably. This is because the peritoneal reflexion of the rectovesical or rectouterine pouch shows a considerable individual variation. This reflection is slightly lower in the female than in the male.

On the average, it lies 8 - 9 cm from the perineal skin in the male and 5 - 8 cm in the female (Goligher, 1980). Usually, the upper one third to one half of the rectum lies intraperitoneally (Last, 1978).

The lateral ligaments of the rectum are a part of the pelvic fascia which lies on either side of the rectum below the pelvic peritoneum. The lateral ligament on each side consists of the fibrous elements of the pelvic fascia. It connects the parietal pelvic fascia on the sidewall of the pelvis with the rectum. It is roughly triangular in shape, the base of which lies on the pelvic sidewall and the apex joins to the side of the rectum. The lateral ligament contains the middle hemorrhoidal artery and the branches of the pelvic plexus. Posteriorly, there are two sheets of fascia. The fascia propria or fascial capsule is a part of the visceral pelvic fascia and forms a thin layer of fascia covering the fat, vessels and lymph nodes on the back of the rectum. The fascia of Waldeyer is much stronger and tougher and is a specially thickened part of the parietal pelvic fascia. It covers the sacrum and coccyx and extends downwards and forwards on the upper aspect of the anococcygeal raphe where it fuses with the fascia propria of the rectum at the ano-rectal junction (Goligher, 1980). In the course of rectal excision, the Waldeyer fascia should not be stripped from the anterior surface of the sacrum because this may injure the

middle sacral vessels which lie between this fascia and the sacrum. Instead, the plane between the fascia propria and Waldeyer fascia should be followed (Goligher, 1980). Anteriorly, the Denonvillier's fascia covers the anterior aspect of the extraperitoneal rectum. It extends from the anterior peritoneal reflection above to the superior fascia of the triangular ligament below. Denonvillier's fascia continues laterally with the front of the lateral ligaments. It intervenes between the rectum behind and the prostate and seminal vesicles infront in male or vagina infemale. The fascia is more adherent to the rectum so that it is more convenient to excise it with the rectum in the course of retal excision then to cut it transversely at a more lower plane (Goligher, 1980). Anteriorly, in the male the rectum is related to the prostate, seminal vesicles, vasa diferentia, ureters and the bladder wall. These structures are related to the extraperitoneal part of the rectum. The intraperitoneal part is related to the upper parts of the seminal vesicles and the urinary bladder across the rectovesical pouch. It lies in direct contact with loops of small gut and possibly the sigmoid colon. In females, the posterior vaginal wall lies immediately anterior to the extraperitoneal part of the rectum. The intraperitoneal rectum is related to the upper part of the vagina and the uterus across the Douglas pouch which is occupied by coils of small gut, the ovaries, uterine tubes and the sigmoid colon. Posteriorly the rectum is related to the sacrum and coccyx, the

levator ani muscles, the left and sometimes the right coccygeus muscle, the middle sacral vessels and the roots of sacral plexus on either side. Laterally, the intraperitoneal rectum is related to loops of small intestine, uterine appendages and the sigmoid colon. The ureter, iliac vessels and the side wall of the pelvis are separated from the rectum by the fascia of the lateral ligament. The levator ani muscle lies closely lateral to the rectum at a still lower level and is separated to some extent by the lower part of the lateral ligament.

The rectum descends downwards, then downwards and forwards closely applied to the concavity of the sacrum and coccyx, then it turns downwards and backwards passing through the levator ani to become the anal canal.

The rectum describes three lateral curves, the upper and lower are convex to the right and the middle is convex to the left. The infolding of the mucosa on the concave side of each curve forms a valve. Thus the upper and lower valves lie on the left side and the middle valve lies on the right side. The middle valve is the most prominent and it lies at nearly the same level of the anterior peritoneal reflection. The lumen of the rectum below the peritoneal reflection is very wide and this dilated part is known as the rectal ampulla (Goligher, 1980).