SURGICAL MANAGEMENT OF THE PRIMARY MALIGNANT COLORECTAL TUMOURS

THESIS

SUBMITTED IN PARTIAL FULFILMENT

FOR THE MASTER DEGREE OF

GENERAL SURGERY

BY

FAWZY MOHAMED TAWFIK NASSR

M.B., B.Ch.

SUPERVISED BY

PROF. Dr. SHAMEL ABDALLA ALI

PROFESSOR OF SURGERY

AIN SHAMS UNIVERSITY

FACULTY OF MEDICINE

AIN SHAMS UNIVERSITY

1983

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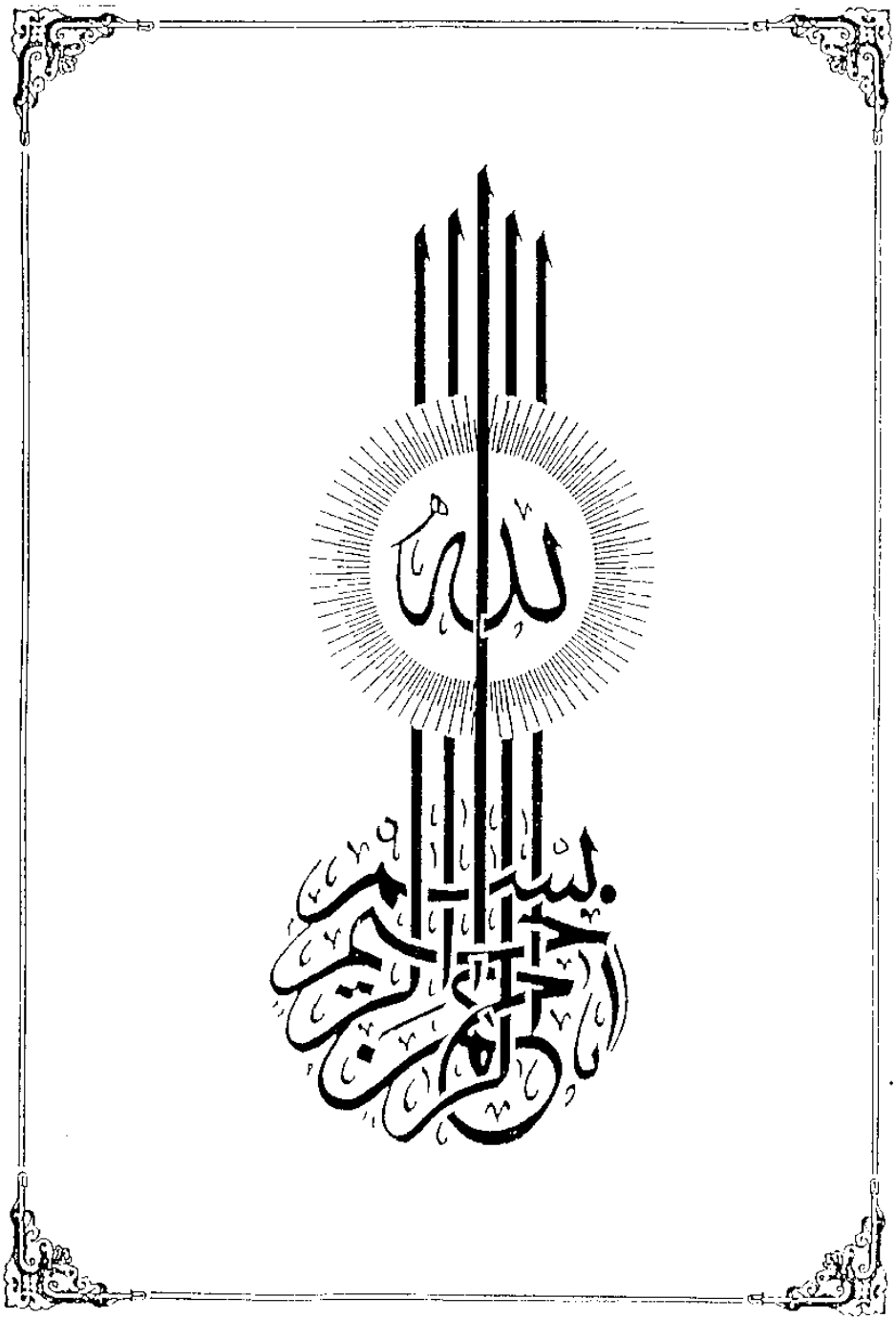

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ACKNOWLEDGEMENT

I wish to express my sincere gratitude to Professor Dr. Shamel Abdalla Ali, Professor of Surgery, Ain Shams University, for his kind approval to register and subject of this thesis and his continuous advice and close supervision.

I would also like to thank Dr. Alaa Abdallah for his help and kind concern.

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INTRODUCTION

Cancer of the colon and rectum is one of the commonest forms of malignant disease in Europeans. It is relatively rare in coloured races. In Britain it is about 50 % more common than breast cancer, and ranks equal in frequency with cancer of the stomach. It is only exceeded by cancer of the lung. In rare cases it develops as a sequel to ulcerative colitis or to polyposis coli. There is an intermediate relationship to other types of adenomata. In majority of cases no aetiological factor can be demonstrated. Rarely there is a familial incidence.

This thesis involves the surgical anatomy of the large bowel, physiology, pathology, diagnosis and surgical treatment. It discuses the various lines of surgical treatment. The usual operations of the colorectal cancer are mentioned. The modern trends in the surgical treatment of cancer rectum are discussed, and the relating problems are reviewed. Finally, the recurrent disease and prognostic factors are also reviewed.

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ANATOMY

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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 in length. The calibre of the large gut diminishes, gradually, as it is traced distally. The calibre again becomes more dilated in the lower most part of the rectum just above the contracted anal canal. General disposition and relations depend on the build of the individual. The transverse colon tends to occupy a horizontal position, in men of sthenic type and broad build, and in slim women it becomes very dependent (Goligher, 1980).

ANATOMY OF THE COLON

The caecum lies in the right iliac fossa above the lateral half of the inguinal ligament. The caecum is enveloped by the peritoneum. Posteriorly, the peritoneal covering is deficient in about 5% of individuals, and the caecum rests in direct contact with the fascia overlying the iliacus muscle. The

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vermiform appendix projects from the lower most part of the caecum. The ileum joins the caecum on the medial and posterior aspect, the ileo-caecal valve is guarded by an upper and lower semilunar lips. The two lips are prlonged forward and backward on the caecal wall as franula (Last, 1977 and Goligher, 1980).

The ascending colon is about 15 cm in length. It is covered by the peritoneum on its anterior, lateral and medial surfaces. Posteriorly, it lies in direct contact with iliacus, the quadratus lumborum and the aponeurotic origin of the transversus abdominis muscle and to the lower pole of the right kidney at higher level. Anteriorly, it is related to coils of the ileum, right edge of greater omentum and anterior abdominal parietes (Last, 1977 and Goligher, 1980).

The hepatic flexure lies just below the right lobe of the liver, and slightly overlapped by it. The hepatic flexure lies behind the peritoneum of the posterior abdominal wall, and in front of lower part of the right kidney (Goligher, 1980).

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The transverse colon is about 45 cm in length in most subjects. 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 posterior abdominal wall. The remainder is completely invested by the 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 duodeno-jegunal 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 transverse colon, then ascends in front of the transverse colon. The greater omentum is loosely attached to the transverse colon and to the upper surface of transverse mesocolon (Last, 1977 and Goligher, 1980).

The splenic flexure is a bend between the left end of the transverse colon and the descending colon. The splenic flexure forms a much acute angle than the hepatic flexure. It lies at a higher level and more posterior plane under the cover of the ribs.

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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 splenic flexure to the iliac crest may be called the descending colon. It is about 20 cm in length. 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 muscle is called the iliac colon. It is about 10 cm in length, and has a complete covering of peritoneum. This iliac colon has a short mesocolon, which connects the lateral aspect of the iliac colon to the posterior parietal peritoneum of the left iliac fossa (Last, 1977 and Goligher, 1980).

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The sigmoid colon extends from the lower end of the iliac colon to the rectum. It forms a loop. The sigmoid colon varies greatly in length. It is only 13-15 cm in length in some cases, and is about 60 cm in length in other cases. On the average it is about 38 cm in length. The sigmoid colon lies mainly in the left half of the pelvic cavity. It is convex forward, and is related to loops of small intestine and usually the bladder or uterus and uterine adenxa. The sigmoid joins the rectum in front of 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 movement 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, 1977 and Goligher, 1980).

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RECTUM

It 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 rectum begins from the rectosigmoid junction, which is marked by a distinct flexure in long hanged colon. It turns sharply downwards then turns downward and forward. It is closely applied to the concavity of the sacrum and coccyx. The rectum ends 2-3 cm in front of and below the tip of the coccyx. It is turned abruptly downward and backward by passing through the levator muscles and becomes the anal canal (Last, 1977 and Goligher, 1980).

The relation of the pelvic peritoneum to the rectum is of a considerable surgical importance. The upper third or so of the rectum has a complete peritoneal investment except for a thin strip posteriorly, where the peritoneum is reflected off it as the two leaves of the thick short mesorectum. As the rectum descends into the pelvis the mesorectum becomes broader and shorter, and the peritoneum sweeps off, at

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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 interposition of a layer of fatty tissue. This fatty tissue is naturally thicker in obese subjects. The intraperitoneal and extraperitoneal parts of the rectum are separated by the anterior and oblique running lateral peritoneal reflections. The relative proportions of the intraperitoneal and extraperitoneal rectum vary considerably. Usually the upper one-half or one - third of the rectum lies in the intraperitoneal covered segment (Gunningham, 1968; Last 1977 and Goligher 1980).

The peritoneal reflection shows a considerable individual variation, and is also slightly lower

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in the female than the male. On the average the anterior peritoneal reflection lies about 8 - 9 cm from the perineal skin in the male and 5 - 8 cm in the female. In women with complete rectal prolapse the rectovaginal pouch protrudes into the prolapse (Ewing, 1952).

The Fascial Relations of the Rectum:

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 one on each side consists of the fibrous elements of the pelvic fascia. It connects the parietal pelvic fascia on the side wall of the pelvis with the rectum. It is roughly triangular in shape. The base lies on the pelvic side wall, and the apex joins the side of the rectum. The lateral ligament contains the middle haemorrhoidal artery and the branches of the pelvic plexus. Posteriorly, there are two sheets of fascia, which are related to the posterior aspect of the extraperitoneal part of the rectum. 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,

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