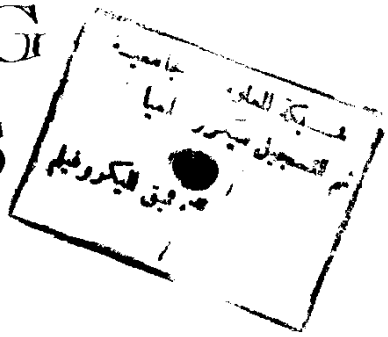
ROLE OF RADIOLOGY AND IMAGING MODALITIES IN THE DIAGNOSIS OF RECTAL CARCINOMA



Essay Presented

BY

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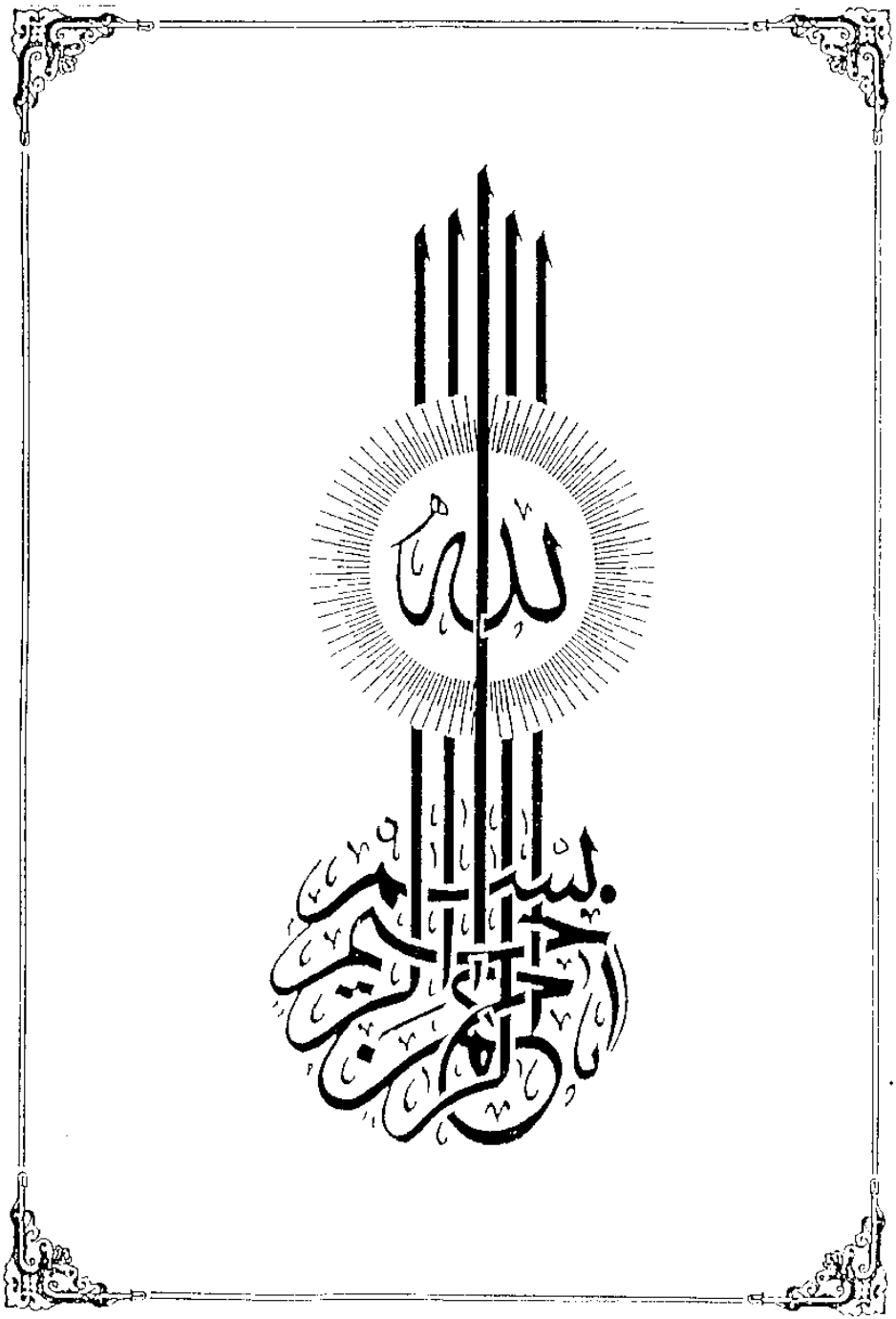

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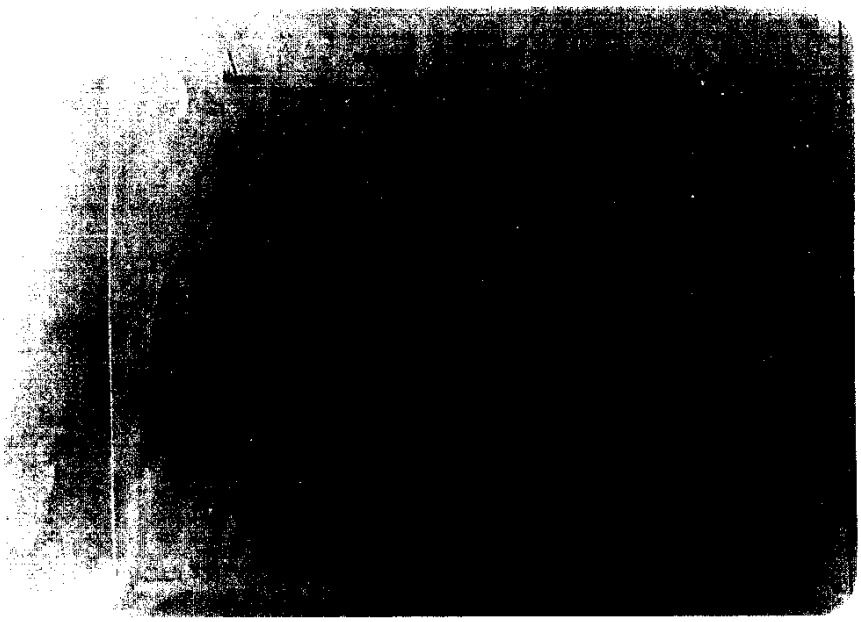

Fig. (1) Posterior half of a coronal section of the pelvis. *(After Last 1984).*

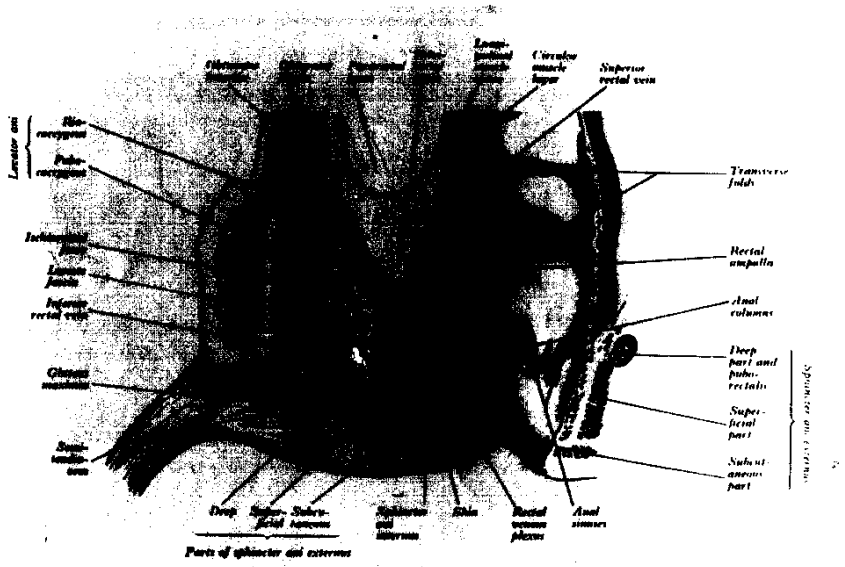

Fig. (2) Coronal section of the rectum and anal canal and the adjacent structures. *(After Williams & Warwick 1989).*

ANATOMY OF THE RECTUM AS DISCUSSED BY LAST (1984)

The Latin word "rectus" means straight. The rectum was originally named in monkeys in which it is straight, but the human rectum appears to be misnamed. Apart from following the posterior concavity of the sacrum and coccyx, it shows three slight lateral curves or flexures that are most prominent when the viscus is distended: upper and lower curves convex to the right and a middle curve convex to the left, the result being that the middle part appears to bulge to the left. The lowest part is slightly dilated as the rectal ampulla. (Fig. 1). Corresponding to the three curves seen externally, there are three sickle-shaped transverse rectal folds, formerly called rectal valves (of Houston) that project into the lumen. (Fig. 2). They are produced by the circular muscle of the wall and are not confined merely to the mucous membrane. Their purpose is not clear, but they may be concerned in the separation of flatus from the faecal mass, giving shelf-like support while allowing flatus to pass.

The rectum which is about 12 cm (5 inches) long, is continuous with the sigmoid colon at the level of the third piece of the sacrum, the junction being at the lower end of the sigmoid mesocolon, with no change in structure. The

distinction is merely a matter of peritoneal attachments; where there is a mesocolon the gut is called sigmoid, where there is no mesentery it is called rectum. It descends along the sacrococcygeal concavity, with an anteroposterior curve, the sacral flexure. It thus curves down and back, then downwards, and finally down and forwards to join the anal canal by passing through the pelvic diaphragm. Fig (3).

The anorectal junction is 2-3 cm in front of and slightly below the coccygeal tip. From this level (in males opposite the apex of the prostate). The anal canal passes down and backwards from the lower end of the rectum, this backward bend of the gut being termed the perineal flexure of the rectum *(Williams & Warwick, 1989)*. At the anorectal junction the muscle coat of rectum is replaced by anal sphincters which is slung in the U-Loop of puborectalis. It lies 3 cm above the cutaneous margin of the anus. The anal canal runs from the termination of the rectum to the anal orifice in the perineum. (Fig. 4 a, b).

The three taeniae of the large intestine, having broadened out over the sigmoid colon, come together over the rectum to invest it in a complete outer layer of longitudinal muscle, so there are no sacculations as in the colon, and also there are no appendices epiploicae.

The rectum possesses no mesentery. Peritoneum covers the upper third of the rectum at the front and the sides, and the middle third only at the front, the lower third is below the level of the peritoneum which is reflected forwards on the upper part of the bladder in the male. (Fig 3) or upper vagina to form the rectovesical pouch or recto uterine pouch (of Douglas) (Fig 5). These pouches form the lowest parts of the peritoneal cavity, and being 7.5 and 5.5 cm from the anal margins in the male and female respectively are within reach of the fingertip on rectal examination. (Fig 6). They are normally occupied by coils of small intestine or sigmoid colon which also lie in the pararectal fossae on either side of the rectum.

In front of the rectovesical pouch is the upper part of the base of the bladder and the tips of the seminal vesicles. Below the level of the pouch are the rest of the bladder base and seminal vesicles, the prostate, and the ends of each ureter and ductus deferens (Fig. 7,8) A condensation of connective tissue, the rectovesical fascia (of Denonvilliers) intervenes between this part of the rectum and the structures in front of it. It provides a firm barrier for at least the initial stages of cancerous spread.