PROLAPSE OF THE RECTUM

ESSAY

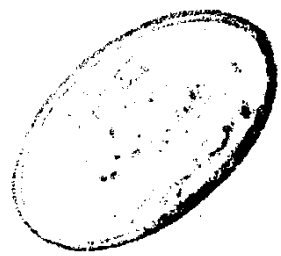
SUBMITTED IN PARTIAL FULFILMENT

OF THE MASTER DEGREE IN GENERAL SURGERY

BY

RAOUF FOUAD KHALIL KERDAHI

M.B., B.Ch., Ain Shams University



UNDER THE SUPERVISION OF

Prof. Dr. **M. SAMIR ABOU ZEID**

Prof. of General Surgery

Ain Shams University

Dr. **ALAA ELDIN ABDALLA**

Lecturer of General Surgery

Ain Shams University

1986

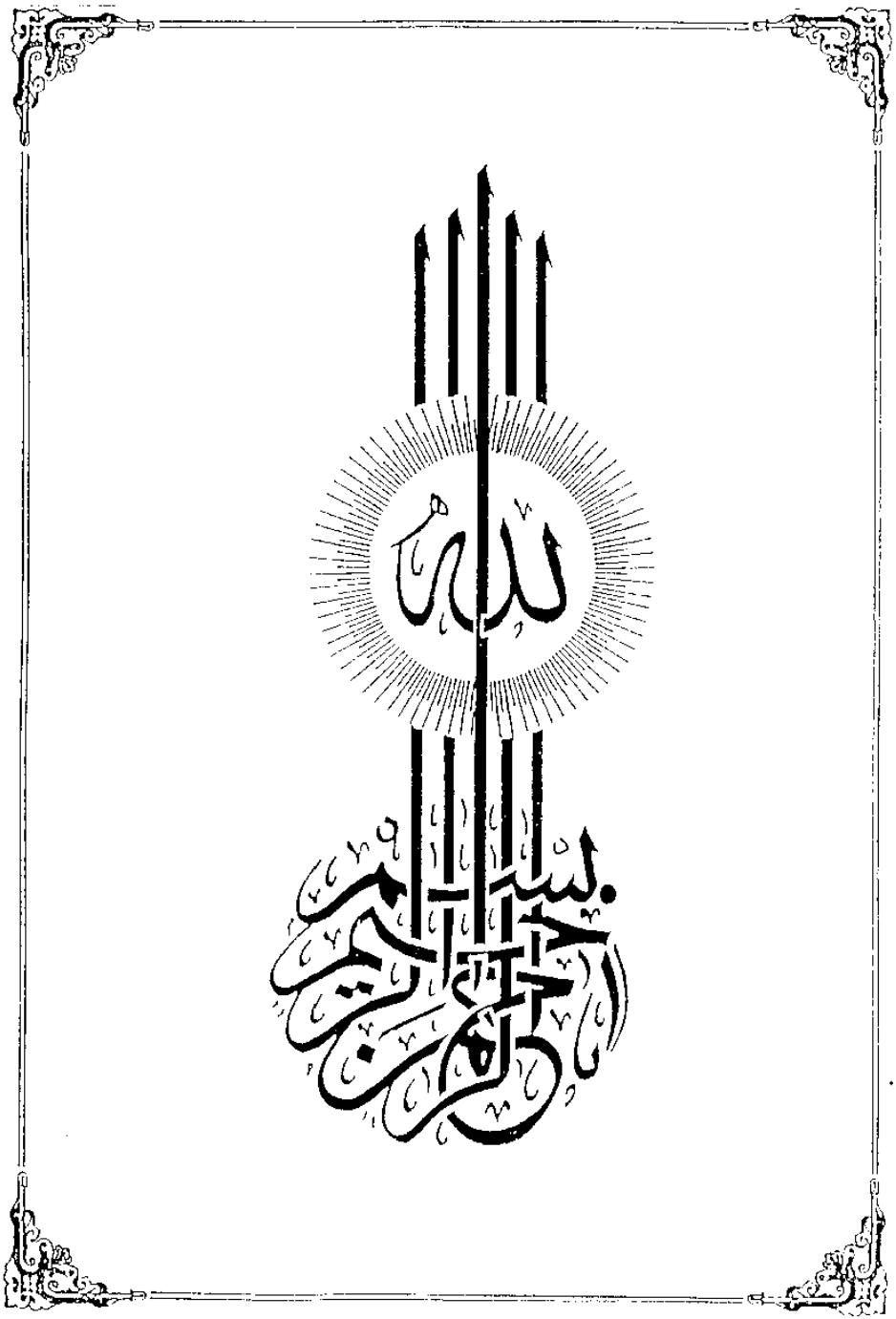
ACKNOWLEDGEMENT

I wish to acknowledge my deepest gratitude and thanks to Professor Dr. M. Samir Abou Zeid who encouraged and inspired me, who gave his private time willingly and who supported me with his thoughts whenever he felt my need.

I wish also to acknowledge my deepest gratitude and thanks to Dr. Alaa Eldin Abdalla.

I am deeply indebted to them, for without them, this work would never be complete.

I owe a particular debt also to my family and friends who encouraged, helped and tolerated me during the development of this work.



CONTENTS

INTRODUCTION

INTRODUCTION

Rectal prolapse is an uncommon clinical entity that has long fascinated surgeons. It is a condition that was recognized in antiquity, having been described in the Ebers Papyrus of 1500 B.C. (Mann, 1969).

It often occurs in persons in the extremes of life (Corman, 1984). It is defined as the protrusion of one or more layers of rectum through the anal sphincter. If mucosa alone is involved, the prolapse is called incomplete; if all layers of the rectal wall protrude, it is termed complete (Thomson et al., 1981).

The terminology implies that incomplete rectal prolapse has the same causes and is merely an earlier stage of complete prolapse, but there are many reasons to doubt this assumption (Thomson et al., 1981).

For years most surgeons ascribed to the belief that complete rectal prolapse was a sliding hernia, but in more recent years it has been refuted (Theuerkauf et al., 1985).

It is probable that the principle abnormality in prolapse is an intussusception of the rectum and not weakness of the pelvic floor (Keighley et al., 1983).

Internal intussusception is a distinct clinical entity that represents the precursor of complete prolapse. It is an early stage of the disease, occurring internally before the prolapsed bowel becomes evident externally (Theuerkauf et al., 1985).

Rectal prolapse is a distressing condition, particularly when associated with faecal incontinence (Keighley & Matheson, 1981).

The diagnosis is frequently missed in the young and in some subjects the prolapse is occult (White et al., 1980).

Because many patients presenting with rectal prolapse are old and infirm, surgeons tend to favour low morbidity, local operations on the anal canal (Goligher, 1984).

Such local procedures include the Thiersch wire, or a silastic sling around the anal canal (Jackman et al., 1980).

Some advocate radical operations such as recto-sigmoidectomy (Porter, 1962) or combined abdomino-perineal pelvic floor repair for those patients who are fit to undergo major procedures (Roscoe Graham operation) (Goligher, 1957; Hughes & Gleadell, 1962).

However, these operations have, in addition to their morbidity and mortality, a high recurrence rate (Keighley et al., 1983).

Operations to cure rectal prolapse now simply mobilize the rectum and fix it to the sacrum or the symphysis pubis so that an intussusception cannot occur (Keighley et al., 1983).

Patients suffering from faecal incontinence can undergo a post-anal repair. Nevertheless some cannot be helped, and then a colostomy is often the last management (Thomson, 1986).

ANATOMY

ANATOMY

Anatomy of the Rectum (Fig. 1)

The Latin word "Rectus" means straight, as if ruled. The rectum is misnamed, for it is curved in conformity with the hollow of the sacrum and, in addition, has a secondary bulge to the left of the midline (Last, 1985).

The rectum is continuous with the sigmoid colon and there is no change of structure at the junction. Where there is a mesocolon the gut is called sigmoid, where there is no mesentery it is called rectum (Last, 1985).

No sphincter exists at the rectosigmoid junction (Goligher, 1984).

The sacculations and appendices epiploicae present in the sigmoid are absent in the rectum (Warwick & Williams, 1973).

The rectum starts at the level of the third sacral vertebra, and its end becomes continuous with the anal canal by passing through the pelvic diaphragm at the anorectal junction which is situated 2 to 3 cm in front of, and slightly below the tip of the coccyx (Warwick & Williams, 1973).

In addition to its anteroposterior curve, the rectum deviates from the midline in the form of three lateral curves; the upper and lower ones are convex to the right and the middle one (Which is the most prominent) bulges to the left. Its beginning and end are in the median plane (Warwick & Williams, 1973).

The angulation of the bowel on the concave side of each of these curves is accentuated by infoldings of the mucosa known as Houston's valves. The last named, which is also known as Kohlrausch's fold, is the most prominent and is situated about the

Fig. 1: Coronal section of Anus and Rectum.

(Gray S.W. and Skandalakis J.E.: Atlas of Surgical Anatomy for General Surgeons, 1985).

Both the inner circular and outer longitudinal smooth muscle coats of the colon become thickened as they reach the anal canal. They make up the involuntary internal anal sphincter.

The longitudinal layer, as described by Shafik, ends in a fibrous central tendon. Fibres from this tendon pierce the cutaneous portion of the external sphincter and attach to the skin to form the corrugator cutis ani.

The external sphincter is striated muscle of somatic rather than splanchnic origin. It is divided into deep, superficial and subcutaneous portions to form three slings around the rectum.

Remember: Anorectal support depends on: (a) anorectal sphincters; (b) anococcygeal body (posteriorly); (c) perineal body, (anteriorly); (d) pelvic diaphragm.

Fig. 2: The Surgical Anal Canal.

(Gary S.W. and Skandalakis J.E.: Atlas of Surgical Anatomy For General Surgeons, 1985).

A- Coronal section through the anal canal showing the relations of the internal and external sphincters

B- Coronal section through pelvis showing the spaces above and below the levator ani muscles

Remember:

1) The striated external sphincter envelops the distal two thirds of the anal canal. In the middle one third, it overlaps the internal sphincter.

2) The smooth internal sphincter envelops the proximal two thirds of the anal canal.

3) The internal sphincter and the superficial portion of the external sphincter may be divided without loss of continence if the conjoined longitudinal muscle and the puborectalis muscle are intact

same level as the anterior peritoneal reflection. The part of the rectum below this level has a wider lumen and is known as the ampulla of the rectum (Goligher, 1984).

The Houston's valves lie across half the circumference of the rectal lumen and are produced by the circular muscle of the gut and the mucous membrane (Last, 1985).

The *relation of the pelvic peritoneum* to the rectum is of considerable surgical importance (Fig. 3). 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, the mesorectum becomes broader and shorter and the peritoneum sweeps off at the sides of the rectum until only the anterior aspect has a peritoneal coat which finally becomes reflected forwards at the bottom of the rectovesical or rectouterine pouch, leaving the lower third or so of the rectum without any peritoneal covering. In the upper rectum the peritoneum is closely applied to the underlying muscle coat, but this attachment becomes gradually looser lower down as a result of the interposition of a layer of fatty tissue. 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 is abnormally deep and actually protrudes into the rectum and through the anus into the prolapse (Goligher, 1984).

The fascia of the rectum consists of loose areolar tissue surrounding the rectal venous plexus. Posteriorly, a sheet of fascia, more membranous in character, suspends the lower part of the ampulla to the hollow of the sacrum; it encloses the superior rectal vessels. It is known as the fascia of Waldeyer. Laterally, just above the pelvic floor, the middle rectal artery and the branches of the pelvic plexuses are enclosed in a slight condensation of areolar tissue that is known to surgeons as the lateral ligament of the rectum. The fascia of Waldeyer, the lateral ligaments, the pelvic peritoneum and the

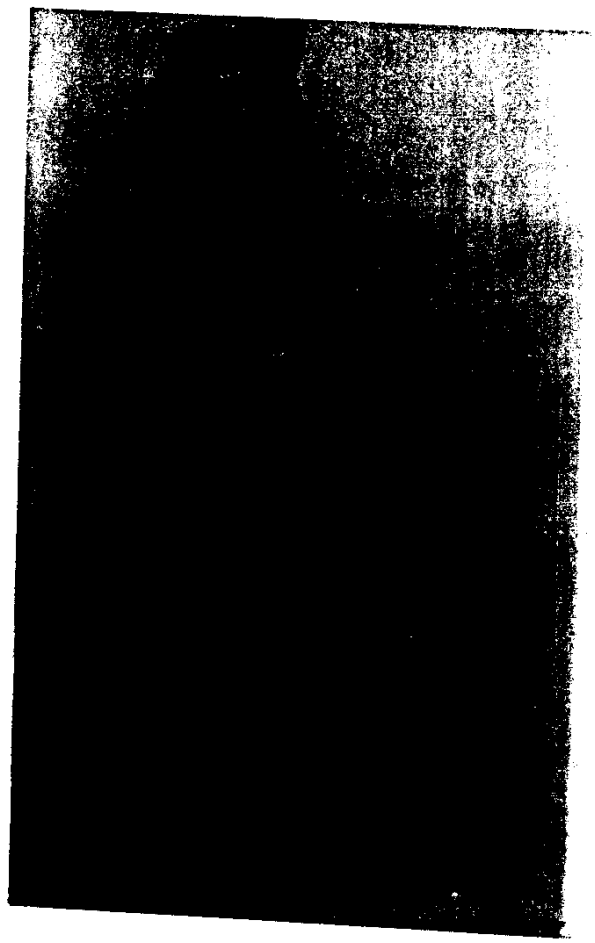


Fig. 3: The Surgical Anal Canal.

(Gray S.W. and Skandalakis J.E.: Atlas of Surgical Anatomy for General Surgeons, 1985).

A- Coronal section through the anal canal with the sphincters relaxed.

B- Conventional divisions of the rectum and anus.

The lower rectum and anal canal are not covered by peritoneum. The middle rectum is covered by peritoneum anteriorly only.

Do not worry about a definite boundary between the sigmoid colon and the rectum.

vessels and most of all the pelvic floor combine to hold the rectum stable in its position (Last, 1985).

Anteriorly, the extraperitoneal part of the rectum is also covered with a layer of visceral pelvic fascia which extends from the anterior peritoneal reflection above to the superior fascia of the urogenital diaphragm (triangular ligament) below, and laterally becomes continuous with the front of the lateral ligament. It is known to surgeons as Denonvillier's fascia (Goligher, 1984).

As regard *the relations of the rectum*, posteriorly the rectum is related to the lower three sacral vertebrae, the coccyx, the median sacral vessels, the piriformis, the anterior rami of the lower three sacral and coccygeal nerves, the sympathetic trunk, the ganglion impar, the lower lateral sacral vessels and the coccygei and levators ani. While anteriorly the relations differ in both sexes. In males, above the site of peritoneal reflexion it is related to the upper parts of the base of the bladder and of the seminal vesicles and the rectovesical pouch and its contents; while below the peritoneal reflexion it is related to the seminal vesicles, the deferent ducts, the terminal parts of the ureters and the prostate. In females, above the peritoneal reflexion, the uterus, the upper parts of the vagina and recto-uterine pouch and its contents, while below the peritoneal reflection to the lower part of the vagina. Laterally, it is related to the pararectal fossa above the peritoneal reflection while below it, to the pelvic sympathetic plexus, coccygei and levator ani and branches of the superior rectal vessels constitute its immediate lateral relations (Warwick & Williams, 1973).

As regard the *blood supply of the rectum* (Fig. 4) it is derived principally from the inferior mesenteric artery, whose superior rectal branch divides into right and left branches, the right one divides into anterior and posterior branches. These three main branches sink into the muscle wall in the line of the three primary haemorrhoids (4,7 and 11 o'clock). The muscle wall receives a reinforcement from the middle rectal branches of

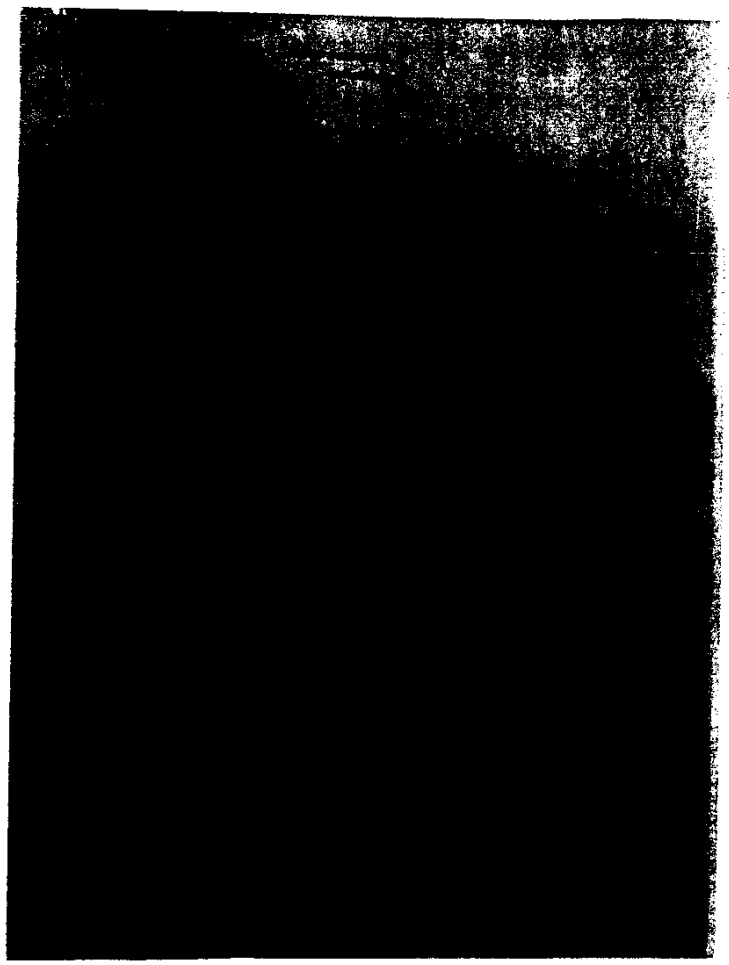


Fig. 4. The Blood Supply of the Anus and Rectum.
(Gary S.W. and Skandalakis J.E.: Atlas of Surgical Anatomy for General Surgeons, 1985).

A- Anterior view of rectum and its arteries.

B- Posterior view of rectum and its arteries.