Cancer of the Rectum

Essay

Submitted in the partial Fulfillment
of the Master Degree in
General Surgery

By
Dr. MAGDY RAOUF MOAWAD
M.B.,B.Ch.

Supervisors
Dr . RAOUF GUINDY ABOU - SEIF
Professor of General Surgery
Ain Shams University

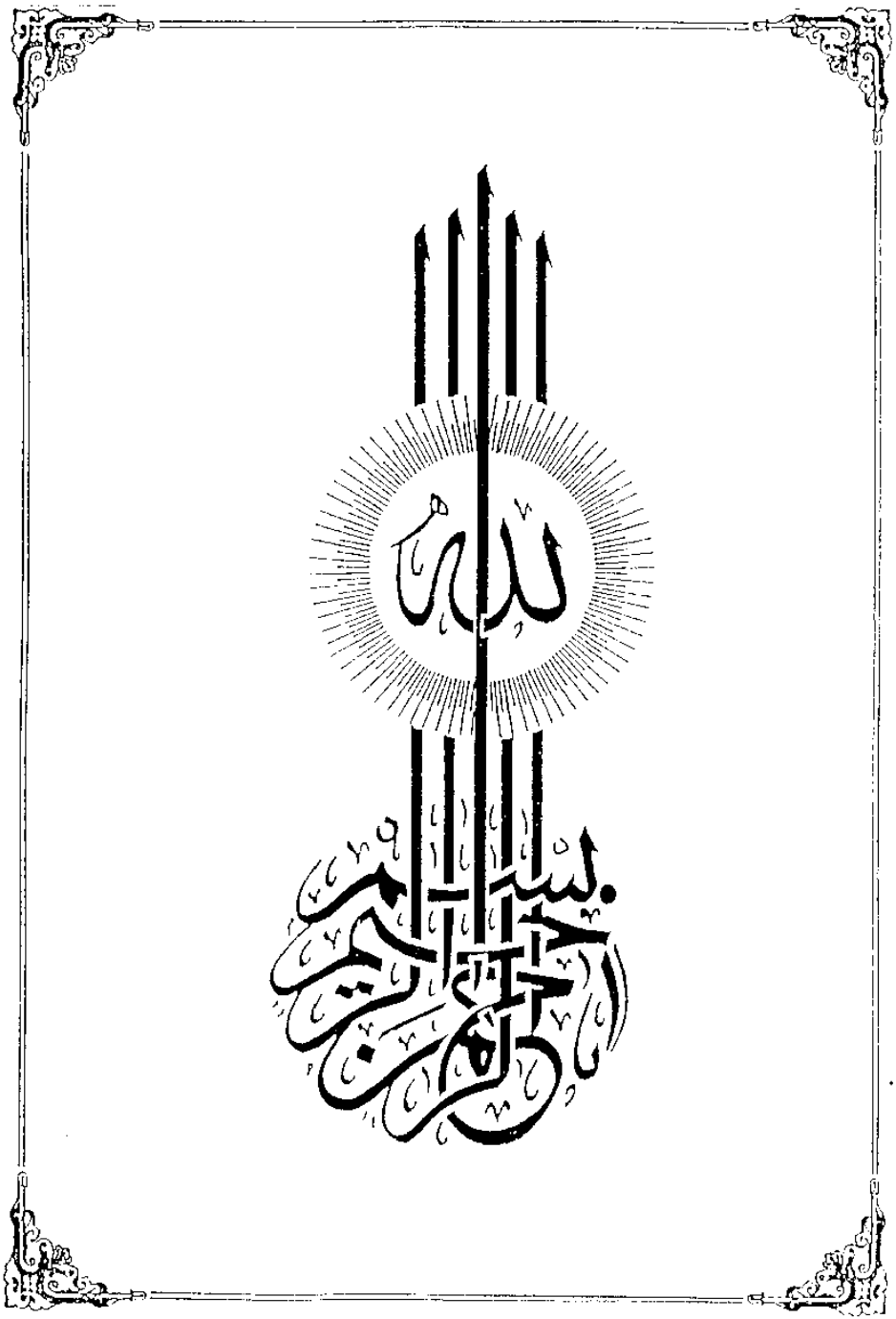
Dr . ALAA OSMAN
Assistant Professor of General Surgery
Ain Shams University

Faculty of Medicine
Ain Shams University
1993

Acknowldgment

I am greatly honoured to express my thanks and gratitude to ***Dr . ROUF GUINDY ,*** Professer of general Surgery , Ain Shams University who suggested the subject , set up the plan and inspired me with spirit of research . He has been always encouraging and helpfull . No words could express my gratitude to him .

I am very thankfull to ***Dr , ALAA OSMAN ,*** Assistant Professor of General Surgery , Ain Shams University . But for his help and criticism , this work would have never been accomplished .



Contents

Introduction

Rectal carcinoma is a common pathologyical condition affecting the rectum and its grave outcome gives it a special importance .

Early diagnosis and accurate clinical staging alter much the managment of the disease . As the mani fastations of this disease are relatively late . So , screening tests as digital rectal examination , Proctoscopy , sigmoidoscopy with biopsy , barium enema and more recently infraluminal ultrasound should be done for high risk group .

Radical resction of the rectum has been introduced by Miles in 1908 and the combined abdomino - perineal resection become the recognized and accepted approach for the treatment of this cancer . Usually the reaction of a patient to a stoma and loss of anus causes profound distress . So ,many surgical techniques were used not only for proper control of the disease , but also for preserving the anal sphincters in many patients depending on the level of the tumour and the grade of malignancy of the growth . Some of the new methods used to achieve these goals are endoscopic transanal resection, electrocoagulation , surgical localized excision and laser fulgration

Radiotherapy , chemotherapy proved to be helpfull as an adjuvant to therapy also , they are indicated in high risk patients and those with inoperable growth .

AIM OF WORK

An essay to review the literature about the most recent methods in staging of the disease , the surest and most reliable methods of investigations and the recent techniques in managing the rectal carcinoma .

ANATOMY OF THE RECTUM

The rectum is continous above with the sigmoid colon at the level of the third sacral , vertebra , and below with the anal canal as it passes through the pelvic diaphragm

(Johnson ,1981).

At first the rectum proceeds downward , then downward and forward closely applied to the concavity of the sacrum and coccyx for 13 - 15 cm . It ends 2 - 3 cm . in front of and below the tip of the coccyx by turning abruptly downward and backward , and passing through the levator muscles to become the anal canal ***(Golligher ,,1984).***

The upper part of the rectum has the same diameter as the sigmoid colon , but its lower part is dilated to form the rectal ampulla . The rectum differs from the sigmoid colon in having no sacculations , appendices epiploicae or mesentry ***(Williams and Warwik ,1980)*** .

It shows three slight lateal curves or flexures that are most prominant when the viscus is distended .The upper and lower curves convex to the right and a middle curve convex to the left ***(Last ,1990)*** .

there are usually three internal sickle - shaped transvese folds (Valves of Houston)that correspond to the

lateral flexures . such fold consists of mucous membrane , submucosa , and circular and some longitudinal fibres of the muscularis externa *(Johnson ,1981).*

The most prominant one is the right middle valve which is known as " kohlbrauch's fold " . It is situated at the same level of the anterior peritoneal reflection *(Goligher ,1984)* .

Peritoneal Relations of the rectum :

The peritoneum is loosly attached and separated from the muscle layer of the rectum by fatty tissue ,and thus allows considerable expansion of it . It is related only to the upper two third of the rectum , covering its front and sides above , and lower down only its front , from which it is reflected on to the bladder in males forming the rectovesical pouch and on the posteriror vaginal wall in females forming the recto-uterine puch . The level of this reflection is higher in males being about 7.5 cm from the anus than in females which is about 5.5 cm from the anus . *(Williams and Warwik, 1980)*

Fascial relations of the rectum :

On either side of the rectum below the pelvic peritoneum between it and the pelvic floor is a space filled with fibrofatty tissue . the fibrous elements in this tissue are part of pelvic fascia and connect the parietal pelvic fasica on the side wall of the pelvis with the rectum . They are known as the lateral liganents of the rectum which have a roughly triangular shape with a base on the pelvic side wall and the apex joining the side of the rectum .

Their division is an essential step in the operation of the rectal excision and is followed by a variable amount of bleeding from the middle haemorrhoidal arteries wich run in them *(Goligher ,1984)*

The posterior aspect of extraperitoneal rectum is loosely bound down to the front of the sacrum and coccyx by connective tissue which is easily seperated by blunt dissection . When this is done it is found that there is still a thin layer of fascia covering the fat , vessales and lymph glands on the back of the rectum . This is called the fascia propria or " Fasical capsule of the rectum " it is a part of the visceral pelvic fascia *(Goligher ,1984)* .

The sacrum and coccyx are also still covered with a fascia which is much stronger and tougher . It is a specially thickned part of the parietal pelvic fascia known as " the fascia of Waldeyer " *(Decker.1986).*

Traced inferiorly , this presacral fascia extends downward and forward on the upper aspect of the anococcygeal ligament to fuse whith the fascia propria of the rectum . When the cocyx is removed or the anococcygeal raphae is severed the fascia of Waldeyer has to be divided to give access to retrorectal space . In carrying out the dissection from below for rectal excision it is important not to strip the presacral fascia because the middle sacral vessle which lie between this fascia and the bone are very liable to be torn if this faulty plane is struck

(Goligher , 1984) .

The extraperitoneal part is also covered anteriorly 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 it becomes conutinous with the front of the lateral ligament , it is a definite fascial layer seen during rectal excision and known as " Denonvilliers fascia " it intervenes between the rectum behined and the prostate and seminal vesicles (or vagina) anterioly but it is more closely adherent to the rectum than these structures .So , it is more convenient to separate it from prostate , seminal vesicles (or vagina) during rectal excision and then to divide it transversly at a lower level (***Goligher , 1984***) .

relations of the rectum :

The rectum rests on the front of the lower three sacral vertebrae , the coccyx , the anococcygeal ligament , the superior rectal vessles and the ganglion impar . When much distended it also comes into relation on each side , with the lower part of the sacral plexus and sympathatic trunk lying on the piriformis , and with the coccygeus and levator ani muscles . The levater ani separate it from the ischiorectal fossae (***Johnson , 1981***) .

Anteriorly , the relations of the rectum differe in the tw sexes . In males , about the site of the peritoneal reflection are the upper parts of the base of the bladder , seminal vesicles , and the rectovesical pouch and its contents (terminal coils of the ileum and the sigmoid colon) . Below the reflection are the lower parts of the base

of the bladder and of the seminal vesicles , the deferent ducts , the terminal parts of the ureters and the prostate . In females , above the reflection are : the uterus , upper vagina , rectouterine pouch and its contents (terminal coils of the ileum and sigmoid colon) while below the reflection is the lower part of the vagina .

The upper part of the rectum is related laterally to the pararectal fossa of the peritoneum and its contents (sigmiod colon or lower part of the ileum) .while below the peritoneal reflection the pelvic suympathatic plexuses , the coccygei and levater ani and branches of the superior rectal vessles ***(Williams and Warwik , 1980)*** .

The Anal canal

The anal canal begins at the anorectal junction (where the lower end of the ampulla of the rectum narrows abruptly and bends sharply downwards and backwards) and ends at the anus . It is about 4 cm long and when empty its side walls are compressed together to form an anteroposterior slit by the tonic contraction of the surrounding muscle . ***(Johnson , 1981)*** .

It is separated from the tip of the coccyx by a mass of fibrous and muscular tidssue , termed the anococcygeal ligament . Anterioly In male it is separated by the perineal body

from membranous part of the urethera and the bulb of the penis .In the female . it is separated by the perineal body from the lower end of the vogina *(Williams and Warwik , 1980).*

The external sphincter separates it from the fat in the ischiorectal fossa which allows the canal to distend during defication *(Johnson , 1981)* .

The lining of the anal canal :

The lining of the anal canal consists of mucous membrane in its upper two thirds and skin in its lower one third. The junction of the two being marked by the line of the anal valves. It is about 2 cm from the anal orifice , or the junction between the middle and lower thirds of the internal sphincter .This level is referred to as the pectinate or dentate line because of the serrated fringe produced by the anal valves . Above each anal valve is a littel pocket known as the anal sinus or crypt or sinus of Morgagni . Above the pectinate line the mucasa is thrown into 8 - 14 longitudinal folds known as rectal columns or columns of Morgagni . Each adjacent two columns being connected at the pectinate line by an anal valve *(Goligher , 1984)* .

Each column cantains a terminal radicle of the superior rectal artery and vein *(Williams and Warwik . 1980)* .

At 1937 Milligan and his assecintes pointed out that the living anal moucosa has a deep purple colour for 1 cm above the

pectineal line and it changes into the pink colour of the rectal mucosa at about the anorectal ring .

At the living subject the first 15 mm of the mucosa below the pectinate line has a shiny bluish apperance . This region is called tranzitional zone or pecten which over lies the internal rect l venous plexus .The pecten ends at a narrow wavy white line (of Hilton), which corresponds to a palpable intersphincteric groove where the lower border of the internal sphincter and the subcutaneous part of the external sphincter meet*(Johnson , 1981)* .

The white line of Hilton was never clearly defined and the term must be abandoned *(Last , 1990)* .

The musculature :

The anal canal is always closed except for the passage of flatus or faeces . It is hold closed by a sphincteric ' _be of muscle which has a circular fibres and divided into internal and extenal parts . Each occupies two thirds of the canal , so that they overlap at the middle third *(Fig. 1)*

The internal sphincter :

It is of smooth muscle , and surrounds the upper two thirds of the canal . It is continuous with the circular muscle coat of the rectum , and inferiorly it ends with a well defined rounded edge 6 - 8 mm above the level of the anal orifice , and 12 - 8 mm

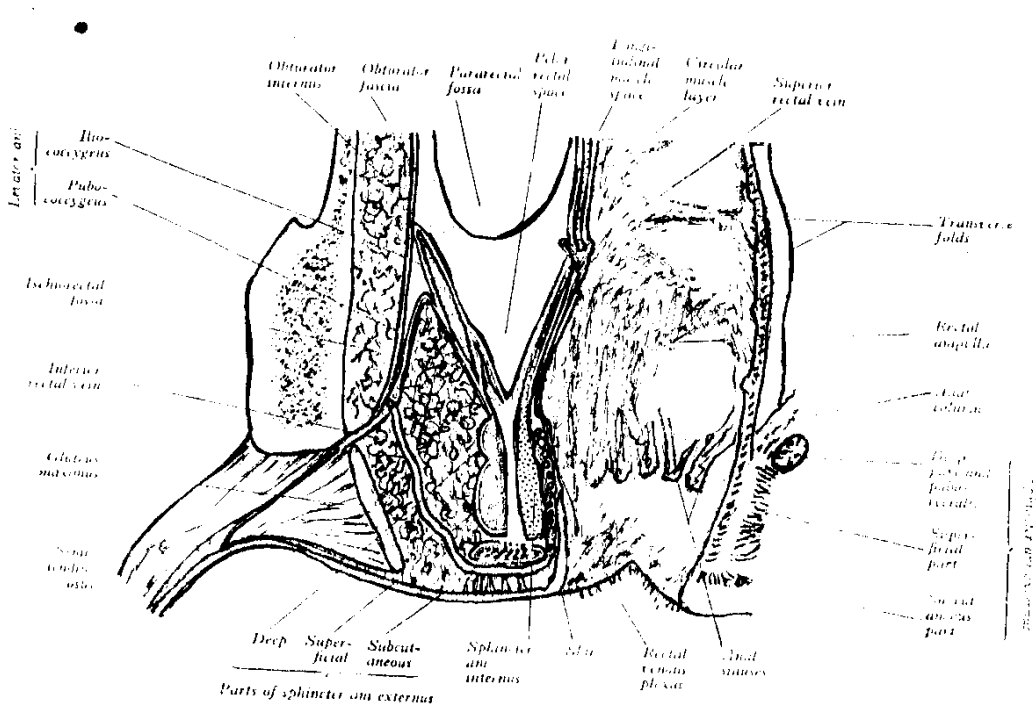


Figure 1 : Diagram of a coronal section of the rectum and anal canal and the structures adjoining.

From Gray's (1989).

below the level of the anal valves . it's muscle fibres are grouped into discrete elliptical bundles which in the upper part of the sphincter lie obliquely with their transverse axis runing internally and downward . giving them an imbricated arrangment . This obliquity becomes progresstively less as the internal sphincter is traced downward so that . the lower part of the muscle the bundles lies horizontally and some of the lower ones ever incline slightly upward ***(Goligher , 1984)*** .

The external anal sphincter :

It is composed of voluntary muscle . surrounds the entire length of the canal .

In 1934 " Milligan and Morgan" divided the external sphincter into three parts : subcutaneous . superficial and deep . The deep and subcutaneous encircle the gut without bony attachment . the superficial is attached behined to the coccyx and infront to the perineal body . The subcutaneous part lies between the lower border of the internal sphincter and the perineal skin . the superficial part lies just above the subcutaneous part and the deep part encircles the upper end of the canal ***(Fig . 2)*** .

Goligher in 1955 suggested that The muscle is one continuous sheet and contrary to the account of Milligan & Morgan there has been no suggestion of divdsion of the anal sphincter into three separate parts .