Assessment of low anterior resection syndrome in patients who underwent low anterior resection for cancer rectum

Thesis

Submitted for Partial Fulfillment of Master Degree in General Surgery

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2019

Acknowledgement

First and foremost I feel always indebted to GOD the kind and merciful. Special thanks to all patients who participated in the study.

No words can fulfill the feeling of gratitude and respect I carry to prof. Dr. Tarek Youssef Ahmed, Assistant professor of General Surgery, Faculty of Medicine, Ain Shams University. I thank him for his meticulous supervision, illuminating guidance, constructive criticism and revision of the whole text.

I would like to express my deepest gratitude and sinceres thanks to Dr. Ahmed Aly Khalil, Lecturer of General Surgery, Faculty of Medicine, Ain Shams University, for the benefit of his extensive experience and knowledge.

Lots of thanks to my family and all my colleagues at Tanta Cancer Center and Faculty of Medicine, Ain Shams University. This work could have never been accomplished without their sincere efforts and cooperation.

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List of Abbreviations

- **(LAR)** low anterior resection syndrome
- **(CRCs)** Colorectal cancers
- **(FAP)** familial adenomatous polyposis
- **(HNPCC)** hereditary non-polyposis colorectal cancer
- **(MAP)** MUTYH-associated polyposis
- **(BMI)** Body Mass Index
- **(FSIG)** flexible sigmoidoscopy
- **(DCBE)** double-contrast barium enema
- **(CTC)** computed tomographic colonography
- **(FOBT)** Fecal occult blood tests
- **(gFOBT)** guaiac-based Fecal occult blood tests
- **(iFOBT)** immunochemical-based Fecal occult blood tests
- **(ACS)** American Cancer Society
- **(MSTF)** Multi Society Task Force on Colorectal Cancer
- **(NCCN)** National Comprehensive Cancer Network
- **(ACP)** American College of Physicians
- **(CEU)** Council of the European Union
- **(ACG)** American College of Gastroenterology
- **(USPSTF)** United States Preventive Services Task Force
- **(DCBE)** Double-Contrast Barium Enema
- **(FIT)** Fecal Immunohistochemical Test
- **(IBD)**inflammatory bowel disease
- **(UC)** ulcerative colitis
- **(CD)** Crohn disease
- **(AGA)** American Gastroenterological Association
- **(ASGE)** American Society for Gastrointestinal
- **(BSG)** British Society of Gastroenterology
- **(JPS)** juvenile polyposis
- **(PJS)** Peutz–Jeghers syndrome
- **(RECIST)** Response Evaluation Criteria in Solid Tumors

- **(MRI)** magnetic resonance imaging
- **(TRUS)** Transrectal ultrasound
- **(CEA)** carcinoembryonic antigen
- **(PET)** positron emission tomograp
- **(CRM)** circumferential resection margin
- **(TNM)**Tumor, Node and Metastasis
- **(AJCC)** American Joint Committee on Cancer
- **(TME)** total mesorectal excision
- **(TAE)** Transanal excision
- **(TEM)** Transanal endoscopic microsurgery
- **(TSA)** transsphincteric approach
- **(VLAR)** very low anterior resection
- **(ULAR)** ultra-low anterior
- **(APR)** Abdominoperineal resection
- **(TRG)** Tumor Regression Grade
- **(CAPOX)** Capecitabine plus oxaliplatin
- **(TPE)** total pelvic exenteration
- **(CME)** complete mesocolic excision
- **(DFS)** disease-free survival
- **(CRT)** preoperative chemoradiotherapy
- **(LLND)** lateral pelvic lymph node dissection
- **(CCR)** clinical complete response
- **(IPAA)** ileal pouch-anal anastomosis
- **(RT)** Radiation therapy
- **(CT)** computed tomography
- **(TCP)** transverse coloplasty pouch
- **(CJPAAs)** colonic J-pouch-anal anastomoses
- **(SEAA)** side-to-end anal anastomosis
- **(IPANs)** Intrinsic primary afferent neurons

Introduction

Rectal cancer is the third most common form of cancer and the second leading cause of cancer related deaths in the western world. It occurs due to abnormal growth of the lining cells of the rectum that have the ability to invade and spread to other parts of the body. **(Barregard et al., 2017)**

Surgery is the only curative therapy for rectal cancer. Transabdominal surgery can be performed with either sphincter sparing techniques i.e. (anterior resection) or an abdominal perineal resection. Historically, abdominl perineal resection was the gold standard for treating low-lying rectal cancer. With the advent of better surgical techniques and equipment e.g. (staplers) as well as neo-adjuvant therapy, abdominal perineal resection has been gradually replaced by sphincter sparing procedures. **(Williamson et al., 2009).**

For patients in whom negative distal margin can be achieved sphincter-sparing procedures are preferred because they maintain bowel continence and avoid a permanent colostomy. In contemporary practices sphincter sparing procedures are feasible in up to 80 percent of patients requiring surgery for rectal cancer.**(Allgayer et al., 2005).**

However, functional disturbances constitute a major problem for many surviving rectal cancer patients following a sphincter saving procedure, with symptoms ranging from daily episodes of incontinence to obstructed defecation, constipation & low ant resection syndrome (LARS). LARS is used to describe a variety of

symptoms: bowel, urinary and sexual dysfunction. The bowel dysfunction may be categorized into storage dysfunction (which includes bowel frequency, Fecal urgency and incontinence) .And the evacuatory dysfunction (which includes stool fragmentation, gas stool discrimination, tenesmus and anal pain). Low Anterior resection is common and has been reported in 10% to 90% of post-rectal resection patients. **(Desnoo et al., 2006).**

Aim of the work

This study aims to assess the anterior resection syndrome in patients with rectal cancer who underwent low anterior resection as regards incidence, timing & its fate or improvement.

Review of literature

Review of literature

Chapter I: Anatomy of Rectum

A- Anatomy of the Rectum:

The rectum and anal canal comprise the last portion of the large intestine. The rectum is located in the pelvis, begins at the level of the sacral promontory, and extends 12 to 18 cm distally. This portion of the enteric tract differs from the colon, and its beginning can be marked by noting where the adventitial taeniae bands have coalesced to form outer longitudinal muscle. The rectum has 2 or 3 curves within its lumen, created by submucosal folds called the valves of Houston. The peritoneum covers the upper two-thirds of the rectum anteriorly, but only the upper third laterally. The reflection of the peritoneum is variable but occurs approximately 6 to 8 cm above the anal verge. The lower one-third of the rectum is without peritoneal covering. The endopelvic fascia, also referred to as Denonvilliers fascia, envelops this portion of the rectum. The lateral portion of this fascia is also known as the lateral rectal stalk. The rectum is attached to a strong endopelvic fascia extending from the anterior surface of the sacral bone at about the level of S4. This area of attachment is known as Waldeyer ring (**Figure 1**). **(Beck et al., 2001).**

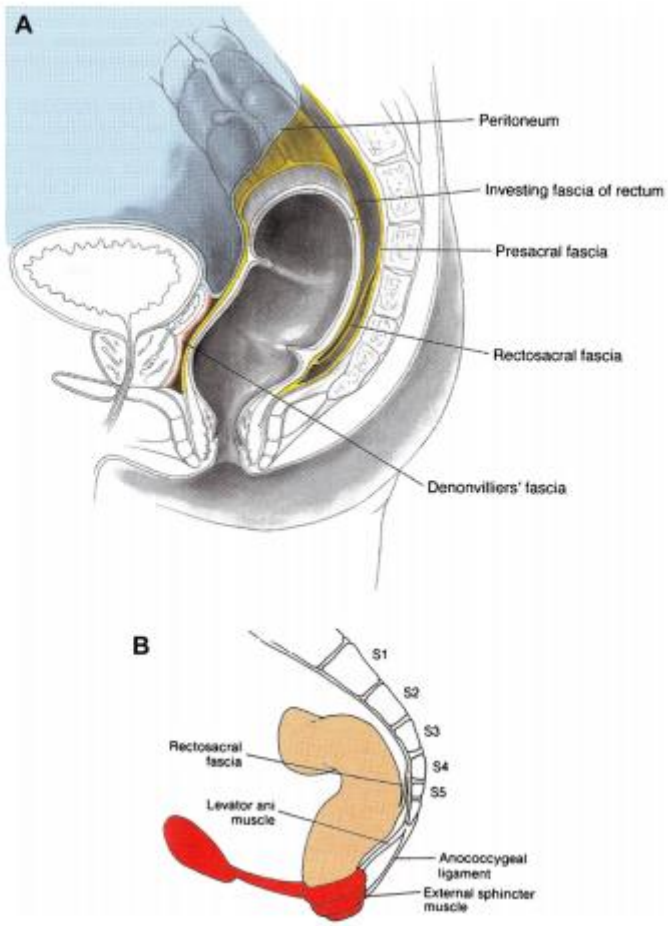

Figure 1: Pelvic fascia. (A) Relation of pelvic fascia to peritoneal layers, prostate and bladder. (B) Pelvic fascia and Waldeyer ring.

B- Arterial Supply:

The inferior mesenteric artery, the final branch of the aorta before its bifurcation, terminates inferiorly as the superior rectal (hemorrhoidal) artery. This supplies the rectum and the upper third of the anal canal. The middle rectal (hemorrhoidal) arteries, originating from the internal iliac arteries, supply to distal rectum and proximal anal canal. **(Brunicardi et al., 2010).**

The presence of these arteries is variable. The inferior rectal (hemorrhoidal) arteries arise from the internal pudendal artery, which is a branch of the internal iliac artery. These arteries traverse the

ischioanal fossa on both sides of the anal canal feeding the sphincter muscles. Intramural collaterals exist between the superior and inferior rectal arteries at the level of the dentate line in the submucosa. This accounts for the low incidence of rectal ischemia (**Figure 2**). **(Brunicardi et al., 2010).**

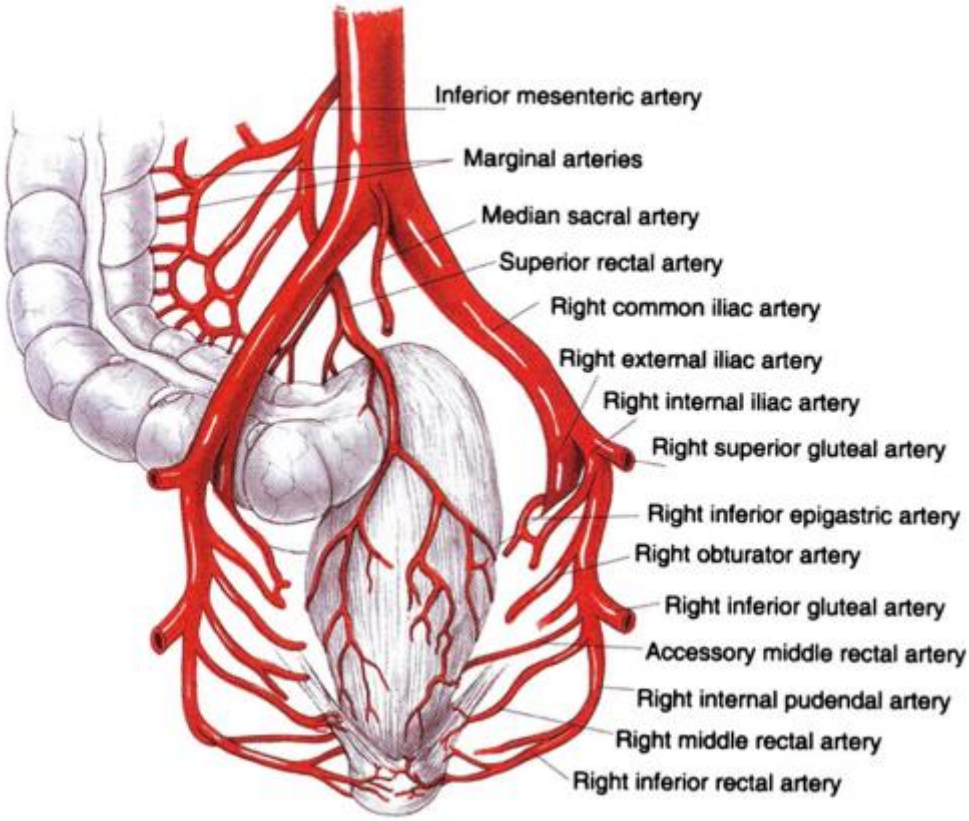

Figure 2: Anorectal arterial blood supply.

C- Venous Drainage:

Blood returns from the rectum and anal canal into either the portal or systemic systems. Most of the blood from the rectum drains into the superior hemorrhoidal vein that ultimately drains into the portal system via the inferior mesenteric vein. The lowermost portion of the rectum and the anal canal drain into the internal iliac veins