Functional Consequences of Colorectal Cancer Management

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KEYWORDS

• Colorectal cancer • Bowel dysfunction • Urinary dysfunction • Sexual dysfunction • Impotence • Incontinence • Urgency • Pouch

KEY POINTS

- Post-treatment dysfunction is prevalent and often severe in rectal cancer patients. Colon cancer patients are comparatively spared. The literature is difficult to assimilate, and, in general, data regarding many factors potentially affecting function are scarce.
- Bowel dysfunction after rectal cancer treatment is closely related to tumor height, which determines preservation of the anal sphincters and rectal capacity. It is also affected by pouch reconstruction and radiotherapy.
- Sexual dysfunction after rectal cancer treatment remains poorly understood, due in part to insufficient measurement of preoperative function and psychosocial confounders. It is worse with increasing age and low-lying tumors and after abdominoperineal resection (APR), ostomy, nerve injury, or radiotherapy.
- Urinary dysfunction after rectal cancer treatment remains poorly understood. There are multiple types of urinary dysfunction. It is worse with increasing age, female gender, advanced stage tumors, nerve injury, and APR.
- Standardization of measurement using validated instruments is needed to improve understanding of dysfunction. Reduction of toxicity in the treatment paradigm and interventions, such as physical therapy, pharmacologic therapy, and sacral neuromodulation, may help reduce the prevalence and severity of post-treatment dysfunction.

INTRODUCTION

Oncologic outcomes in patients with colorectal cancer have improved significantly within the past decade. Although effective, the treatment of colorectal cancer has a long-term impact on patients' bowel, bladder, and sexual functions. Post-treatment dysfunction affects patients socially and psychologically. The functional consequences of colorectal cancer treatment and post-treatment quality of life (QOL) have become increasingly important in clinical practice and research. Understanding the scope,

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severity, and prevalence of the functional consequences of therapy is integral to setting appropriate patient expectations, evaluating new therapies, and developing novel methods of function preservation and restoration. This article discusses bowel, sexual, and bladder functions in patients undergoing treatment of colon and rectal cancer.

BOWEL FUNCTION

Bowel dysfunction is a common side effect of treatment of colorectal cancer. Although the chemotherapeutic agents commonly used have minimal gastrointestinal toxicity, most patients report experiencing some changes to bowel function after treatment.[1] The extent of recovery after therapy largely depends on the location of the tumor and the type of resection.

Colon Cancer

After treatment of colon cancer, patients may experience mild bowel dysfunction, varying in intensity and manifestation depending on the colonic segment that was resected. In a comparison survey of a retrospective population, right hemicolectomy resulted in higher frequency, whereas left hemicolectomy resulted in greater difficulty emptying.[2] After sigmoid colectomy, some patients experience increased frequency, incomplete emptying, and difficulty evacuating, at rates of 5%, 32%, and 32%, respectively.[3] Although some dysfunction exists after surgery for colon cancer, proctectomy results in significantly more functional defects.[2] Regardless, it is important to discuss potential alterations in bowel function in patients being treated for colon cancer, especially those with sigmoid tumors.

Rectal Cancer

Most patients with rectal cancer seek a sphincter-preserving option and are reluctant to accept a permanent stoma. With improved surgical techniques, neoadjuvant therapy, and more limited distal surgical margins, sphincter-preserving surgery is more commonly offered. Nationally, sphincter preservation rates have increased.[4] At specialty centers, sphincter preservation is common even for tumors located less than 4 cm from the anal verge.[5] Many single-center studies report that intersphincteric resections (ISRs) with hand-sewn anastomoses for very low tumors result in equivalent oncologic outcomes.[6] These developments heighten the importance of understanding the impact of therapy on bowel function.

With sphincter preservation increasing, surgeons are investing significant clinical and research energy on the management of post-treatment bowel function. In a recent report, 56% of patients undergoing total mesorectal excision (TME) low anterior resection (LAR) met the criteria for LAR syndrome, significant incontinence, or increased frequency, but these figures improved to 28% by 1 year postoperation.[7] Years after sphincter-preserving LAR, however, 37% of patients report disappointment with their bowel function and 27% report their symptoms as severe, the most common symptoms being incomplete evacuation, clustering, food affecting frequency, unformed stool, and gas incontinence.[8] Many patient factors, tumor factors, and treatment factors affect function, and these are discussed.

Patient Factors

Age

Although bowel dysfunction is more prevalent in the general elderly population, age does not significantly affect the incidence of post-treatment bowel dysfunction.[7,9–11] Some research has found that younger patients report worse function,[12] possibly