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Prospective Study of the Effect of Resection of the Rectum on Male Sexual Function

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A prospective study to evaluate sexual dysfunction following resection of the rectum was performed in 21 male patients. Following proctocolectomy for inflammatory bowel disease (9 patients), the incidence of sexual dysfunction was 11%, and it was always partial. Following abdominoperineal excision of the rectum for carcinoma (7 patients), the incidence of sexual dysfunction was 50%, and it was total in 16%. After anterior resection with low colorectal anastomosis (5 patients), the incidence of sexual dysfunction was 40%. The risk of dysfunction following operations on the rectum increased with the age of the patient and was minimal below the age of 50 years. In patients with inflammatory bowel disease, careful dissection close to the rectum should avoid damage to the pelvic nerves, and the incidence of sexual dysfunction should be low.

The autonomic nerve supply governing sexual and bladder function in the male is via the pelvic plexus, which lies to the posterolateral aspect of the bladder. The pelvic plexus is formed by fibers from the hypogastric plexus, by rami from the sacral portion of the sympathetic chain, and by the parasympathetic branches of the second, third, and fourth sacral nerves. In the male, the periprostatic plexus forms a subdivision of the pelvic plexus and distributes fibers to the prostate, seminal vesicles, ejaculatory ducts, and corpora cavernosa. The fibers of the periprostatic plexus are made up of the parasympathetic elements from the second, third, and fourth sacral nerves (the nervi erigentes), and sympathetic elments that are distributed to the base of the bladder and proximal urethra and that play a role in the prevention of retrograde ejaculation [1]. Excision of part or all of the rectum involves dissection in close proximity to the pelvic nerves; the further from the rectum the dissection, the greater the risk of damage.

Sexual dysfunction following excision of the rectum is a well-recognized complication. It is more likely to occur following operation for rectal cancer because of the more radical surgery performed and because it generally involves an older age group than does inflammatory bowel disease. The sexual dysfunction may be total or partial. With total dysfunction, there is inability to obtain an erection and have sexual intercourse. and the patient is impotent. There are varying degrees of partial dysfunction; intercourse is still possible, but there may be decreased frequency and strength of erections, or there may be no antegrade ejaculation.

We performed a prospective study of a group of patients undergoing rectal resection for inflammatory bowel disease and rectal carcinoma. The purpose of the study was to evaluate the effect of conservative and radical resection of the rectum on sexual function in male patients.

Materials and Methods

Twenty-one male patients underwent rectal resection for carcinoma of the rectum or inflammatory bowel disease at the Cleveland Clinic between February, 1978 and August, 1978. The patients were as-

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sessed preoperatively by history, physical examination, routine laboratory tests, intravenous pyelography, and cystometric studies. The sexual history was obtained by interview preoperatively and again postoperatively by the same observer (D.M.). Inquiry was made concerning ability to have an erection, ability to maintain an erection during coitus, coital frequency, attainment of orgasm, and the occurrence of retrograde ejaculation.

Rectal resection for inflammatory bowel disease employed the endoanal (intersphincteric) technique [2]. For carcinoma, radical abdominoperineal resection of the rectum (Miles operation) and anterior resection with low anastomosis were used. However, in all patients undergoing rectal resection for cancer, an attempt was made to identify and preserve the presacral nerves.

Of the 21 patients studied, 9 had proctocolectomy for inflammatory bowel disease, and their mean age was 29 years. Of the 12 with carcinoma of the rectum, 7 underwent abdominoperineal resection of the rectum, and 5 had anterior resection with low anastomosis. The mean age in this group was 60.2 years.

Results

Of the 9 patients undergoing proctocolectomy for inflammatory bowel disease, 8 had no change in their sexual function postoperatively. One patient, age 61 years, had partial sexual dysfunction in that the frequency of erections was reduced, although in other respects he remained unchanged from before operation.

Twelve patients underwent rectal excision for carcinoma. A Miles resection with colostomy was performed in 7 of these with resultant sexual dysfunction in 3. This consisted of impotence in 1 and partial dysfunction in 2. One 60-year-old man had decreased frequency of erections with no antegrade ejaculation, while the other patient was a 57-year-old man who had decreased frequency of erections and pelvic pain on ejaculation. Six patients underwent anterior resection with low colorectal anastomosis and 2 had partial sexual dysfunction; one 60-year-old man had decreased frequency of, and decreased ability to sustain erections, while another 73-year-old patient had decreased frequency of erections with no antegrade ejaculation.

There were no operative deaths, and all patients were followed up for a minimum period of 3 years. One patient with a Duke's class C carcinoma died 30 months after rectal resection. Two of the remaining 11 patients who had carcinoma of the rectum have residual malignancy. The remaining patients in the cancer group are clinically free of recurrence.

Discussion

The reported incidence of sexual dysfunction following excision of the rectum for inflammatory bowel disease varies from 9 to 29% [3–9]. Burnham et al. [3] found an overall incidence of sexual dysfunction in 29% of 118 male patients having excision of the rectum for inflammatory bowel disease. In patients below the age of 35 years, the incidence of erectile dysfunction was 8%, all partial. In patients between the ages of 35 and 45 years, the incidence of erectile dysfunction was 33%, 4% having impotence. In patients over the age of 45 years, the incidence of erectile dysfunction increased further to 53%, with 17% having impotence. Other series [4–9] have shown a similar trend, with impotence being confined to the older age group, but some degree of partial sexual dysfunction occurring at all ages. In our series, the incidence of sexual dysfunction following excision of the rectum for inflammatory bowel disease was 11%, the dysfunction being partial in the single patient, age 61 years. No patient having excision of the rectum for inflammatory bowel disease had total dysfunction.

As expected, the incidence of sexual dysfunction following excision of the rectum for carcinoma is higher. Williams et al. [10] found that 1/3 of patients were impotent and another 1/3 had failure of ejaculation following either abdominoperineal excision of the rectum or anterior resection. Stelzner [11] found that 1/2 of patients having abdominoperineal excision and 1/3 of patients having anterior resection were impotent. Weinstein and Roberts [12] reported that all patients having abdominoperineal excision were impotent, while sexual function was practically unchanged following anterior resection. In our series, the incidence of sexual dysfunction following abdominoperineal excision of the rectum for cancer was 50%, impotence being present in 16%. Following anterior resection with colorectal anastomosis, the incidence of sexual dysfunction was 40% with no case of impotence. The patients experiencing sexual dysfunction were confined to the older age group; the youngest was 57 years with the remainder being 60 years or over.

Ten of 13 patients (87%) undergoing rectal resection for carcinoma are free of recurrence at 3 years. Of the 2 patients surviving with recurrence, neither has the symptoms or findings of pelvic or local recurrence. It is probable, therefore, that a locally "adequate" cancer operation was performed on this group, and that the relatively low sexual dysfunction rate was not due to skimping on the extent of the operation.

The exact mechanism of sexual function is still not well understood. Partial sexual dysfunction has been documented in patients undergoing surgery for

both rectal cancer and inflammatory bowel disease. Whether this represents a quantitative disruption of part of the nerve supply, some psychogenic effect, or something else, is not known. The areas where the nerve supply would seem to be most at risk include the presacral nerves and hypogastric plexuses at the promontory of the sacrum and the anterior surface of the upper half of the sacrum; the anterolateral ligaments of the rectum; and the area anterior to the fascia of Denonvilliers, namely, the back of the seminal vesicles and prostate gland. The area of the sacral promontory may be protected by dissection close to the back of the rectum in cases of inflammatory bowel disease or, in the case of rectal cancer, by entering the bloodless plane between the investing layer of fascia of the rectum and Waldeyer's fascia where the presacral nerves can be seen, identified, and preserved. The lateral wall of the pelvis can be protected by dissecting close to the rectum for inflammatory bowel disease, but will remain at risk with the wider, lateral dissection on the pelvic wall for cancer. The plane anterior to the fascia of Denovilliers also is a "risk" area for the surgeon. Impotence almost always occurs after perineal prostatectomy, where this is the plane of the dissection. For inflammatory bowel disease, the surgeon can keep behind this plane and avoid displaying the seminal vesicles.

Résumé

Dans une étude prospective, nous avons analysé chez 21 hommes les troubles de la fonction sexuelle après amputation du rectum. Leur fréquence est de 11% après proctocolectomie pour maladie inflammatoire de l'intestin (9 cas) et les troubles sont toujours partiels. Après abdominopérinéale pour cancer du rectum (7 cas), 50% des opérés ont des troubles, avec perte fonctionnelle totale dans 16%. La fréquence est de 40% après résection abdominale du rectum avec anastomose colorectale (5 cas). Le risque augmente avec l'âge: il est minimal en-dessous de 50 ans. Dans les maladies inflammatoires de l'intestin, une dissection attentive, qui reste au contact du rectum, doit éviter toute lésion des nerfs pelviens avec une fréquence faible de troubles de la fonction sexuelle.

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Invited Commentary

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Problems of bladder and sexual function after excision of the rectum have been of concern to patients and surgeons for many years. The paper by Fazio et al. describes the wide disparity in the incidence of bladder and sexual dysfunction following rectal excision, as reported in the literature. One problem in obtaining true statistics regarding impaired function after rectal excision has been the difficulty in studying a truly prospective group of patients. Patients confronted with the need for an operation for a condition so feared as cancer and resulting in a colostomy are hardly in a mood to discuss their sexual habits with the examining surgeon. The work of Fazio et al. is a prospective study and thus sheds light upon this vexing topic. Although