The Radiation-Damaged Rectum: Resection with Coloanal Anastomosis Using the Endoanal Technique

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Fifty-nine consecutive patients with a radiation-damaged rectum were treated by subtotal rectal resection, continuity being restored by coloanal sleeve anastomosis using the endoanal suture technique. There were no deaths. Technical success was achieved in 55 patients (93%) with rectovaginal fistula, hemorrhagic proctitis, painful radiation ulcer, rectal stricture, or carcinoma developing in an irradiated rectum. An additional risk factor was present in all 4 technical failures, including a divided irradiated sphincter, previously divided marginal artery, diabetes, and persistent sepsis. Restorative surgery was attempted in all patients, irrespective of the severity of the radiation injury. Postoperative continence depended on anal sphincter function, with an improvement in full continence from 54% to 76% over the first postoperative year. Of the first 28 patients assessed at 1 year after operation, all 19 of those whose initial condition was well above the sphincter mechanism were fully continent, compared to only 2 of 9 with low fistulas extending down to the anal sphincter, which in these patients was histologically shown to be severely damaged by radiation. The functional status was assessed 1 year after surgery in 46 of the total 59 unselected patients treated. Thirty-five were continent (76%), 7 incompletely continent (15%), and 4 incontinent (9%). Long-term follow-up was possible in 35 of the first 37 consecutive patients successfully treated before February, 1980, and followed for a mean of 5.1 years (range 1–8 years 9 months). Four died of recurrent cancer. Twenty-four (77%) of the surviving 31 patients were fully continent at the time of final assessment, 4 incompletely continent, and 3 (9.7%) reverted to a colostomy because of incontinence or pelvic obstruction.

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the related degree of radiation damage to the anal sphincter mechanism. This article describes the surgical treatment of 59 patients with a radiation-damaged rectum, with particular emphasis on surgical technique, technical and functional results, and the subsequent fate of these patients.

Patients

Of the 59 consecutive patients treated, 50 were black, 6 white, and 3 of mixed racial origin. The mean age was 43.3 years (range 22 to 63); 3 were under 30 years and 3 over 60 years. Fifty-six suffered from carcinoma of the cervix, and 3 from carcinoma of the ovary. In the former, the stage of the disease was known in 55. Fourteen were stage 1, 17 were stage 2a, 12 stage 2b, and 12 stage 3 at the time of diagnosis. The mean time interval between radiation treatment and the development of complications was 17 months (range 1 month to 11 years), the interval being between 6 and 24 months in 46 of 54 patients in whom it was known. In 2 patients it was apparently 8 years, and in two, 11 years. In 21 of the 59 patients with rectal radiation damage, additional radiation injury had occurred. This led to a vesicovaginal fistula (9), enterovaginal fistula (1), enterovesical fistula (1), enterouterine fistula (1), contracted bladder (1), small bowel obstruction due to stenosis (4), and severe radionecrosis of paravaginal and pararectal connective tissue [4].

In all 42 patients with a rectovaginal fistula (Fig. 1), the defect was large, attempted local repair having previously failed in 10 patients. In most instances the width of the fistula was equivalent to that of the vagina, and in some cases the defect extended down to near the introitus, to impinge on the anal sphincter mechanism. In 1 patient necrosis of the anterior aspect of the sphincter had led to the formation of a "cloaca." In a number of patients the fistula was accompanied by a rectal stricture. Eight other patients had bled severely from hemorrhagic radiation proctitis and required urgent rectal resection, a preliminary colostomy having failed to stop the hemorrhage in 4. A painful anterior rectal radiation ulcer was the indication for surgery in 5 patients. This condition was the forerunner of a fistula in others. In 3 patients a rectal stricture was the principal pathological finding and had developed at posterior fornix level, or a little higher, 2 of these patients having been treated for ovarian carcinoma. In these 2, the radiation injury was at a distinctly higher level than in the patients treated for carcinoma of the cervix. One other patient had a severe radiation proctitis, complicated by the development of a carcinoma in the upper rectum, 6 years after radiotherapy for ovarian carcinoma.

Only those patients thought to have been cured of their carcinoma were accepted for reparative surgery, but the operation was performed in 3 in whom evidence of a small localized recurrence was found at exploratory laparotomy, since in these patients the prognosis was estimated to be relatively good. The preoperative differential diagnosis between recurrent malignancy and radiation effect was not always simple. Pointers toward recurrent malignancy included the clinical finding of large irregular pelvic masses, as opposed to the "frozen" but empty pelvis, and an obstructed ureter on excretion pyelography. On occasion, the diagnosis of recurrence could be confirmed by cervical or rectal biopsy.

In this series, no patients were rejected as unsuitable for reparative surgery on the grounds of the severity of the bowel injury. This policy was adopted since no large group of similar patients had previously been treated by this technique, and the limitations, as well as the benefits of the procedure, had not been clearly defined. In addition, treatment