Preoperative radiotherapy reduced recurrence after surgery for rectal cancer


Objective
To determine whether preoperative radiotherapy reduces local recurrence and increases survival in patients who have surgery for locally advanced but operable rectal cancer.

Design
Randomised controlled trial with a minimum follow-up of 5 years.

Setting
20 regional centres in the United Kingdom.

Patients
279 adults (69% men) with histologically proven adenocarcinoma of the rectum partially or totally fixed within the pelvis. Inclusion criteria were age < 80 years, suitability for treatment, and no disseminated disease. Accrual occurred from 1981 to 1989.

Intervention
139 patients were randomised to radiotherapy plus surgery and 140 to surgery alone. Megavoltage radiotherapy (40 Gy given in 20 fractions of 2 Gy over 4 wk) was given to the pelvis with anterior-posterior parallel opposed fields, 18 cm (length) by 15 cm (width), positioned to cover the tumour with an adequate proximal margin (usually 5 cm). Surgery was done a minimum of 4 weeks after radiotherapy. Follow-up was 97%.

Main outcome measures
Survival, disease-free survival, local recurrence, distant recurrence, and complications. The study was stopped early because of problems with recruitment (279 patients of 450 planned were recruited). All analyses were by intention to treat.

Main results
Surgery was considered curative in 40% of patients who had surgery alone and in 47% of those who received radiotherapy and surgery. Disease-free survival was higher in patients who received radiotherapy (hazard ratio [HR] 0.76, 95% CI 0.58 to 1.0, P = 0.05). Fewer patients who received radiotherapy had local recurrences (50 vs 65, HR 0.68, CI 0.47 to 0.98, P = 0.04) and extrapelvic recurrences (49 vs 67, HR 0.66, CI 0.46 to 0.95, P = 0.02). Median survival times were 24 months in the surgery alone group and 36 months in the surgery plus radiation group. The groups did not differ for mortality at 5 years (114 of 140 patients [81%] who received surgery alone vs 103 of 139 patients [74%] who received radiotherapy had died [HR 0.79, CI 0.60 to 1.04, P = 0.10]). The groups did not differ for complications after surgery or for late complications.

Conclusions
Radiotherapy given to patients before surgery for rectal cancer reduced the risk for local and extrapelvic recurrences. Overall survival was not improved, and complications were not increased.

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Commentary (continued from page 118)

Operative radiation in combination with chemotherapy has, in some studies, led to high rates of moderately severe late morbidity, especially anorectal dysfunction, although major toxicity requiring surgical intervention has been infrequent. Preoperative radiation offers the advantage that much of the irradiated rectum is removed and is reconstructed with unirradiated colon. A randomised trial that compared preoperative radiation (23 Gy in 5 fractions in 1 wk) with postoperative radiation (60 Gy in 30 fractions in 8 wk) found better results with preoperative treatment with respect to local recurrence and late complications, although survival was similar (9). No randomised trial has yet been done that compares identical radiation schedules given before and after surgery.

The 2 MRC studies delivered moderate-dose radiation to the whole pelvis. Current studies are exploring the role of higher doses, including short intensive courses of preoperative radiation given immediately before surgery, confined to the posterior pelvis, but the optimum doses and techniques are not yet established. These MRC trials provide encouragement to those involved in the adjuvant treatment of rectal cancer, although the radiation doses and techniques used and the use of single-modality adjuvant have now largely been superseded.

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References