EEA Stapler for Mid-rectum Carcinoma
Review of Recent Literature and Own Initial Experience

ULF ÖHMAN, M.D., TORGNY SVENBERG, M.D.

Over a three-year period, 1980-82, 79 per cent of our patients with rectal cancer were treated with the intention of cure, and sphincter-saving procedures were performed in 62 per cent of these cases. This report concerns 21 patients with mid-rectum cancer operated on with low anterior resection and extraperitoneal EEA-stapled anastomosis. Nine patients had Dukes' stage A tumors, seven had stage B, and five had stage C tumors. An 86-year-old woman died in the sixth postoperative week, and a 74-year-old man died after 20 months with a probable recurrence. Nineteen patients are currently alive 4 to 40 months postoperatively, with no overt signs of recurrence. We cannot confirm recent alarming reports on a significant incidence of early local recurrence. Routine Gastrografin enemas were performed and offered very little in terms of clinical guidance. Significant anastomotic leakage occurred in four patients, although without clinical symptoms or the need for fecal diversion. Despite initially intact anastomoses in 13 patients, pelvic sepsis with late dehiscence developed in three, all of whom required fecal diversion. The clinical leak rate was thus 3 of 21, 14 per cent, and the total incidence of leakage 7 of 21, 33 per cent. We performed routine colostomy on the first three patients but, in retrospect, believe this was unnecessary. Only one of the 19 survivors still has a colostomy, due to a benign anastomotic stricture. We consider anterior resection of mid-rectum carcinoma with EEA-stapled anastomosis a highly feasible procedure, the curative potential of which, however, can be established only by long-term follow-up studies.

Keywords: Rectal carcinoma, EEA stapler; Local recurrence; Anastomotic dehiscence; Diverting colostomy

IN THE TREATMENT of rectal carcinoma, a successful sphincter-saving procedure has obvious advantages for the patient's quality of life as compared with total rectal excision with permanent colostomy. This presupposes, however, that the risk for local recurrence is not increased and the incidence of and morbidity from anastomotic dehiscence are acceptable.

Several studies document convincingly that restorative resection for mid-rectum cancer is at least as curative as total excision in terms of five-year survival.1-13 The advent in recent years of circular staplers14-17 has made very low colorectal anastomoses possible, thereby extending the limits for sphincter-saving procedures12,13,18-21 and diminishing the need for posterior approaches.22-28 It has been estimated that the EEA stapler can preserve 12 per cent of rectums that otherwise would be sacrificed,29-31 and Goligher26 believes that the total number of patients who would be able to retain their sphincters could increase to some 75 per cent.

Although the mortality from major operations for rectal cancer should now approach zero,32 the important question of a possible higher incidence of local recurrence after sphincter-saving operations remains unresolved.26,35 Local recurrence is virtually unknown after removal of stage A tumors, but it occurs in one-third of patients with stage B tumors and two-thirds of those in stage C.13 Even if contemporary reports on stapling procedures account for an incidence of local recurrence of no more than 1 or 2 per cent,33 this is probably an underestimation of the true incidence, since the recurrence rates are known to be 30 to 50 per cent with conventional techniques.34-37

Recent reports of an alarming nature account for significant rates of early local recurrence after anterior resection for rectal cancer utilizing the EEA stapler. These rates vary from 20 per cent38,39 to more than 30 per cent40 and deserve serious consideration. Of 18 patients with local recurrence, all had locally advanced tumors, and only one was in a stage less than Dukes' C. These facts may suggest that the newer techniques should be best reserved for tumors of a more favorable nature.40 The finding of deposits behind the rectum has been taken to imply that inadequate removal of the mesorectum in low anterior resection may be the basic clue to pelvic recurrence.41

Another pertinent and frequently debated question concerns the problem of a safe margin below the tumor.
Data suggesting reduced survival with a distal margin less than 5 cm have been inconsistent, and the perpetual discrepancy between the surgeon's operative report of an adequate margin and the pathologist's report of no margin at all has not helped to clarify the situation. A recent careful study showed only 10 per cent of rectal cancers to have a spread of more than 1 cm below the tumor, and all these were poorly differentiated Dukes' C growths. A clinical correlate demonstrated outcome to be as good in patients with a small distal margin as in those with a wide margin, leading to the conclusion that a rigid routine application of the "5-cm rule" may cause many patients to lose their anal sphincters unnecessarily. It has also been shown recently that, contrary to previous belief, even for poorly differentiated cancers, restorative resections are as curative as total excisions. Reviewing all the data pertaining to the curative potential of sphincter-saving resections, Goligher concludes that surgeons should feel free to use these procedures to the limit of technical feasibility.

The next important issue is the incidence of anastomotic dehiscence. Certain basic requirements are needed for an anastomosis to heal, such as adequate nutrition, good bowel preparation, careful apposition, no tension, and a good blood supply. Low anastomoses dehisce more often than high ones, and the leakage rate is considerably higher in hand-sewn than in stapled anastomoses, both in humans and in dogs. A comparison of stapled and sutured anastomoses in dogs showed that the former involved less narrowing but, on the other hand, a delayed mucosal healing. Another dog experiment revealed fewer leaks in SPTU-stapled than in EEA-stapled anastomoses, whereas in clinical use the Russian SPTU gun had certain disadvantages. A collective review of 550 anastomoses in humans showed a clinical leakage rate of 27 per cent in sutured and 8 per cent in stapled anastomoses.

Reports on clinical EEA series are accumulating rapidly. The rate of clinically significant leakage was 10 per cent in a questionnaire covering almost 3600 operations, ranging from 10 to 15 per cent in most single reports, although several authors report leakage rates in the 5 per cent range, and even lower. When anastomotic leaks are consistently and deliberately sought, the total leakage rate will be in the 25 to 35 per cent range. Several investigators have performed radiographic control of all low stapled anastomoses, while others advise against its routine use. The need for a protecting colostomy is a pertinent issue, since a colostomy involves inconvenience for the patient, a multi-staged procedure, and a significant potential for complications attached to its closure. Though a few operators protect all their low anastomoses, most protect only those anastomoses with poor blood supply or questionable construction. A comparison of stapled and sutured anastomoses in dogs showed that the former involved less narrowing but, on the other hand, a delayed mucosal healing. Another dog experiment revealed fewer leaks in SPTU-stapled than in EEA-stapled anastomoses, whereas in clinical use the Russian SPTU gun had certain disadvantages. A collective review of 550 anastomoses in humans showed a clinical leakage rate of 27 per cent in sutured and 8 per cent in stapled anastomoses.

Fig. 1. (Patient 1.) Low anterior resection for Dukes' stage B cancer. EEA-stapled anastomosis to sigmoid colon with diverticula. Anastomosis sealed with complementary manual sutures. Impressive leak two weeks postoperatively but entirely smooth course without sepsis or the need for diversion.

Fig. 2. (Patient 1.) Repeat enema two months postoperatively; the anastomosis is intact.