Role of EEA Stapler In Rectal Surgery

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Abstract
Low rectal anastomosis was possible using an EEA stapler in 63 patients (adenocarcinoma 56, stricture rectum 3, radiation proctitis 2, solitary ulcer rectum 2) in whom sphincter-saving procedures were done. The post-operative complications were minimized. The role of transsacral tube ileostomy in selected cases is also discussed.

Key words: EEA stapler, low rectal anastomosis.

Introduction
Abdomino-perineal resection, presently the standard procedure for gross pathological lesions of the mid-rectum, has the disadvantage of permanent colostomy. With the advent of automatic suture stapling devices such as the SPTU gun from the USSR and the EEA gun from the United States, most cases can be managed with a very low anterior resection and colo-anal anastomosis. This paper reports the results with an EEA stapling gun used during the primary resection of the rectum in the period 1978 to 1985.

Material and Methods
The 63 patients studied (52 males, 11 females aged 21 to 76 years) consisted of patients with adenocarcinoma rectum (56), stricture rectum (3—2 due to nonspecific stricture and 1 tuberculosis) and radiation proctitis and solitary ulcer rectum (2 each). Sphincter saving procedures were adopted for patients with well-differentiated (24) and moderately differentiated (22) carcinoma, when the growth was in the lower rectum (in seven cases the growth was at 5 cm, in 35 at 6 cm and in 14 at 7 cm from the anal verge).

Patients with cancer rectum had preliminary examination with a proctoscope and the extent of the growth, its consistency, mobility, degree of infiltration, and the metastasis to the para-rectal lymph nodes were noted. Sigmoidoscopy was done for high rectal growths and biopsy was taken in all the cases. All of them were subjected to serial biopsies towards the anus to know the lower limit of extension. Barium enema was done to detect any associated lesions, to rule out multi-centric carcinomatous, and to determine the upward extension of the growth. Patients with stricture of the rectum were investigated with haemogram, stool examination for parasites, Mantoux test, skin graft chest to rule out focus of tuberculosis, Friè's test and Wassermann test.

The pre-operative preparation for patients with cancer belonging to Duke's B and C groups consisted of irradiation (200 rads day 6 days a week for 2 weeks) along with 10 mg of mitomycin C and 500 mg of 5 fluorouracil weekly during the period of irradiation. The patients were taken up for surgery after 10 days.

The bowel was prepared in each patient by mechanical cleaning and with oral metronidazole and neomycin; the patients were on liquid diet for 3 days.

Use of staplers
The patient was put in the lithotomy—Trendelenburg position and the preliminaries for the resection carried out. The rectum was mobilised from the pelvis avoiding damage to the hypogastric plexus. The inferior mesenteric artery was ligated flush at its origin and the inferior mesenteric vein below the lower border of the pancreas. The left half of the colon up to the mid-transverse colon was then mobilised to have a tension-free anastomosis. A right-angled clamp was placed across the colon distal to the lesion, giving adequate clearance. A second clamp placed proximal to the lesion prevented soiling of the operative field.

The rectum was resected giving adequate clearance and the stump washed with mercuric perchloride. The ends of the rectum and colon were trimmed without fat from surrounding tissues. The gathering stitches were applied to the edges both proximally and distally using 2-0 prolene. The lubricated EEA instrument (Fig2) was then introduced through the anus after anal stretching. As the anvil bearing nose cone emerged, the wing nut on the instrument was turned to separate the nose cone from the staple cartridge. The distal gathering stitches

Fig 2: Curved and straight EEA staplers (top) and the Russian SPTU gun (bottom).
were then tied tightly around the central rod. The proximal gathering stitches were applied. The handle was then turned by the winged end until the bowels were approximated as shown by the vernier marks. The two handles were closed tight, driving in the two rows of staples while the circular knife cuts the abutting purse string ends. The anvil and the cartridge were separated by the counter clockwise rotation of the central element of the handle and the instrument was withdrawn by spiral twisting.

The double rings of excised bowel still inside the cartridge were examined carefully while maintaining their orientation. If there was deficiency in either ring, sutures were placed at that point. The 'doughnuts' were sent for histopathological examination to determine if the clearance was adequate.

The cavity in the pelvis was obliterated with coils of mobilised left colon. This created an angle just above the anastomosis but it remained. There was no need for proximal colostomy if the anastomosis was sound and the proximal colon empty. Anal stretching was done in all cases. In the event of badly prepared colon or obstructive lesions, the proximal colon was emptied by a sigmoidoscopic sheath and temporary transrectal tube ileostomy done instead of a colostomy.

In some patients with large growths, the conventional 5 cm clearance was not always possible. In such cases after stapler anastomosis the patient was followed up for evidence of recurrence. All the patients were followed up monthly with special regard to continence and bowel habits.

Results

Sixteen of the patients were lost to follow up, including all with benign rectal strictures and 1 of the 2 with solitary rectal ulcers (the other case has been followed up for three years). Forty seven cases were followed up for at least three months with 26, 18, 11 and 5 followed up for 1, 2, 3 and more than 3 years respectively. Complications observed were (i) leak at the anastomotic site (2 due to rectal carcinoma at 5 cm from the anal verge and one case of solitary rectal ulcer). The leak closed on its own in all the cases treated by irrigation and keeping the tube drain and washing with metronidazole; (ii) wound infection (2 cases of rectal malignancy at 6 cm from the anal verge); (iii) death within one month (2, due to pulmonary complications, general inertia and coronary thrombosis respectively).

Discussion

The EEA gun and SPTU gun are the stapling devices in use now. The former is a disposable gun and has many advantages. The SPTU gun can be loaded and maintained in good condition by a person. Failures may require a second shot or even manual anastomosis. brisk bleed is also possible due to gaps between the staples as the SPTU gun has a single row of staples.

A low anastomosis is possible with a stapler gun because of the following facts: (i) purse-string sutures can be easily applied at the distal stump, avoiding manual sutures, (ii) the gun excises a fringe of 1 cm from the rectal stump and this can be allowed in the initial resection by having a margin of only 1-5 cm - 2 cm.

Anastomotic leakage can occur especially in low anastomosis. The incidence can be brought down significantly by careful selection of cases, a good pre-operative preparation of the patient as well as the bowel, and proper technique. The anastomosis should be sound without any tension and a good blood supply to the bowel is essential. The cavity behind the rectum should also be obliterated.

Slesky and Remington's rule of pre-operative irradiation if a low anterior resection is contemplated. Anastomotic dehiscence, fibrosis and partial stenosis are described as its aftermath. But in our experience low doses of irradiation given pre-operatively was very useful. It increased the operability of the tumour by reducing its size and possibly reduced the rate of local recurrence.

A transverse loop ileostomy is done in poor risk patients especially when a low anastomosis is contemplated or in cases with obstruction. This procedure is unnecessary in cases where a sound anastomosis is performed. We prefer this procedure to the temporary transverse loop colostomy, as the latter requires a second surgery to close the colostomy, with its attendant complications. It is also difficult to maintain the transverse loop colostomy and our patients may even refuse surgery for fear of temporary colostomy.

We conclude that the management of patients with rectal cancer depends on the site, stage, histologic reading and operative risk of the patient. Where possible without risk of compromising cancer clearance, a radical excision of the rectum with colo-rectal or colo-anal anastomosis is preferred in our patients to the standard abdomino-perineal resection with a permanent colostomy. This is technically possible with the help of stapling device. Thus colostomies are avoided and the post-operative care in terms of stomal care dressings and hospitalisation is less.

The EEA gun is easy to operate and is preferred to the SPTU gun. These instruments provide neatness and precision and decrease trauma. Bleeding and contamination are minimised.

References


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