

TOTAL MESORECTAL EXCISION - IT'S ROLE IN RECTAL CANCER SURGERY

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Introduction: There are numerous factors, most are of technical nature, that result with different outcome of surgical intervention on the rectum. Thanks to this variety of the surgical technique McArdle and Hole in Scotland found out that the local recurrence rate differs, from surgeon to surgeon, between 0 and 45% (2).

Among many other differences in the surgical techniques, a concept of Total Mesorectal Excision, seems to be accepted by most of colorectal surgeons.

This concept was first introduced by RJ Head in 1982, and was described as the main reason for low local recurrence rate.

To explain this, authors describe discontinuous spread of tumor nests into the mesorectum well distal to the lower margin of the tumor. This potential source of local recurrence led to the doctrine that total mesorectal excision should accompany anterior resection as a part of a routine procedure. Performing it in this way authors report recurrence rate lower than 5% (3). This maneuver, however, does not eradicate local recurrence, as the total rectal excision doesn't as well. It does not deal with metastatic spread in lymphnodes of the lateral pelvic wall, which is known to occur in 10 to 30%.

These data raises many dilemmas of T N M, and only multicentric randomized trial could solve them. This is however hard to achieve, since it's too difficult to standardize a precise surgical technique used by different surgeons.

It is reasonable to conclude that T N M will optimize the outcome of anterior resection by minimizing local recurrence although it will not abolish it.

As the alternative, Japanese surgeons offer their technique of extended lymphadenectomy, whereby the lateral and superior lymphatic systems are excised. This includes a high ligation of the inferior mesenteric artery and an extended periaortic and pelvic lymph node dissection beginning at the duodenum and extending down to take the periaortic and lateral iliac lymph nodes. The lateral limits of the dissection are usually the median borders of the iliac vessels, but some authors begin well out the iliac fossa wall and may even ligate the hypogastric vessels. Western colorectal surgeons remain to be convinced that the increased morbidity which is associated with extended lateral lymph node dissection justifies the results. In addition there are similar retrospective studies which claim no benefit for the techniques (4,5).

Material and methods

From the January 1991 to the 1 of January 1997 we have operated on 286 patients with rectal carcinoma. Within all of the patients we have performed resection of the rectum and colorectal anastomosis with stapler. Of these patients, 181 were with localization of the tumor below 7cm from the anal verge, therefore we performed low and ultra-low resection of the rectum with total mesorectal excision, 96 (53%) men and 85 (47%) female. Anastomosis was constructed using circular stapler or double stapling technique.

T M E technique:

Theoretical basis for practicing T M E, set by Mr. RJ Heald in so called „T M E hypothesis” comprises two rational but as he, himself claims, unproven suppositions (6).

1. The surgical planes between the integral visceral mesentery of the hind gut and the surrounding parities provide a unique opportunity for defining a surgically achievable „tumor package”.
2. By serendipity, the field of spread of rectal cancer is commonly limited to this package, i. e. the mesorectum. Its total removal encompasses virtually every tumor satellite except in cases which are already widely disseminated (7).

Total excision of the mesorectum is a maneuver we have reserved for the cancer of middle and lower third of the rectum, and we perform it in the original manner as Mr. Heald (8) described it only from the January 1996, till we have personally been

introduced to this method by Mr. Heald (January 1996, Basingstoke). In all other cases with localization higher then the middle third (approx. above 7cm of rectoscopic distance) we have performed transection of the mesorectum.

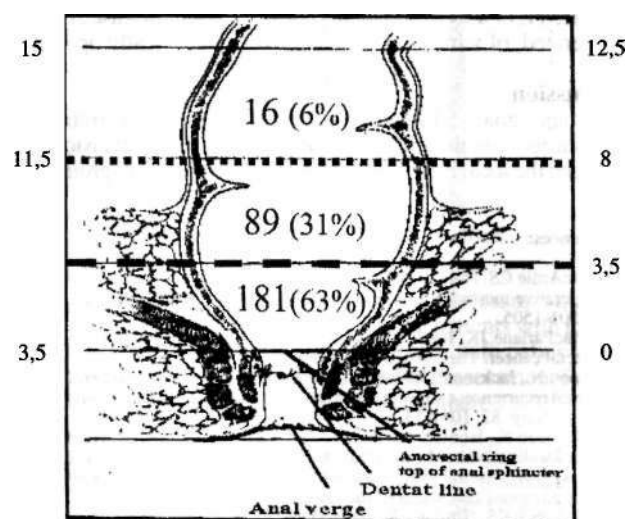
After separate of the left colon, high ligation of the inferior mesenteric vessels define the proximal limits of the lymphatic clearance near to the aorta. By moving downwards it is essential recognizing an avascular plane between visceral structures (rectum and mesorectum) and somatic structures (autonomic nerve plexus, sympathetic above and parasympathetic below). Sharp scissors dissection under direct vision is used throughout. Manual extraction, often performed, is to be avoided. The peritoneal incision are also widely placed and encompassed the whole peritoneal reflection. The middle rectal vessels are also divided, as far from the tumor as possible. Whether or not the sphincters are conserved, the most dangerous part of the operation is the immediate vicinity of the tumor. This is usually above pelvic floor, not involving levatore muscles. When the whole rectum with mesorectum is encompassed in this way, it can be lifted and dissected 2cm below lower margin of the tumor. In some cases when tumor permits, small reservoir of the rectum can be retain of about 2-3cm above pelvic floor. A clamp is placed across this reservoir and wash-out should be carried out. Anastomosis was performed using circular stapler or double stapling technique, depending of circumstances.

Diversion of fecal stream, by forming loop ileostomy, we found to be extreme help. It makes consequences of anastomotic leakage much easier to deal with.

Results

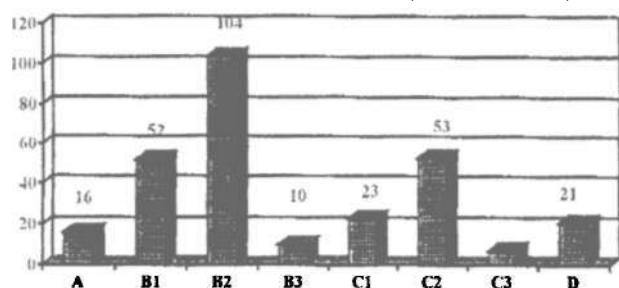
In six-year period we have treated 286 patients with rectal cancer. In all these cases we have performed anterior resection of the rectum with stapling colo recto anastomosis. Height of the anastomosis was dictated by the localization of the tumor. In 181 patient tumor was localized in the lower third of the rectum, so we performed low and ultra low anterior resection with mesorectectomy.

LEVEL OF ANASTOMOSIS



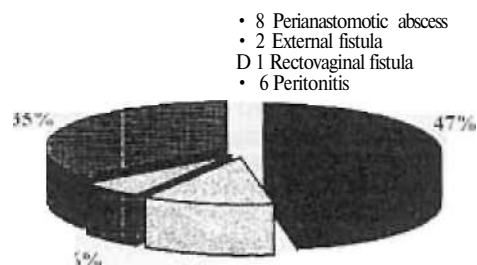
Aortoiliac lymphadenectomy and preservation of hypogastric nerves was performed in all cases. Pathohistological findings revealed 8 (4,4%) patients in A stadium of the disease, 106 (58,5%) of stadium B, and 55 (30,5%) of stadium C. D stadium of the carcinoma was detected in 12 (6,6).

DUKES PATHOLOGICAL STAGING (Gurderson - Sosin) n-286



Loop ileostomy was as a protection to (34,8%) low and colo-anal anastomosis. TME in it's original manner as Hr Heald had proposed it, become handled down on our department in the 1996, after personal meeting with the surgeon. Before this we can not guarantee that the Mesorectal excision was done in the proper manner, so the results of the Total Mesorectal Excision differs till and after January 1996. Complications connected to the anastomosis were clinically observed in 17 (5,95%). Perianostomotic abscess was noticed within 8 patients. Diffuse peritonitis occurred in 6 patients. Stercoral fistula in one and recto-vaginal fistula in one patient.

CONSEQUENCES OF ANASTOMOTIC LEAKAGE n-286



In patients with anastomoses below 7cm we had 10 anastomotic leakages which is 5,52%, while in the group with middle rectal anastomosis (7-11,5cm) we had 7 (7,86%) leakages. In group with high (more than 11,5cm) anastomosis we didn't observe signs of dehiscence. Of these 181 patients, 6 (3,3%) died in postoperative course.

In group with low anterior resection (n-181), local recurrence was detected in 16 (9,1%) patients, local + distal recurrence in 3 (1,7%) and distal in 13 patients (7,42%). Peritoneal dissemination 3 (1,71%). Of all patients with a recurrent disease 20 were reoperated, of which 7 are considered to be radically operated.

Discussion

The major goal of this series has been that the concentration by one surgeon on the technique of total mesorectal excision has reduced the local recurrence rate to 9,1%. No control group was

available but recent reports have included figures as high as 30-40%. This improvement in local recurrence has been achieved despite reduction of the mural safety margin so as to do a minimum of abdomino-perineal and permanent colostomy. Conventional anterior resection leaves a variable amount to distal mesorectum in the pelvis: The lower tumors are not only surgically more difficult but also more closely associated with distal mesorectum than the higher one. Furthermore, varying residues of distal and perirectal lympho-vascular tissue could explain the enormous variations in reported local recurrence rates after different operations reported from different surgeons. Enker (9) and colleagues from Sloan Kettering Cancer Center found a local recurrence rate of 7,3% in a consecutive series 246 patients with rectal cancer treated by TME. This recurrence rate included both patients with and without distant metastases and was considered to be significantly better. In McCall et al's review of the literature the median local recurrence rate was 18,5% after follow up in 10465 patients (10). Of these patients, 1022 had undergone TME. The local recurrence rate in those undergone TME was 7,1%. It does appear therefore that TME holds the promise of considerable reducing local recurrence but attention to detail will be required to prevent complications. Provided the anatomy of the pelvic nerves are understood, bladder and sexual dysfunction should be avoided. Readers are referred to an excellent review of this anatomy by Havenga et al (11,12).

One concern that has been is that TME may lead to a high incidence of anastomotic dehiscence. Thus in Heald's series (13) there were 24 (11%) major anastomotic leaks in 219 patients undergoing low sphincter saving resection with TME. In addition further 14 (6,4%) of asymptomatic leaks were found on contrast enemas. It may be that TME results in the devascularization of the anorectal stump. For this reason a defunctioning stoma has been recommended as a routine addition when TME is used (14).

On the other hand Japanese authors understand TME little bit different than most Western surgeons, especially Scandinavians. As Mr. Takahashi states that Mr. Heald's term „Holly plane“ does not exist as an anatomical term but a technical one, and that lymphonodectomy should not remain within these borders, but extend to outer tissue surrounding internal iliac vessels (second and third space). According to Mr. Takahashi, mesorectum is set only for the first space, and he gives a number of 125 of 1136 cases, of positive nodes outside mesorectum (15).

However this question remains open for further debates.

Conclusion

As the essence of this paper we can stress out the claim that Total Mesorectal Excision should become the defined objective of rectal cancer surgery, that nerve visualization and preservation should be possible in most cases, and that the anal sphincters need to be sacrificed in no more than 15% of patients. „There is no area of treatment where the development of better surgical technique has so much to offer the patient“ - R. J. Heald.

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