First thousand rectal cancer cases - local recurrence and survival

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In the period 1990 - 2002, 1674 patients with colorectal carcinoma were operated in the First Surgical Clinic, Third Department for Colorectal Surgery. In 1264 cases (75,5%) rectal carcinoma was the indication for surgical treatment. Sphincter saving procedures (SSP) were performed in 824 (65,2%), abdominoperineal resections (APR) in 340 (26,9%) and resections of rectum with definitive stoma (Hartmann procedure) in 100 (7,9%) patients. We analyzed 1095 cases where curative SSP or APR were performed. All cases where curative resection was not possible because of liver metastases or inability to excise all macroscopic disease were excluded.

In the group of patients where SSP was performed (767 cases), there were 26,6% high colorectal anastomoses (8cm from anal verge), 65,4% with low (4-8cm from anal verge) and 8,0% with intersphincteric coloanal anastomosis (cm from anal verge). Pathological exam showed 5,3% Dukes A, 53,1% Dukes B, 36,5% Dukes C and 4,9% Dukes D. In the APR group (338 cases) there were 1,5% Dukes A, 32,4% Dukes B, 62,1% Dukes C and 3,5% Dukes D. In this study we analyzed local recurrence and five-year survival in both groups. Recurrence of the disease was registered in 325 (29,6%) out of 1095 patients. Local recurrence was found in 81 (7,4%) patients. In the SSP group recurrence occurred in 215 (28,0%) out of 767 curative resections. Local recurrence alone was found in 53 patients (6,9%). SSP group was also divided into two subgroups; in the first group TME was performed and in second transection of mesorectum was carried out. Analyzing local recurrence in these two groups, in the TME group it was 7,6% and in the transection group 5,6%. In the APR group recurrence was registered in 110 (33,5%) out of 328 patients while local recurrence alone was found in 28 (8,5%) cases. Analyzing mortality we found that 234 (21,4%) out of 1095 patients died during follow-up. In the SSP group 154 out of 767 patients (20,1%) died. In the TME group mortality was 21,7% and in the transection group 16,9%. Mortality in the APR group showed that 80 out of 328 (24,4%) patients died during follow-up. Analysis by the Kaplan-Meier's test shows cumulative survival of 0,69 for all cases. In the SSP group cumulative survival is 0,72 and in the APR group 0,64 with statistically significant difference (p,001). In the TME group cumulative survival is 0,75 and in the transection group 0,72 with statistically significant difference (p,05). We believe that performing SSP should be encouraged whenever it is possible because there is no difference in local recurrence rates and survival compared to APR.

Transsection of mesorectum can safely be performed in most cases with tumors located more than 8 cm from anal verge. We believe that exact preoperative staging and preoperative radiotherapy could improve results.

Key words: rectal cancer, recurrence, survival

INTRODUCTION

In this study, we analyzed local recurrence and five-year survival after long-term follow-up in patients operated due to rectal carcinoma where sphincter-saving procedure (SSP) or abdominoperineal resection of rectum (APR) were performed.

PATIENTS AND METHODS

During period 1990-2002, 1264 patients with rectal carcinoma were operated on in Third Department for Colorectal surgery, First surgical clinic. Sphincter-saving procedures were performed in 824 (65,2%) and Abdominoperineal resections of rectum (APR) in 340 (26,9%). Resections of rectum with definitive stoma were performed in 100 (7,9%) cases.

We analyzed 1095 cases where curative SSP or APR were performed. All cases where curative resection was not possible because of liver metastases or inability to remove all macroscopic malignant tissue were excluded.
There were 61.8% males and 38.2% females, average age 56.6 years (17-88 years). Pathohistological examination of biopsy specimens revealed adenocarcinoma in all cases.

In 767 cases splanic-saving procedure was performed and in 328 patients abdominoperineal resection of rectum was carried out.

The SSP group was divided into three subgroups according to the level of colorectal or caecal anal anastomosis. There were 26.6% high colorectal anastomoses (anastomosis 8 cm from anal verge), 65.4% with low (anastomosis 3-8 cm from anal verge) and 8.0% with intersphincteric caecal anal anastomosis (anastomosis cm from anal verge).

The same surgical team performed all of the operations and after the operation all patients were regularly followed-up. The operation was defined as curative in all subjects where all macroscopic tumor tissue was removed at operation. High ligation of the mesenteric vessels was performed in all cases. The splenic flexure was not mobilized in those cases were the colon was sufficiently long to allow creation of anastomosis without tension. Complete lymphvascular package harvest with preservation of hypogastric nerves was a standard part of the procedure. The pelvic plexus and sacral nerves were preserved in all cases when it was possible. Due to technical limitations preoperative radiotherapy was not performed for T3 and T4 tumors until beginning of year 2001 when it started sporadically.

Until 1996 total mesorectal excision (TME) was not performed as described by Mr. J. Heald. After specialization in TME in Basinstoke and especially after Mr. Heald's visit to Belgrade, TME became the standard procedure in the treatment of rectal cancer in our department. Treatment of rectal cancers up to 8 cm from anal verge included TME as a standard part of the procedure while in rectal cancers above 8 cm transection of mesorectum was carried out in most cases. Sometimes, in cases with bulky, advanced and fixed tumors with suspected deposits in mesorectum TME was performed despite tumor distance. In all cases where transection of mesorectum was performed distal clearance was more than 3 cm. In cases with TME, especially in cases where low intersphincteric anastomosis was created distal clearance was less than 2 cm, in some cases less than 1 cm. There were no positive doughnuts on pathohistological exam in cases where anastomosis was created with stapled device.

In the SSP group, there were 5.3% Dukes A, 53.1% Dukes B, 36.5% Dukes C and 4.9% Dukes D. In the APR group (328 cases) there were 1.5% Dukes A, 32.4% Dukes B, 62.1% Dukes C and 3.5% Dukes D.

Three weeks after discharge from hospital all patients had their first outpatient visit and were included in follow-up according to the pathological stage.

All the data about patients during hospitalization and follow-up visits were stored in the computer base specially designed for colorectal carcinoma. Statistical analysis was performed at the Statistical Institute, University of Belgrade using SPSS version 10.0 (SPSS, Chicago, IL.)
In the APR group recurrence was registered in 110 (33.5%) out of 328 patients while local recurrence alone was found in 28 (8.5%) cases.

Disease free survival by Kaplan-Meier test showed cumulative disease-free survival of 0.72 and 0.89 for local recurrence for all rectal cancers (Fig. 1).

In the SSP group, cumulative probability for developing local recurrence was 0.09 and in the APR group 0.10 with no statistically significant difference (p=0.05). (Fig. 2).

In the TME group cumulative probability for developing local recurrence was 0.12 and in the transection group 0.09 with no statistically significant difference (p=0.05). (Fig. 3).

Survival

Analyzing mortality we found that 234 (21.4%) out of 1095 patients died during follow-up. In the SSP group 154 out of 767 patients (20.1%) died. In the TME group mortality was 21.7% and in the transection group 16.9%. Mortality in the APR group showed that 80 out of 328 (24.4%) patients died during follow-up.

Analysis by the Kaplan-Meier’s test shows cumulative survival of 0.69 for all cases. In the SSP group cumulative survival is 0.72 and in the APR group 0.64 with statistically significant difference (p=0.01). (Fig. 4). In the TME group cumulative survival is 0.75 and in the transection group 0.72 with statistically significant difference (p=0.05). (Fig. 5).

DISCUSSION

The main goal in the treatment of rectal cancer is to perform radical (R0) operation and to preserve anal sphincter function whenever possible. On the other hand, one of the major problems in the treatment of rectal cancer is inability to achieve local control – local recurrence. It has long been accepted that APR was the gold standard for rectal adenocarcinoma, particularly of the lower one-third of the rectum. Some claimed that APR is the gold standard to which all other operations must be compared. A number of advances over the last 20 years has radically altered the treatment of rectal cancer. Understanding of the necessary safe distal resection margin has allowed an increased incidence of sphincter saving resections. Distal intramural spread rarely extends more than 1cm beyond the palpable edge of the tumor. If the tumor is so biologically aggressive metastatic spread will occur irrespective of the distal clearance achieved at the operation.

The recommendations in the “Guidelines for the management of colorectal cancer” from the Royal College of Surgeons of England and the Association of Coloproctology of Great Britain and Ireland is that if a distal clearance of 1cm can be achieved, a low rectal cancer should be suitable for anterior resection. TME technique improved local control and survival and moreover increased the incidence of sphincter preservation and of pelvic and autonomic nerve preservation. One side effect of the higher rate of sphincter-saving procedures is however, the increased risk of anal stenosis and eventually the
increased risk of local recurrence. However, the indications for APR have decreased in the past decade. Regarding oncological principles of radicality, some claimed that the widest APR might be oncologically inferior to a nearly sealed TME specimen carefully dissected from above in sphincter saving procedures. Recognizing those facts, sphincter saving procedures are increasingly performed, even for low rectal carcinoma since the quality of life is much better than the one obtained with APR. In selected cases, adequate preoperative radiotherapy or chemothera
dy could spare sphincter function and allow sphincter-saving procedure to be safely performed.

Despite above mentioned facts, APR still has its place in surgery of rectal carcinoma. Usually, APR is performed in cases of adenocarcinomas of the anal canal, very low carcinomas of the rectum with involvement of adjacent tissues, advanced and anaplastic carcinomas.

Thorough preoperative tumor staging with endoanal ultrasound, CT and MR is of paramount importance in deciding whether to perform transanal excision, SSP or APR. Preoperative radiotherapy in selected cases together with adequate preoperative staging could increase the rate of SSP. The results of a large meta-analysis strengthened the idea that the combination of preoperative radiotherapy and surgery could improve overall and cancer specific survival compared with surgery alone. Unfortunately, due to the lack of the necessary equipment we could rely in most cases only on clinical preoperative staging with digital exam. Sometimes, digital exam could give enough information to indicate APR (low fixed tumors, tumors of anterior rectal wall, ulcerovegetative form of tumor) but in selected cases, CT and MR were performed. Since 2002 we started with preoperative staging with endoanal ultrasound, CT and MR. At the same time we started with routine preoperative radiotherapy for T3 and T4 tumors. We believe that our results concerning local recurrence and survival will improve with such a policy.

Reurrence of the disease is still the most serious and usually fatal complication in rectal cancer surgery. Despite various operative strategies and technique of TME, recurrence of the disease, be it local or distant is still the problem that every surgeon must face in practice. Improvements in surgical technique can only influence cure rates by reducing the local recurrence. Training in TME is of paramount importance in reducing local recurrence rate.

It has been questioned does increased rate of SSP influence local recurrence rates. Analyzing our results in more than 1000 rectal cancer cases we found no statistical difference between SSP and APR concerning local recurrence. Moreover, we found less local recurrences in the SSP group (6.9%) than in the APR group (8.5%). Therefore, we agree with Mr. Heald concept that sphincter saving procedures should be performed whenever it is technically feasible.

Relatively high proportion of recurrences (comparing to some other studies with local recurrence rates less than 3% could be the consequence of inability (technical reasons) to give our patients preoperative radiotherapy for T3 and T4 stage adenocarcinomas. Analyzing survival in the SSP and APR group we found statistically significant difference between two groups (p=0.01). Cumulative survival for SSP group was 0.72 and for APR group 0.64. The explanation for this might be the fact that we performed APR in cases with more advanced disease, since in many cases locally advanced disease in low rectal tumors was the only indication for ARP even creation of intersphincteric anastomosis was technically feasible. The proof for this is and distribution of Dukes stage in SSP and APR group. In the SSP group we had 36.5% Dukes C, while in the APR group there were 62.1% Dukes C.

TME concept has proven in the last decade its superiority to the conventional “blunt” dissection where reported local recurrence rates were as high as 15 to 45%. We accepted TME concept for all tumors up to 8 centimeters from anal verge. In cases of rectal carcinoma located above 8 cm from anal verge we usually performed transection of mesorectum. Analyzing our results we found no statistically significant difference in local recurrence rates between these groups. Disease free survival (local recurrence) calculated by Kaplan-Meier test in TME group was 0.88 and in transection group 0.91 (p=0.05). In the TME group cumulative survival is 0.75 and in the transection group 0.72 with statistically significant difference (p=0.05). (Fig.5). We believe that better survival in the transection group can not be attributed to the surgical technique but to the fact that tumors located higher in the rectum have better prognosis.

CONCLUSION

We believe that performing SSP should be encouraged whenever it is possible because there is no difference in local recurrence rates and survival compared to APR. Transection of mesorectum can safely be performed in most cases with tumors located more than 8 cm form anal verge. We believe that exact preoperative staging and preoperative radiotherapy could improve results.

REFERENCES:


