REPEATED SURGERY FOR LOCAL RECURRENCES OF RECTAL CANCER

SUMMARY:
The present study aims to establish the incidence of repeated surgery for local recurrences of rectal cancer and the factors influencing the prognostication of the risk of the circumferential resection margin implication and of the extent of the mesorectum invasion. The study was conducted on 123 patients with rectal neoplasm coming from two surgical units: the IInd Surgical Clinic of Cluj Napoca and the Municipal Hospital of Blaj. The repeated surgery for local recurrences of rectal cancer represented 3.25% of the total surgical interventions. The research method used was the clinical-statistical one and consisted in the retrospective analysis of the admitted clinical cases of rectal cancer that underwent surgery in the two surgical facilities mentioned above. During the period under discussion (2005 – 2009) 4 repeated surgical interventions were performed for local recurrences of rectal cancer. Reported to the number of interventions intended to be oncologically radical, they represent 5%. The average age of the patients operated on for local neoplastic recurrences was 50 years, and the prevalent gender was male. The primary tumors were adenocarcinomas and were located in the lower and middle rectum. In two cases the primary surgery was an anterior rectum resection (Dixon), and in other two cases amputation. In one of these cases the amputation was preceded by a Dixon resection. The repeated surgery consisted in two rectum amputations, a posterior pelvic extirpation of invaded organs and an excision of pelvic tumour fragments. We analyzed the factors favouring local recurrences after surgical extirpation of rectum cancers and have found that they are caused by: the pelvis width and depth, tumour size, stage and height, circumferential resection margin (CRM). We have established that the total excision of the mesorectum in rectal cancers accounts for a significant drop of the local recurrence rate. In order to reduce the local recurrence rate and preserve the sphincter system it is imperative to pay special attention to the circumferential resection margin and to perform total mesorectal excision. Pre- and postoperative chemoradiotherapy has beneficial indications in advanced cancers (T3).

Key Words: Rectal cancer, Local recurrences and interventions

INTRODUCTION

Recurrences after rectal cancer surgery can be local or at a distance from the primary centre of contagion. Local recurrences can be anastomoses or can appear on the place of the former tumour or of the pelvic lymph nodes. Local recurrences appear in 18 – 20% of the cases in the first two years and are highly variable, according to various authors. The local recurrences are favoured by the patients’ advanced age, the advanced tumour stage, the non-differentiated or colloid nature of tumours, the surgical technique used and the conditions of the intervention (planned or emergency).

The success of the recurrent rectal cancer treatment depends on its early detection, in asymptomatic phase. The best method for this is the positron emission tomography. If this device is not available, the data supplied by CTs and MRIs can be used, as well as the determination of the carcinoembryonic antigen level (CEA) which is a marker of the recurrence or persistence of a colorectal cancer.

The indications for local recurrence surgery are established depending on the patient’s general state and the strictly local character of the recurrence. Theoretically, the iterative surgical resections should be tempting only if remote metastases are absent, but in
practice they are also performed in some cases of disseminated disease, when there is an intestinal obstruction or haemorrhage. This type of surgery, usually with palliative character, can improve the quality of life.

The high frequency of local recurrences after anterior rectum resections has drawn the attention on the necessity of total mesorectum excision and the safety of the circumferential resection margin.

MATERIAL AND METHOD

The study was conducted on 123 patients with rectal neoplasm coming from two surgical units: the IInd Surgical Clinic of Cluj Napoca and the Municipal Hospital of Blaj, as follows:

- the IInd Surgical Clinic of Cluj Napoca – 88 patients
- the Municipal Hospital of Blaj – 35 patients.

The repeated surgery for local recurrences of rectal cancer represented 3.25% of the total surgical interventions; 75% of the patients were male, the surgery being performed after anterior rectum resections of advanced cancers.

The research method consisted in the retrospective analysis of the clinical cases of rectal cancer, based on observation sheets, surgical protocols and postoperative morphopathological results.

RESULTS

The local recurrence after anterior rectum resection for rectal cancer is still an issue influenced by a number of factors including the TNM stage, circumferential resection margin and extent of mesorectum invasion.

<table>
<thead>
<tr>
<th>Name</th>
<th>Age in years</th>
<th>Sex</th>
<th>Primary tumour</th>
<th>Stage</th>
<th>Time for apparition of recurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td>P.I.D.</td>
<td>40</td>
<td>M</td>
<td>Inferior rectal carcinoma (5 cm). Hepatic metastases</td>
<td>St. IV TNM (D)</td>
<td>2 years</td>
</tr>
<tr>
<td>P.I.</td>
<td>62</td>
<td>M</td>
<td>Middle rectal mucous adenocarcinoma (10 cm).</td>
<td>St. III TNM (C)</td>
<td>2 months</td>
</tr>
<tr>
<td>L.I.V.</td>
<td>44</td>
<td>M</td>
<td>Middle rectal adenocarcinoma (7 – 8 cm).</td>
<td>St. III TNM (C)</td>
<td>10 months</td>
</tr>
<tr>
<td>S.C.</td>
<td>58</td>
<td>F</td>
<td>Inferior rectal adenocarcinoma (6 cm).</td>
<td>St. II TNM (B)</td>
<td>2 years</td>
</tr>
</tbody>
</table>

Table 1. Aim of surgery in rectum cancer.

<table>
<thead>
<tr>
<th>Aim of surgery</th>
<th>No. of cases</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Curative</td>
<td>80</td>
<td>65</td>
</tr>
<tr>
<td>Palliative</td>
<td>43</td>
<td>35</td>
</tr>
</tbody>
</table>

Table 2. Repeated interventions for recurrent rectum cancers.

<table>
<thead>
<tr>
<th>Curative primary interventions</th>
<th>80 cases</th>
<th>95%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Repeated interventions for recurrences</td>
<td>4 cases</td>
<td>5%</td>
</tr>
</tbody>
</table>

The local recurrence after surgical treatment in rectum cancer varies between 16% (Heimann, 1986) and 34% (Hugyer, 1997). Its frequency decreases very much after the total mesorectum excision, reaching 3.5 – 7.3% (Held, Enker, 1995).

Of the 123 patients undergoing rectum cancer surgery, 65% suffered interventions with a curative character and 35% palliative interventions.

During the period under discussion (2005 – 2009) 4 repeated surgical interventions were performed for local recurrences of rectal cancer. Reported to the number of interventions intended to be oncologically radical, they represent 5%.

The average age of the patients operated on for local neoplastic recurrences was 50 years, and the prevalent gender was male (75%). The recurrences appeared within a time interval varying from 2 months to 2 years.

The primary tumour was located in the lower rectum, in two cases, and in the other two cases in the middle rectum. The topographic localization of the primary tumours at the rectum level was made according to the European norms, i.e. the upper rectum is between 10.1 – 16 cm, the middle rectum between 6.1 – 10 cm and the lower rectum between 0 – 6 cm. From the histopathological point of view, the primary tumours were tubular adenocarcinomas in 3 cases and mucous adenocarcinoma in one case. The histological gradient was G2 in all of the cases.

In two cases the primary interventions were Dixon type anterior rectum resections and in the other two cases Miles type rectum amputation, one of which
performed for recurrence after Dixon. An anterior resection was associated with an atypical hepatectomy for hepatic metastasis.

The repeated surgery for neoplastic recurrences consisted of 2 Miles type rectum amputations for two recurrences located at the anastomosis level after the Dixon surgery, a segmentary enterectomy with bilateral extirpation of appendant organs, posterior colpectomy and right ureterotomy for a tumour block with entero-utero-vaginal fistula and hydronephrosis and an excision of pelvic tumour fragments from the residual ischial-rectal fossa.

**DISCUSSION**

The treatment of rectal cancer has been significantly improved over the years, the permanent goal being a better quality of life by lowering the resection limit and keeping the sphincter system. This implies the lowering of the resection limit in conditions of oncological safety, so that it does not lead to the rise of the local recurrence rate.

It has been found that the local recurrence of the rectal cancer is higher in men, as a consequence of an inadequate surgical excision due to the difficulty of the resection, often in a deep and narrow pelvis. A narrow pelvis and the low location of the rectal cancer may increase the risks of rectal neoplasm surgery and contribute to the difficulty of the surgical excision.

The preoperative stage is essential for rectal cancer, because it is important to select patients who present a high risk of local recurrence and can benefit from neo-adjuvant chemo- and radiotherapy. The T stage was assessed according to the TNM classification system and the N stage was assessed according to the presence or absence of neoplastic invasion of the lymph nodes. The advanced stage was one of the elements that characterized the studied cases.

The factors that may influence the difficulty of the surgical excision include the pelvis width and depth, tumour size compared to the pelvis size, presence of other enlarged organs (prostate, uterus) and tumour height measured from the anal level.

The relation of the tumour with the peritoneal reflection is another very important indicator that must be assessed. There are tumours completely located over the peritoneal reflection, others partially over and partially below it and others, the ones with the highest local recurrence rate, completely below the peritoneal reflection. For this last category the circumferential resection margin must be analyzed. The circumferential resection margin (CRM) has been defined as the shortest distance from the outer margin of the tumour to the mesorectal fascia. Anteriorly, this area corresponds to the rectum operated on below the Douglas cul-de-sac, and posteriorly, to a triangular area whose tip is at the point where the sigmoid mesocolon starts. The minimum distance between the tumour and circumferential margin should be over 1 mm. If the tumour is at less than 1 mm the resection is considered incomplete and the local recurrence rate, increased. The circumferential margins can be interested by the tumour, veins with tumour thrombi, invaded lymph nodes or tumour deposits in the mesorectum. The remaining cells at CRM require adjuvant chemo- and radiotherapy.

The CRM status affects the local recurrence rate and can be influenced by surgical technical factors. The positive CRM rates may be associated with a higher difficulty in obtaining a total mesorectal excision in low rectal cancers in comparison with middle or upper rectal cancers. These cancers may appear because the mesorectum narrows under the anal lifting muscles, making it possible for the tumour to spread into the perirectal tissue. It may also be associated with the difficulty of performing pelvic surgery in men due to the

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**Table 4. Repeated surgery performed in rectal recurrences.**

<table>
<thead>
<tr>
<th>Primary surgery</th>
<th>Secondary surgery (repeated intervention)</th>
<th>No. of cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anterior rectum resection (Dixon)</td>
<td>Rectum amputation (Miles)</td>
<td>2</td>
</tr>
<tr>
<td>1. Anterior rectum resection (Dixon)</td>
<td>Posterior pelvic extirpation of invaded organs: segmentary enterectomy + total hysterectomy + bilateral extirpation of appendant organs + posterior colpectomy + right ureterotomy with re-implantation</td>
<td>1</td>
</tr>
<tr>
<td>2. Rectum amputation (Miles)</td>
<td>Excision of tumour fragments from the residual ischial-rectal fossa after rectum amputation.</td>
<td>1</td>
</tr>
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<td>1</td>
</tr>
</tbody>
</table>
pelvis narrowing and depth and a larger mesorectal volume than in women.

The total mesorectum excision in the surgical treatment of middle and lower ampullar rectal cancer has led to a spectacular drop of the local recurrence rate. The positive character of the circumferential margins can be predicted and the local recurrence can be anticipated depending on the plane and level at which the mesorectum dissection is made. The dissection in the plane of the mesorectum fascia and the excision in the plane of the anal lifting muscles is the ideal situation in order to avoid local recurrence. The direction in the intramesorectal plane or in the plane of the own musculature of the rectum associated with an excision in the sphincter plane presents the risk of an incomplete excision with local recurrence.

The anterior rectum tumours tend to be more advanced and have worse oncological evolutions in comparison with tumours located elsewhere. The anterior tumour location and the reduced thickness of the perirectal fat in anterior position have been correlated with an incorrect prediction of the extent of the mesorectum invasion and an inadequate prediction of the circumferential resection margin.

CONCLUSIONS

The surgical treatment of the recurrent rectal cancer depends on its early detection and the patients’ general state.

Local recurrences are favoured by the patients’ advanced age, the advanced stage of the tumour, the surgical technique used and the operative circumstances.

The high frequency of local recurrences after rectum resections drew the attention on the necessity of a total mesorectum excision and the safety of the circumferential resection margin.

The total mesorectum excision performed in the plane of the mesorectum fascia and postoperative radiochemotherapy have significantly reduced the local recurrence rate.

The anterior rectum tumours should be cautiously assessed as they can be correlated with an inadequate prediction of the status of the circumferential resection margin or the extent of the mesorectal invasion. In this situation one should accurately assess the impact of the status of the lymph nodes which indicate advanced tumour stages (T3 or positive lymph nodes).

REFERENCES: