



Salvage surgery in local relapse of rectal cancer

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Introduction

Recurrence of the disease, obviously, represents the major problem in patients who undergo "curative" resection for rectal cancer, with published rate ranging from 3 to 50 percent. Most relapses occur within first two years of follow-up (1,2,3,4).

Depending on the site of the recurrence, it can be distant or local. It also can be solitary or diffuse. In terms of potential surgical cure the best results are achieved with solitary, localized metastases.

The most common sites of the solitary metastases are pelvis, liver and lung, with a fairly even distribution among these three sites (5). Other sites of the localized metastases can be peritoneum, lymph nodes, brain, bone, abdominal wall, ureter and kidney. Those sites are less common, but not so amenable to resection.

The definition of local recurrence is clinical, radiological or pathological evidence of recurrent rectal carcinoma in the soft or bony tissues of the pelvis, including patients with isolated local recurrence as well as those with local recurrence in association with distant metastatic disease (6).

Simpler definition of the recurrence is biopsy proven disease, or radiological proof of the disease, thus local recurrence is defined as any tumor localized within the true pelvis (7).

In this paper in the focus of our interest will be the recurrent disease localized inside the minor pelvis, which presents the most difficult, and dangerous, most often late complication of the surgery for rectal cancer.

Discussion

Local recurrence has different features, depending on several factors: tumor characteristics (poor differentiation, infiltration of perirectal fatty tissue and infiltration of adjacent organs), patient constitution (narrow "male" pelvis, obese patients and different systemic disorders (immunodeficiency)). Surgeon, also, plays an important role in genesis of local recurrence: poor surgical technique, deviation from basic principles of oncosurgery, inexperience, low volume hospitals (8).

Distal clearance has been the subject of different discussions and speculations in the last few

decades, concerning the radicality of the procedure. There is no question that the "5 cm rule" is, only, history fact now. The work of Madsen and Williams (9,10) showed that, distally, tumor spreads rarely. Thanks to that, sphincter saving procedures became possible, provided there were no technical limitations. Even low intersphincteric resections showed no increase in local recurrence, when compared to abdominoperineal resection (APER) (12).

Circumferential resection margin (CRM) is stated as the most important predictive factor for local recurrence. The tumor that has lateral clearance



less than 1 mm has much greater probability of recurrence (13,14,15).

The early detection of local recurrence is one of the main goals of follow-up. Other very important factors that should closely be monitored during the follow-up are metachronous tumors, other malignancies and distant metastases (18).

Metachronous tumors and other premalignant lesions should be mentioned here because their early detection offers a chance of a cure.

Patients with rectal and colon cancer are also amenable to other malignancies (breast, gynecological, lung) and investigations to discover those should be also included in the follow-up.

Most relapses, when discovered, are either locally extensive or widespread disseminated; occur, as mentioned, within a 2-year period from initial "curative" operation. However, a small number of patients are in good general shape, with a surgically resectable recurrence, offering a chance for potentially curative resection.

Early detection of the local recurrence can be achieved by a combination of history, physical examination, CEA and Ca 19-9 measurements, endoscopy and imaging (CT, NMR, FGD-PET scan) (19,20).

PET scan is a new, very useful, procedure that can successfully distinguish scar, from tumor tissue, which can prevent an unnecessary "second look" surgery (20).

Usual symptoms of a recurrent tumor are: pelvic pain (sometimes with radiation to lower extremities), rectal bleeding and change in bowel habits.

It must be noted that a significant number of patients (around 50 percent) appear to be asymptomatic, despite evident recurrent tumor.

Physical examination can reveal a palpable mass within a minor pelvis; Digital examination may be very useful in detecting recurrence, which may be amenable to further surgery.

Together with those two CEA level should be monitored regularly and its significant rise can lead to further investigations in early detection of local recurrence (18). Carlson et al. (21) reported an accuracy for CEA estimation of 84 percent if the upper limit was set at 7,5 ng/ml. Other authors (22) suggested that CEA level higher than 10 ng/ml was always caused by recurrent tumor.

Local recurrence has different characteristics depending on the original type of "curative" surgery.

Many attempts have been made to determine the value of prognostic predictors, for patients planned for curative salvage surgery (St. Marks group, Mayo Clinic group). So far, no consensus was made. The only predictive factor, for now, that appears to be valuable is the tumor diameter larger than 3 cm, and tumor fixation degree 2. However, it can be useful to follow the recommended tests, CEA level of 9 ng/ml, if reached in non-smoker, laparotomy is indicated even if all other tests are negative (18).

When all other, non-invasive diagnostic methods fail to confirm the existence of highly suspectable recurrent tumor, "second look" surgery is indicated.

Main surgical modalities in the treatment of rectal cancer depending on the number of various factors are: anterior resection (AR), APER, local excision, and sometimes, Hartmann's procedure.

No matter what "radical" procedure is chosen, some basic, well established rules of rectal cancer surgery are to be followed: TME, high ligation of IMA, excision of the "baring" segment, preservation of the vegetative pelvic nerves.

Local recurrence in patients who underwent AR can be anastomotic or localized elsewhere in the pelvis. Anastomotic recurrence rarely originates from the mucosal suture line, as it may appear logical, but it originates from the wall of the bowel and is often perianastomotic. (18). "Good" aspect of this type of recurrence is that in, contrary to APER, it provides more options for the Follow up (Endoscopical examination, biopsy if necessary, it can become symptomatic earlier (23)). The reasons for the local recurrence in this type of operation can be found in biology of the tumor, the stage of the disease and in technical aspects of the surgical technique.

Some authors (5,7) report much better results of salvage surgery in the "outpatient" group where well known oncological principles (TME) of the surgery of the rectum were not completely conducted. This was explained with the longer period of time which is needed for tumor to infiltrate the sacrum, or other structures of the pelvic wall, in the case of incomplete mesorectal excision. The infiltration of these structures makes any attempt of salvage surgery much more difficult, if not impossible. Nevertheless, symptoms of the recurrent tumor within the pelvis after the initial



operation with incomplete TME occur much faster, than in those with TME (24, 25, 26).

Salvage surgery after APER is always more difficult (23,27), the percentage of local recurrence is much higher (28); Salvage surgery is curative in significantly lower number of cases. There are several factors that contribute to this. Usually, patients who undergo this type of operation have larger tumors in more advanced stage. Also, surgical manipulations are much more limited in attempted salvage surgery, normal anatomy is much more violated. Also, follow up of these patients is much more difficult (23). Physical examination is not easily feasible. In women vaginal examination is often very useful, in detecting the local recurrence, in men the only mean of follow up are radiological methods (CT, NMR, PET scan). Also asymptomatic period in these patients is much longer (no apparent bleeding or obstruction).

For patients in stage I of the disease, local excision, in recent years, has increasingly become the therapy of choice. T1 and T2 tumor can be treated with local excision but in certain strictly defined indications. T1 tumors within the 10-15 cm from the anal verge, occupying less than 40% of the circumference can be treated with the modalities of the local excision (transanal excision or TEM) (29). T2 tumors have much greater risk of local lymph node involvement, thus are much more amenable to locoregional recurrence, and are reserved for patients, that are not in condition to undergo "radical" treatment. Crucial elements for these procedures are exceptionally good preoperative staging (endorectal ultrasound, physical examination, pathology report), and close postoperative follow-up. If pathology results provide information of tumor invasion of muscularis propria, positive margins, poor differentiation, lymphovascular invasion, a high probability for local recurrence exists, and immediate salvage surgery is mandatory. The results after that kind of surgery are much better, than in surgery for already existing local recurrence (30).

If pathology result is favorable, close follow-up is mandatory (every two months for 3-4 years, ERUS). Despite all precautions (31) estimated 5-year local recurrence rate is 28 percent compared to 4 percent for anterior resection, and different

studies report a rate of salvage surgery that ranges from 22 to 100 percent (32,33,34).

It should be noted, however, that results after this type of salvage surgery are less favorable than in initial "radical" surgery (35).

Though salvage surgery may appear futile, the main argument for, is that around 50 percent of patients with local recurrence have a solitary tumor inside the pelvis, and they are candidates for "second look" procedure. The number of patients that can be resected for cure is less than 50 percent (between 30 and 40 percent) and median survival of these patients varies from 21 to 36 months (36,37,38).

The decision for re-operative treatment should be brought on the basis of:

-Patients general health-the patient should be fit enough for potentially extensive surgery.

-Necessary surgical expertise should also be available for these operations, which should be undertaken in the specialized centers where a multidisciplinary team is available (19).

Every surgical procedure begins with an explorative laparotomy. Peritoneal seeding and unexpected liver metastases are, in general, contraindication for continuing with a procedure.

The most common "curative" operations for local recurrence are: APER, AR, pelvic exenteration and partial vaginectomy (27,35).

More extensive procedures are also possible: distal sacrectomy, cystectomy, abdominosacral amputation, pelvic and sacropelvic exenteration. (19,39,40).

Therapy options for surgical cure can be accompanied with other modalities of therapy-radiation or chemotherapy. Radiotherapy is advisable before salvage surgery, if there was no such therapy prior to initial surgical treatment (41).

Complaints of severe buttock pain, perineal or pelvic pain, especially if irradiating to lower extremities, are contraindications for radical surgery.

Conclusion

Treatment of locally recurrent rectal carcinoma after curative surgery is liable to high morbidity and often disappointing survival rates which requires careful consideration of several most important factors: procedures must be carried out by an experienced surgeon, with a considerable expertise in this field, patients together with the type of salvage procedure must be selected carefully, considering all factors listed above. Procedures should be carried out in a high volume hospital.

Meticulous follow-up and early detection of recurrence are conditions for curative salvage surgery. Advanced stages of disease may not always be a contraindication for operative treatment, providing a good surgical strategy and tactics.

Multidisciplinary approach and teamwork are ultimate conditions for success. Besides surgery, which is a dominant method of treatment other modalities of therapy, namely hemio and radiotherapy, should be included.

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