

SYMPOSIUM ON RECTAL CANCER: 2. LOCAL RECURRENCE AFTER SURGERY FOR RECTAL CANCER

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Local recurrence is a serious complication in patients with rectal cancer because of the frequency with which it occurs, its impact on quality of life and the fact that treatment is rarely successful. Although local recurrence rates varying from 4% to 51% have been reported, recent series have reported rates of less than 10%. Various factors may affect the rate of local recurrence, including the stage and location of the tumour. Other prognostic factors may be of importance, but it is controversial whether they are independent risk factors. Finally, there is mounting evidence that the local recurrence rate varies with the surgeon. Whether this is due to the surgical technique or surgical expertise is not clear, but randomized controlled trials addressing the issue of extent of resection are indicated in order to optimize surgical results.

Une récurrence locale représente une complication grave chez les patients atteints d'un cancer du rectum à cause de sa fréquence et de son incidence sur la qualité de vie, et parce que le traitement réussit rarement. Même si l'on a signalé des taux de récurrence locale qui varient de 4 % à 51 %, on signale des taux inférieurs à 10 %, à la suite de séries récentes. Divers facteurs peuvent jouer sur le taux de récurrence locale, y compris le stade et l'emplacement de la tumeur. D'autres facteurs liés au pronostic peuvent avoir de l'importance, mais on ne sait pas trop s'il s'agit de facteurs de risque indépendants, ce qui suscite la controverse. Enfin, de plus en plus de données probantes indiquent que le taux de récurrence locale varie selon le chirurgien. On ne sait pas trop si c'est attribuable à la technique chirurgicale ou à la compétence du chirurgien, mais des études contrôlées randomisées sur l'étendue de la résection s'imposent si l'on veut optimiser les résultats de l'intervention chirurgicale.

Colorectal cancer ranks third in cancer incidence in Canada, approximately 15 000 new cases having been reported in 1995.¹ Approximately one-third were rectal cancers. Although surgery remains the primary treatment modality for most patients with rectal cancer, 30% to 50% of patients who have a potentially curative operation will subsequently have recurrence of their disease.²

Overall, approximately one-third of patients will die of their disease.

Most recurrences occur within the first 2 years after surgery, but a small proportion may develop up to 5 years later.² Recurrences may occur at distant sites, most commonly the liver, lung and peritoneal cavity, or locally within the pelvis (locoregional recurrences).³ Although half of the patients with local recurrence will also have distant metas-

tases, the remainder will have isolated local disease. Even in the latter group, the outlook tends to be grim. Attempts at eradicating local recurrences are rarely successful. The 5-year survival in patients with local recurrence is less than 4%, with the median life expectancy being 7 months.⁴ Most patients die slowly with isolated pelvic disease.

Thus, although survival is of utmost

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importance in patients with rectal cancer, the prevention of local recurrence is only slightly less so. Because of the frequency with which local recurrence occurs, the significant impact on quality of life and the fact that treatment is rarely successful, the burden of disease with locally recurrent rectal cancer is significant. Every effort to prevent this complication must be made. There is mounting evidence that the surgeon plays a key role in the prevention of local recurrence as well as in making decisions regarding the management of these patients, so it is a topic of importance to all surgeons treating patients with rectal cancer.

In this article, I shall discuss the risk of local recurrence as well as factors affecting the risk.

SYMPTOMS OF LOCAL RECURRENCE

Local recurrences are assumed to arise from the primary tumour or the pelvic regional lymphatic system. Most recurrences begin within the pelvis and subsequently invade the rectal wall. True suture-line recurrences are uncommon and usually indicate a technical error.

Pain is a prominent symptom in patients with a local recurrence.⁵ Persistent perineal or sacral pain, especially when it is associated with pain radiating down the legs, is an ominous sign, suggesting invasion or encasement of the sacral plexus. It usually indicates inoperable disease. Furthermore, attempts to control the pain with radiation, nerve blocks and analgesia are usually unsuccessful in the long term. As a result, palliation and quality of life are poor.

In patients who have undergone an anterior resection, local recurrence with invasion into the rectal wall may cause obstructive symptoms, tenesmus and bleeding, whereas those who have

had an abdominoperineal resection may present with a perineal mass. Other symptoms may be due to local invasion or obstruction of adjacent structures including ureteric obstruction, bladder dysfunction and swelling of the lower limbs due to lymphatic or venous obstruction. Rarely, there is fistulization of the tumour into other structures.

RISK OF LOCAL RECURRENCE

Next to death, local recurrence has been the most important measure used to assess long-term outcome in patients treated for rectal cancer. The reported risk of local recurrence has been quite variable. McCall, Cox and Wattchow⁶ reviewed 51 series reported in the world literature, which included 10 465 patients who had surgery for rectal cancer. The median local recurrence rate was 18.3% (ranging from 4% to 50%).

There may be several reasons for the wide variability in these results. First, most of the studies were retrospective, so follow-up is more likely to have been incomplete, diagnostic tests to document local recurrences may have been employed inconsistently and data collection may have been incomplete. A second possibility is that the criteria used to diagnose local recurrence were variable and in many studies were not explicitly stated. The diagnosis of a local recurrence may be difficult even with sophisticated imagery. Ideally, all recurrences should be histologically confirmed, but in practice this may not be possible or appropriate. Because of this, many patients with symptoms suggestive of a local recurrence may be treated without confirmation of the diagnosis, possibly resulting in an overreporting of local recurrence. On the other hand, there are other patients who may die of distant disease and also

have undiagnosed local recurrence. Thus, the recurrence rate may vary depending on the diligence to document a recurrence. Finally, there may be actual differences in the patients due to varying referral patterns in the institution.

FACTORS AFFECTING LOCAL RECURRENCE

Patient factors

Patient factors do not appear to affect the risk of local recurrence. However, in a series of patients from our institution, the risk of local recurrence appeared to be higher in patients over the age of 65 years (14% v. 1%), whereas follow-up of elderly patients in the Large Bowel Cancer Project demonstrated that they had lower recurrence rates.^{7,8}

Tumour factors

Prognostic factors that adversely affect overall survival tend to have a similar effect on the risk of local recurrence.⁹ Of the factors studied, tumour stage seems to be the most important. Thus, the more advanced the cancer, the greater the risk of local recurrence. For cancers that have not extended beyond the muscularis propria (Dukes' class A, American Joint Committee on Cancer [AJCC] T1,2 N0) the risk of local recurrence is estimated to range from 1% to 10%, for tumours that penetrate completely through the muscularis propria (Dukes' B, AJCC T3,4 N0), the risk ranges from 5% to 35%, and for those that have involvement of the regional lymph nodes (Dukes' C, AJCC N1-3), the risk ranges from 15% to 50%.

The location of the tumour is also an important prognostic variable.⁵ Local recurrences are more likely to occur in association with tumours involv-

ing the lower third than those involving the middle or upper thirds of the rectum. Rates ranging from 15% in lower-third tumours to 5% in upper-third tumours have been reported. The reason for this difference may be a greater difficulty in widely removing tumours located deeper in the pelvis without shedding tumour cells.

Other tumour characteristics, including the presence or absence of vascular, lymphatic and perineural invasion, obstruction or perforation, tumour fixation and degree of differentiation, also affect the risk of local recurrence and survival. However, there is inconclusive evidence that these prognosticators are independent of stage. Recently, it has been reported that genetic tumour markers such as the DCC (deleted in colorectal cancer) protein may be useful in predicting survival.^{10,11} Although it seems likely that these markers would also predict those at high risk for the development of local recurrence, there are no data to substantiate this.

Surgical factors

Several prospective and retrospective series have shown that the surgeon may be the single most important factor affecting the local recurrence rate. Phillips and colleagues⁸ prospectively followed a cohort of 1988 patients who had rectal cancer and who were operated on by 94 surgeons in 23 hospitals in the United Kingdom during the 1980s. Overall, the local recurrence rate was 14% and did not differ whether a consultant or a junior staff member performed the surgery. However, there was wide individual variability; local recurrence rates ranged from less than 5% to over 20%. Even with stratification by stage of disease, the difference remained.

McArdle and Hole¹² reported on a series of 645 patients who were oper-

ated on between 1974 and 1979 by 13 surgeons with varying experience (from 12 to 47 cases). In addition to differences in the overall death rate postoperatively, the anastomotic leak rate and survival, there were significant differences in the rates of local recurrence, ranging from 3% to 21%. Of note, however, was the fact that the local recurrence rates did not seem to correlate well with how many procedures were performed by an individual surgeon.

The reasons for the individual differences in local recurrence rates have not been well studied. There are reports that the lateral resection margin of the tumour may be as important as the distal resection margin.^{13,14} Also, the extent of the mesorectal excision may be important.¹⁵ On the other hand, the risk of local recurrence appears to be similar, regardless of the type of resection performed (abdominoperineal v. anterior resection),⁵ the type of anastomosis performed (stapled v. hand sewn)¹⁶ and whether a lateral pelvic lymph node excision is performed.¹⁶ However, with the exception of trials comparing anastomotic techniques, no data from randomized controlled trials are available on which to make conclusions, and therefore we must be cautious in drawing any conclusions about the efficacy of the various techniques.

In addition to local recurrence rates varying with the individual surgeon, it is also apparent that local recurrence rates much lower than the reported 15% to 50% are achievable. MacFarlane, Ryall and Heald¹⁵ who used the total mesorectal excision technique, reported a local recurrence rate of 4% at 5 years in a cohort of 290 patients who underwent curative resections for rectal cancer. Other current series^{17,18} have substantiated these results, reporting recurrence rates of less than 10%. Whether this improvement is due to

differences in surgical technique, use of adjuvant therapies or improved surgical expertise can only be speculated upon because of the lack of randomized controlled trials. However, the improved recurrence rate raises several issues. The importance of various technical manoeuvres needs to be ascertained. Randomized controlled trials may be necessary to test the impact of different techniques on local recurrence rates. A greater effort is necessary to standardize surgical technique in future adjuvant therapy trials. Furthermore, given that currently reported local recurrence rates after surgery alone seem to be much lower than those achieved in the control groups of previous randomized controlled trials of adjuvant radiotherapy, the results of these trials may be invalid and further trials with a "surgery only" arm may be necessary. Finally, the wide variation in local recurrence rates raises issues for surgical training and patient management.

CONCLUSIONS

Local recurrence is a significant cause of morbidity after surgery for rectal cancer. Given the poor outlook when local recurrence occurs, it is imperative that the initial treatment be optimized to minimize the risk. Although various tumour-related factors affect the risk of recurrence, the surgeon plays an equally important role. Thus, future research must include studies further elucidating the biologic features of rectal tumours as well as trials aimed at determining the best surgical and adjuvant therapies for patients with rectal cancer.

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