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Anorectal and sexual functions after preoperative radiotherapy and full-thickness local excision of rectal cancer

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Abstract

Aims: Local excision with preoperative radiotherapy may be considered as alternative management to abdominal surgery alone for small cT2-3N0 tumours. However, little is known about anorectal and sexual functions after local excision with preoperative radiotherapy. Evaluation of this issue was a secondary aim of our previously published prospective multicentre study.
Methods: Functional evaluation was based on a questionnaire completed by 44 of 64 eligible disease-free patients treated with preoperative radiotherapy and local excision. Additionally, ex post, these results were confronted with those recorded retrospectively in the control group treated with anterior resection alone ($N = 38$).
Results: In the preoperative radiotherapy and local excision group, the median number of bowel movements was two per day, incontinence of flatus occurred in 51% of patients, incontinence of loose stool in 46%, clustering of stools in 59%, and urgency in 49%; these symptoms occurred often or very often in 11%–21% of patients. Thirty-eight per cent of patients claimed that their quality of life was affected by anorectal dysfunction. Nineteen per cent of men and 20% of women claimed that the treatment negatively influenced their sexual life. The anorectal functions in the preoperative radiotherapy and local excision group were not much different from that observed in the anterior resection alone group.
Conclusions: Our study suggests that anorectal functions after preoperative radiotherapy and local excision may be worse than expected and not much different from that recorded after anterior resection alone. It is possible that radiotherapy compromises the functional effects achieved by local excision.

Keywords: Rectal cancer; Local excision; Anorectal function

Introduction

Full-thickness local excision of rectal cancer is an attractive treatment because of its low risk of postoperative complications, lack of postoperative mortality and better functions compared with abdominal surgery.[1–3] However, the indication for local excision is limited to small favourable T1 cancer because, in more advanced tumours, the local recurrence rate is unacceptably high.[4] The introduction of preoperative radio(chemo)therapy has resulted in expanding indications for local excision in patients with radiosensitive small cT2N0 or superficially infiltrating cT3N0 tumours.[5–7] Two prospective studies showed that when the results of rescue surgery for those with local recurrence are taken into account, oncological outcomes

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seem to be similar to those observed after abdominal radical surgery.[5,6] Retrospective series of selected patients support this conclusion.[8] Based on the above findings, local excision with preoperative radiotherapy may be considered as alternative management to abdominal surgery alone for small cT2-3N0 tumours. In contrast to local excision, most of these early stages do not need preoperative radiotherapy when total mesorectal excision is used.

Anorectal and sexual functions are better after full-thickness local excision without radiotherapy than after anterior resection.[2,3] However, it is unknown whether this advantage remains if preoperative radiotherapy is added. This question arises because pelvic radiotherapy affects anorectal and sexual functions even in patients with an intact rectum; for example in those treated for cervical or prostate carcinoma. These dysfunctions include flatus and faecal incontinence, bowel urgency and increased stool frequency – the same symptoms as those observed after anterior resection.

Anorectal and sexual functions were secondary endpoints of our recently published prospective multicentre study exploring outcomes of preoperative radiotherapy and local excision (http://clinicaltrials.gov/; trial number: NCT00738790).[6] The aim of the current study was to present the results of this functional evaluation. Additionally, ex post, we decided to confront obtained results with those recorded retrospectively in the control group treated with anterior resection alone.

Patients and methods

Treatment methods and early oncological results in our prospective multicentre study evaluating preoperative radiotherapy and full-thickness local excision were recently published.[6] In short, the study was approved by the ethics committee. The eligibility criteria included G1-2 extraperitoneal adenocarcinoma of less than 3 cm as assessed by endorectal sonography or magnetic resonance. The inclusion criteria included sessile cT1N0, cT2N0, or borderline cT2-3N0 tumours, and provision of written informed consent. Before neoadjuvant therapy, 4–5 tattoos of India ink were placed submucosally at the tumour border. The patients received 25 Gy in five fractions over 1 week plus 4 Gy external beam boost in single fraction or chemoradiation comprising 50.4 Gy in 28 fractions plus 5.4 Gy external beam boost in three fractions combined with a concomitant bolus of 5-fluorouracil and leucovorin chemotherapy. Unless the anal canal was not grossly involved, the lower border of the clinical target volume was located at the pelvic floor. Thus, the lower two-thirds of the sphincter was spared from irradiation. The interval between radiation and surgery was 6 weeks. Full-thickness local excision was performed with a 0.5–1 cm margin around the tattoos. After local excision, the good responders to radiation, defined as patients with a pathologically complete response or those downstaged to ypT1 with negative margins, were observed. For patients with ypT2-3 or ypT1 and a positive surgical margin, immediate conversion to total mesorectal excision was planned. Postoperative chemotherapy was not given. Due to poor accrual, the study was terminated prematurely. The early results suggested an acceptable local recurrence rate after preoperative radiotherapy and local excision of small, radiosensitive tumours in elderly patients.[6]

The protocol stipulated the evaluation of anorectal and sexual functions 1 year after treatment. A self-administered non-validated questionnaire was used. An English version of the questionnaire was published previously.[9] The questionnaires were sent to the patients and returned to the trial office by regular post. The patients were asked to evaluate their functions as perceived during the week preceding the evaluation. The questionnaire consisted of 20 items; 17 evaluated specific anorectal dysfunctions, two assessed global anorectal function, and one evaluated sexual function. Patients were asked to indicate the severity of each potential dysfunction on a 4-point scale (1 – , never; 2, – sometimes; 3, – often; and 4, – very often) for time-dependent symptoms, or on a 3-point scale (1 – no, not at all; 2, – a little; and 3, – a lot) for time-independent symptoms.

Eighty-nine patients were included into the study from nine Polish centres between 2003 and 2010. The four most active centres entered 89% of patients. In these centres all patients who fulfilled entry criteria were offered participation and all of them agreed to undergo preoperative radiation and local excision. Of these 89 patients, 25 were excluded from the current evaluation (Fig. 1). Questionnaires were sent to the remaining 64 patients, and 44 (69%) responded. Of those who responded, abdominoperineal resection was intended if local excision would not be performed in 25 patients (57%), and anterior resection was intended in 19 patients (43%). Short-course radiotherapy was delivered in 30 patients (68%) and chemoradiation in 14 (32%). Transanal endoscopic microsurgery was performed in 23 patients (52%), local transanal excision with the use of retractors in 19 patients (43%), and posterior transcoccygeal resection in two patients (5%).

Control group

To create a control group of similar size, a computer database in the Centre of Oncology in Warsaw was searched to identify retrospectively a consecutive series of disease-free living patients with rectal cancer that had been treated between 2003 and 2007 with anterior resection without pre- or postoperative radiotherapy, and with stoma reversal. At that time, only patients with a cT2-1N0 tumour were treated with upfront surgery. The other patients were given preoperative radiotherapy, as were some patients with a bulky low-lying cT2N0 tumour. Total mesorectal excision was performed for low- and mid-rectal cancers, and subtotal mesorectal excision was performed for high tumours. Fifty patients were identified. Two patients were lost to follow-up. The same questionnaires as used in the preoperative radiotherapy and local excision group were sent by regular