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# Prospective assessment of the quality of life in patients treated surgically for rectal cancer with lower anterior resection and abdominoperineal resection

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**Abstract**

*Introduction*: Rectal cancer is the most common malignant neoplasm of the gastrointestinal tract. The aim of the study was to assess the quality of life in patients undergoing surgical treatment for the rectal cancer, either lower anterior or abdominoperineal resection.
*Materials and methods*: 100 patients suffering from rectal cancer were selected for a prospective study (50-APR, 50-LAR). The quality of life was assessed two times: at the admission to the Department and 6 months following surgery. For assessment of the quality of life, two standard questionnaires were used, EORT QLQ-C30 and EORTC QLQ-C29.
*Results*: The studied groups were not different with respect to demographic factors. The patients who underwent LAR spent less time in hospital ($p = 0.00001$). The patients undergoing APR scored less with respect to physical ability ($p = 0.0434$), cognitive ($p = 0.0363$) and emotional state ($p = 0.0463$) and on symptom scale (nausea and vomiting – p: 0.0199, diarrhea – p: 0.0000, constipation ($p = 0.0018$)); however, the patients who were treated with LAR scored less on pain scale ($p = 0.0189$). The QLQ-C29 questionnaire revealed impaired functioning of patients 6 months following APR in terms of life chances ($p = 0.0000$) and problems with body weight ($p = 0.0212$). In both groups, the quality of life improved 6 months after surgery.
*Conclusions*: LAR is a chance for better quality of life for many patients. Six months after surgery, the quality of life of patients improves regardless of the operating method (APR, LAR).
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*Keywords:* Rectal cancer; Quality of life; Lower anterior resection; Abdominoperineal resection

## Introduction

The rectal cancer is a challenge for contemporary surgical oncology. Among various methods of oncological treatment (chemotherapy, radiotherapy, hormone therapy), surgery remains one of the most important forms of treatment. The most commonly performed procedures in rectal cancer include the abdominoperineal resection of the rectum and the lower anterior resection of the rectum.[1]

Abdominoperineal resection is the oldest fundamental procedure, which gives a chance for radical resection of the tumor. The first surgery was performed by Miles in 1908.[2] It consists of two steps: abdominal and perineal. In the first stage, following ligation of rectal vessels, the operator dissects the rectum with the mesorectum. In the second stage, the rectum with anus are resected and colostomy is performed.[3–5]

The next technique is the lower anterior resection of the rectum, popularized in 60's. Anterior resection is a contemporary technique with the aim of preserving the natural pathway of defecation. The first stage is practically the

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same as in the abdominoperineal resection. After the rectum and mesorectum are dissected, the rectum is closed and excised using a stapler. Then, having excised the bowel above the tumor, the sigmoid colon is ligated using a circular stapler, and the colorectal anastomosis is made.[4]

## Quality of life

The quality of life in an unusual approach in medicine. Its extent is defined by the disease, aging and disability.[6] The term HRQL (Health-Related Quality of Life) was introduced by Schipper. HRQL covers four areas: physical (motor), psychological, social and economic, and somatic. The concept is based on subjective assessment of health, symptoms and complications of a disease. Rylander developed the HRQL ideas, discriminating between health condition, determined by objective signs, and subjective symptoms originating from the patient.[7]

Studying the quality of life is a source of information for a surgeon about all consequences of the operation. O'Boyle C. is convinced that the success of an operation cannot be assessed solely in terms of fatality rate, incidence or complications. It is crucial to take satisfaction of the patient into account, which manifests itself particularly in the quality of life.[8]

The most widely known questionnaire for measuring the quality of life is EORTC-QLQ-C30 (European Organization for Research and Treatment of Cancer Quality of Life Questionnaire) by Aaronson, published in 1993.[9] QLQ-CR29 is a module aimed at assessing patients with colorectal cancer. The quality of life of patients undergoing surgical treatment is influenced by many factors. One of them is the patient's current situation. This includes age, education, place of residence, and so important family relationships.[10]

The aim of the study was a prospective assessment of the quality of life in patients treated surgically for rectal cancer by the lower anterior resection or the abdominoperineal resection, using EORTC QLQ-C30 and EORTC QLQ-C29 standard questionnaires.

## Materials and methods

The prospective study of the quality of life in patients who underwent surgical treatment for colorectal cancer was conducted under permission of Committee of Bioethics, No 475/2012. 140 consecutive patients, who were treated for rectal cancer in the Department of Surgical Oncology of the Oncology Center in Bydgoszcz between 2013 and 2015, were selected for the study. Forty patients did not finish the study.

The analyzed group included 50 patients qualified for lower anterior resection (without stoma) – the LAR group – as well as 50 patients undergoing surgical abdominoperineal resection (with stoma) – the APR group. The quality of life of the patients was assessed prior to (examination I) and 6 months following surgery (examination II).

The exclusion criteria included:

- intraoperative change of the type of procedure
- mental disorders
- obesity (third degree, BMI $<$ 40)
- other sever conditions (IV ASA)
- I and IV stage according to TNM

The scheme of the examination included:

- consent,
- history taking: demographic and social, clinical (qualification for a specific procedure, neoadjuvant or adjuvant therapy, staging, hospitalization time)
- filling in of QLQ-C30 and QLQ-C29 quality of life questionnaires

The quality of time was measured using QLQ-C30 and QLQ-C29 questionnaires, twice: first at admission to the Department with QLQ assessment before surgery; and the second time 6 months following surgery – the aim was the late assessment of the quality of life, at this point the patients had finished radiotherapy.

## Diagnostic tools

EORTC – QLQ-C30 (Quality of Life Assessment Questionnaire for oncological patients – version 3.0|). The questionnaire consists of 30 questions assessing physical, life roles, emotional, cognitive and social functioning; 3 symptom scales: fatigue, nausea and vomiting, pain; 6 single questions about dyspnea, insomnia, loss of appetite, constipation, diarrhea, financial difficulties and questions about general health and its quality.

EORTC – QLQ-CR29 Quality of Life Questionnaire (rectal cancer module) is an extension of the QLQ C30 questionnaire regarding problems of the rectal cancer patients concerning their self image, life chances, weight, sexual functioning and symptoms of the disease.[11]

## Statistical analysis

The statistical analysis of the studied group was conducted using Statistica 10.0 [Statsoft, Inc.; 2011]. The consistency with normal distribution of the quantitative data was analyzed using Shapiro–Wilk and Kolmogorov–Smirnov tests. The assessment of the significance of differences between the groups was based on non-parametric tests, due to the lack of consistency of the analyzed data with normal distribution (in non-dependent system, these included: Mann–Whitney U test and Kruskal–Wallis ANOVA, and in dependent system – Wilcoxon test). The relation between quantitative variables was analyzed using Spearman's rank correlation coefficient (rs). Nominal variables

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