Discussion on the Application of CBL-PBL Teaching Method in the Teaching of Rectal Cancer MDT

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Abstract: Objective: To investigate the effect and impact of the combined application of case-based learning (CBL) and problem-based learning (PBL) in the teaching of multidisciplinary collaborative diagnosis and treatment (MDT) of rectal cancer in surgical oncology residency standardized training. Methods: Eighty-four physicians (84) who were admitted to the department for residency training from September 2022 to June 2024 were the subjects of the study. Those who were admitted to the department from September 22 to July 23 were the control group (42) who received the MDT teaching of rectal cancer under the traditional lecture mode (LBL), and those who were admitted to the department from August 23 to June 24 were the observation group (42) who received the MDT teaching of rectal cancer under the CBL-PBL teaching method. Rectal cancer MDT teaching. Compare the differences in training achievement, teaching satisfaction, and evaluation of teaching effect between the two groups. Results: Compared with the control group, the observation group was discharged from the department with higher scores in the assessment of basic knowledge of rectal cancer, knowledge of diagnostic and therapeutic evaluation and diagnostic imaging, development of treatment plan, and operation of surgical skills, and the scores of satisfaction with teaching and evaluation of teaching effect were elevated, and the difference was statistically significant (P<0.05). Conclusion: The joint application of CBL-PBL teaching method in the MDT teaching of rectal cancer in the Department of Surgical Oncology can positively optimize the effect of residents' clinical theoretical knowledge and specialty diagnosis and treatment skills training, and can improve their evaluation of clinical teaching effect and quality satisfaction.

***Keywords*:** case-based teaching methodology, problem-oriented teaching methodology, surgical oncology, rectal cancer, multidisciplinary collaborative diagnosis and treatment

1. Introduction

Rectal cancer is a common type of surgical oncology disease, and it can be treated with individualized surgical treatment according to the scope of rectal cancer and the infiltration of surrounding tissues, so as to achieve positive curative or palliative treatment of patients' conditions[1]. However, in the surgical oncology treatment of rectal cancer patients, affected by the complexity of the digestive system structure, surgical tolerance, surgical prognosis safety and other factors, it is necessary to maximize the therapeutic benefits while guaranteeing the safety of patient's treatment, which requires higher requirements of doctors' comprehensive clinical ability, and it is necessary to pay attention to the cultivation of comprehensive ability of doctors in the department . Therefore, in order to explore the effect and influence of the joint application of case-based teaching method (CBL) and problem-based teaching method (PBL) in the teaching of multidisciplinary collaborative diagnosis and treatment (MDT) of rectal cancer in the standardized oncology surgical residency training, a study was carried out as follows:

2. Information and methodology

2.1 General information

Physicians (84) who were admitted to the department for residency training during September 2022~June 2024 were the study subjects, those who were admitted to the department during September 22~July 23 were the control group (42), and those who were admitted to the department during August 23~June 24 were the observation group (42). In the control group, there were 24 males and 18 females, aged 23-28 years (25.54±1.32), with education: 27 bachelor's degree, 15 master's degree and above; in the observation group, there were 22 males and 20 females, aged 24-28 years (26.02±1.37), with education: 26 bachelor's degree, 16 master's degree and above. There was no statistically significant difference in demographic data between groups (P > 0.05), and the results of the study were comparable.

Inclusion criteria: meeting the requirements of our surgical oncology residency training; informed, consent to enrollment.

Exclusion criteria: active disengagement during the study period; failure to complete the training program according to the class schedule.

2.2 Methodology

Control group: received MDT teaching of rectal cancer under traditional lecture mode (LBL) teaching. Two oncology surgeons, one doctor from gastroenterology, one doctor from medical oncology and one doctor from imaging were selected to form the MDT teaching team. Each instructor will teach clinical theoretical knowledge (2 hours/week) and clinical diagnosis and treatment operation (2 hours/week) according to the teaching arrangement of the department for a total of 12 weeks.

Observation group: received MDT teaching of rectal cancer under CBL-PBL teaching method. That is, based on the composition of the MDT teaching team in the control group, 6 typical cases of rectal cancer were selected as teaching cases (1 case teaching was carried out every 2 weeks) by the leading instructor of the Department of Surgical Oncology, and after collecting case data, members of the MDT teaching team produced online courseware based on the diagnostic and treatment knowledge and skill assessment requirements of various disciplines, combined with the case data, and raised 1 question on each teaching question related to each department. After the trainees are admitted to the department, the courseware will be uploaded to the platform, and the trainees will be required to form their own teams (5~7 members/group) to complete the online courseware group study, question and answer, and the oncology faculty will utilize 1 hour of teaching and answering and theoretical teaching, and the gastroenterology, medical oncology, and imaging doctors will collaborate to complete 1~2 hours of teaching and answering and theoretical teaching, and complete the subsequent hours of oncology surgery and clinical diagnosis and treatment of other disciplines based on the characteristics of the cases. Teaching arrangement, a total of 12 weeks of teaching.

2.3 Observation indicators

(1) Achievements of training: on the day of admission and discharge from the department, a written questionnaire made by the department will be taken to complete the clinical basic knowledge of rectal cancer (40 points) and diagnosis and treatment evaluation knowledge assessment (60 points) of the trainees, and clinical data of previous patients will be collected by the department, and the trainees will complete the diagnosis of imaging of the two selected patients in the form of random sampling (30 points), the formulation of treatment plan (30 points) and the assessment of surgical operation skills (40 points). (40 points). The above assessment scores were positively correlated with the mastery of clinical theoretical knowledge and practical skills in rectal cancer. (2) Evaluation of teaching satisfaction and teaching effect: After the examination, a self-administered questionnaire was taken from the department to evaluate the teaching satisfaction and effect, and the trainees were scored according to their own subjective feelings, and the total scores of each item were 0-10 points, which were positively correlated with the level of the trainees' satisfaction with the teaching and evaluation of the effect.

2.4 Statistical methods

($\overline{x} \pm s$) information, conforming to the normal distribution line t-test; (n,%) information, test; by SPSS25.0 software statistical data after the difference between the groups, with $P < 0.05$ that the difference is statistically significant.

3. Results

3.1 Comparison of the two groups' training performance

There was no statistical difference in the comparison of the admission scores of the two groups (P>0.05); the observation group's scores in the assessment of basic knowledge of rectal cancer, knowledge of diagnosis and treatment evaluation and diagnosis of imaging, formulation of treatment plan, and operation of surgical skills at the time of discharge from the department were higher than those of the control group (P<0.05). See Table 1.

Table 1(a). Comparison of the performance of the two groups of training ($\overline{x} \pm s$, points)

Group/n	Basics		Knowledge of diagnostic and assessment	
	Matriculation	Go out of bounds	Matriculation	Go out of bounds
Control group/42	25.25±3.04	30.42±2.39	42.85±5.14	46.89±4.92
Observation group/42	25.32±3.02	34.12±2.74	42.04±5.09	53.28±3.05
t	0.106	6.595	0.726	7.154
P	0.916	0.000	0.470	0.000

Table 1(b). Comparison of the performance of the two groups of training ($\bar{x} \pm s$, points)

Group/n	Diagnostic imaging		Treatment Programming		Surgical operation skills	
	Matriculation	Go out of bounds	Matriculation	Go out of bounds	Matriculation	Go out of bounds
Control group/42	12.04±1.75	22.02±2.08	13.15±1.94	21.85±2.16	24.32±3.05	31.07±2.85
Observation group/42	12.09±1.81	26.42±1.97	13.21±2.05	26.28±2.05	24.28±3.02	35.54±2.79
t	0.129	9.954	0.138	9.641	0.060	7.263
P	0.898	0.000	0.891	0.000	0.952	0.000

3.2 Comparison of teaching satisfaction and effectiveness scores between the two groups

Teaching satisfaction and effect scores of the observation group were higher than those of the control group ($P < 0.05$). See Table 2.

Table 2. Comparison of teaching satisfaction and effectiveness scores between the two groups ($\bar{x} \pm s$, points)

Group/n	Satisfaction with teaching	Teaching effectiveness
Control group/42	7.89±1.04	6.85±1.01
Observation group/42	9.25±0.73	8.89±0.85
t	6.937	10.015
P	0.000	0.000

4. Discussion

With the clinical depth of multidisciplinary diagnosis and treatment theory, all kinds of clinical serious disease diagnosis and treatment are recommended to take the idea, in order to develop a reasonable and feasible treatment program for patients to go, and need to pay attention to the application of the concept in the training of personnel in various departments[2].

The results of the study showed that compared with the control group, the observation group had higher scores in basic knowledge of rectal cancer, knowledge of diagnostic and therapeutic assessment and diagnostic imaging, formulation of treatment plan, and surgical skill operation assessment at the time of discharge from the department, as well as higher scores of satisfaction with the teaching and the effect, and the difference was statistically significant ($P < 0.05$). Analysis of the results of the study shows that the use of CBL-PBL teaching method to carry out the teaching of rectal cancer MFT in oncology surgery residency training can provide guidance for the effective interspersing of theoretical knowledge of various disciplines and the reasonable arrangement of teaching time after rationally selecting the typical cases of the department, so as to provide a basis for the realization of the independent learning of the relevant multidisciplinary knowledge of the trainees and provide a basis for the clinical diagnosis and treatment practice teaching to strive for sufficient teaching and learning. Clinical diagnosis and treatment practice teaching to strive for sufficient teaching time. And the joint application of CBL, PBL teaching method, can be clear in different stages of teaching the type of cases, for the surgical oncology and other disciplines of theory, clinical diagnosis and treatment practice teaching work to provide targeted, so as to guide the residents in the adequate different departments of clinical diagnosis and treatment practice integrated teaching to achieve effective mastery of the relevant diagnosis and treatment skills, and in the process of learning to achieve the theoretical knowledge of the various departments of the fusion of understanding, optimizing the Overall teaching effect[3-4].

In conclusion, the joint application of CBL-PBL teaching method in the MDT teaching of rectal cancer in surgical oncology can positively optimize the effect of residents' clinical theoretical knowledge and specialty diagnosis and treatment skills training, and can improve their evaluation of clinical teaching effect and quality satisfaction.

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