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Outcomes of Surgical Treatment of Multiple Primary Colorectal and Prostate Cancer

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Aim: to evaluate the outcomes of surgical treatment of patients with multiple primary cancer of the colon and prostate.
Materials and methods. An observational retrospective study was conducted at the Clinic of Coloproctology and Minimally Invasive Surgery (I.M. Sechenov First Moscow State Medical University). A total of 3,640 protocols of the preoperative multidisciplinary team were studied from July 2018 to April 2024. The inclusion criterion was the diagnosis of multiple colorectal and prostate cancer. The medical documentation was collected in the database and analyzed.
Results. The study included 39 patients: 24 patients with a metachronous variant of multiple primary cancer and 15 patients with a synchronous variant of the disease, which amounted to 1.1 % of all patients who underwent a preoperative consultation during the specified period. There were no significant differences in age, localization of tumors in the colon, methods of their treatment, access in surgical treatment of colorectal cancer, frequency of conversions and postoperative complications ($p > 0.05$). Prostate cancer was verified first in the group with the metachronous variant of multiple primary cancer significantly more often than in the group with the synchronous variant (95.8 % vs. 40.0 %, respectively; $p < 0.001$), and was also significantly more often treated surgically (75.0 % vs. 33.3 %; $p = 0.018$). Radical prostatectomy was performed via laparotomy significantly less frequently in the group with the synchronous variant than in the group with the metachronous cancer (0 % vs. 58.8 %; $p = 0.046$). No significant differences were found when comparing overall and recurrence-free survival in groups with metachronous and synchronous variants of multiple primary cancer.
Conclusions. A clinician should be alert to multiple primary colorectal and prostate cancer. The first stage of therapy for the synchronous variant should be surgical treatment of colorectal cancer. The history of surgical treatment of one of the tumors is not a contraindication for the use of minimally invasive techniques, however, the choice of surgical approach should be individualized. The presence of prostate cancer may be another factor in favor of performing lateral lymph node dissection in patients with synchronous rectal cancer.
Keywords: colon cancer, colorectal cancer, prostate cancer, multiple primary cancer
Conflict of interest: the authors declare no conflict of interes

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Результаты хирургического лечения первично-множественного рака толстой кишки и предстательной железы

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Цель исследования: проанализировать результаты хирургического лечения пациентов с первично-множественным раком толстой кишки и предстательной железы.
Материалы и методы. На базе Клиники колопроктологии и малоинвазивной хирургии ФГАОУ ВО «Первый МГМУ им. И.М. Сеченова» Минздрава России проведено обсервационное ретроспективное исследование. Изучено 3640 протоколов предоперационных онкологических консилиумов за период с июля 2018 по апрель 2024 г. Критерием включения был установленный диагноз первично-множественного рака толстой кишки и предстательной железы. Далее производился анализ медицинской документации с занесением полученной информации в базу данных.
Результаты. В исследование вошли 39 пациентов: 24 пациента с метахронным вариантом первично-множественного рака и 15 пациентов с синхронным вариантом заболевания, что составило 1,1 % среди всех пациентов, прошедших предоперационный консилиум за указанный период. Достоверных различий по возрасту, локализации опухолей в толстой кишке, методам их лечения, доступу при хирургическом лечении колоректального рака, частоте конверсий и послеоперационных осложнений получено не было ($p > 0,05$). Рак

предстательной железы выявлялся первым в группе с метахронным вариантом первично-множественного рака достоверно чаще, чем в группе с синхронным вариантом (95,8 % vs. 40,0 % соответственно; $p < 0,001$), а также достоверно чаще лечился хирургически (75,0 % vs. 33,3 %; $p = 0,018$). Радикальная простатэктомия выполнялась лапаротомным доступом значительно реже в группе с синхронным вариантом по сравнению с группой с метахронным раком (0 % vs. 58,8 %; $p = 0,046$). Достоверных различий при сравнении общей и безрецидивной выживаемости в группах с метахронным и синхронным вариантами первично-множественного рака получено не было.

Выводы. Необходима настороженность врача-клинициста в отношении первично-множественного рака толстой кишки и предстательной железы. Первым этапом терапии синхронного варианта следует выбрать хирургическое лечение колоректального рака. Наличие в анамнезе хирургического лечения одной из опухолей не является противопоказанием для применения малоинвазивных методик, однако подход к выбору доступа должен быть индивидуализированным. Наличие рака предстательной железы может быть дополнительным фактором в пользу выполнения латеральной лимфодиссекции у пациентов с синхронным раком прямой кишки.

Ключевые слова: рак толстой кишки, колоректальный рак, рак предстательной железы, первично-множественный рак

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Introduction

According to the 2022 data from the International Agency for Research on Cancer (IARC), prostate cancer ranks second in incidence and fifth in mortality among men worldwide. At the same time, colorectal cancer ranks third in terms of incidence and mortality among the male population [1]. Despite the leading positions of these two malignancies in global cancer statistics, the incidence of multiple primary cancer (MPC) of the colon and prostate accounts for only 0.45 % of all patients with colorectal cancer and prostate cancer [2]. However, the development of surgical strategy for MPC of the colon and prostate poses significant challenges for a number of reasons.

Firstly, the treatment of colorectal malignancies and prostate cancer is separately regulated by Russian and international clinical guidelines, yet no standards currently exist for the treatment of MPC of any localization [3, 4]. Secondly, the priority of treatment for colorectal and prostate cancer in case of MPC remains unclear [5]. Thirdly, the safety and oncological efficacy of simultaneous surgical treatment for multiple primary colorectal and prostate cancer remain subjects of debate [6]. Fourthly, the role of minimally invasive technologies in the surgical treatment of MPC of the colon and prostate is still under discussion. Fifthly, the importance of lateral lymph node dissection in the surgical treatment of MPC of the rectum and prostate requires further investigation [7]. These controversial issues in the surgical treatment of MPC of the colon and prostate provided the rationale for conducting this study.

Aim of the study: to analyze the outcomes of surgical treatment in patients with multiple primary colorectal and prostate cancer at the Clinic of Coloproctology and Minimally Invasive Surgery (I.M. Sechenov First Moscow State Medical University).

Materials and methods

The observational retrospective study was conducted during which a total of 3,640 protocols of preoperative multidisciplinary oncology team from July 2018 to April 2024 were reviewed. Medical records of the selected patients with multiple primary cancer of the colon and prostate were analyzed, and the extracted information was collected in the database.

In the study the following definitions were used:

- multiple primary cancer (MPC) — the independent occurrence and development of two or more malignancies in a single patient;
- multiple primary synchronous cancer (MPSC) — a variant of MPC where the interval between the detection of two cancers is less than 6 months;
- multiple primary metachronous cancer (MPMC) — a variant of MPC where the interval between the detection of two cancers is more than 6 months.

The study included only patients with histologically confirmed colorectal cancer and prostate cancer. Histological specimens for colorectal malignancies were obtained during video colonoscopy, while prostate cancer specimens were collected using transrectal or transperineal trepanobiopsy under ultrasound guidance.

The mandatory preoperative examination methods for included patients comprised physical examination with digital rectal examination, general clinical laboratory tests, and multislice computed tomography of the abdominal cavity and chest with intravenous contrast. Magnetic resonance imaging (MRI) of the pelvic organs with intravenous contrast was performed in all patients with prostate cancer and in patients with rectal cancer, tumors of the rectosigmoid junction and distal part of the sigmoid colon. Additionally, bone scintigraphy was used to exclude bone metastases, along with measurements of prostate-specific antigen. For patients with colorectal cancer, tumor markers were measured — cancer embryonic antigen and CA 19-9.

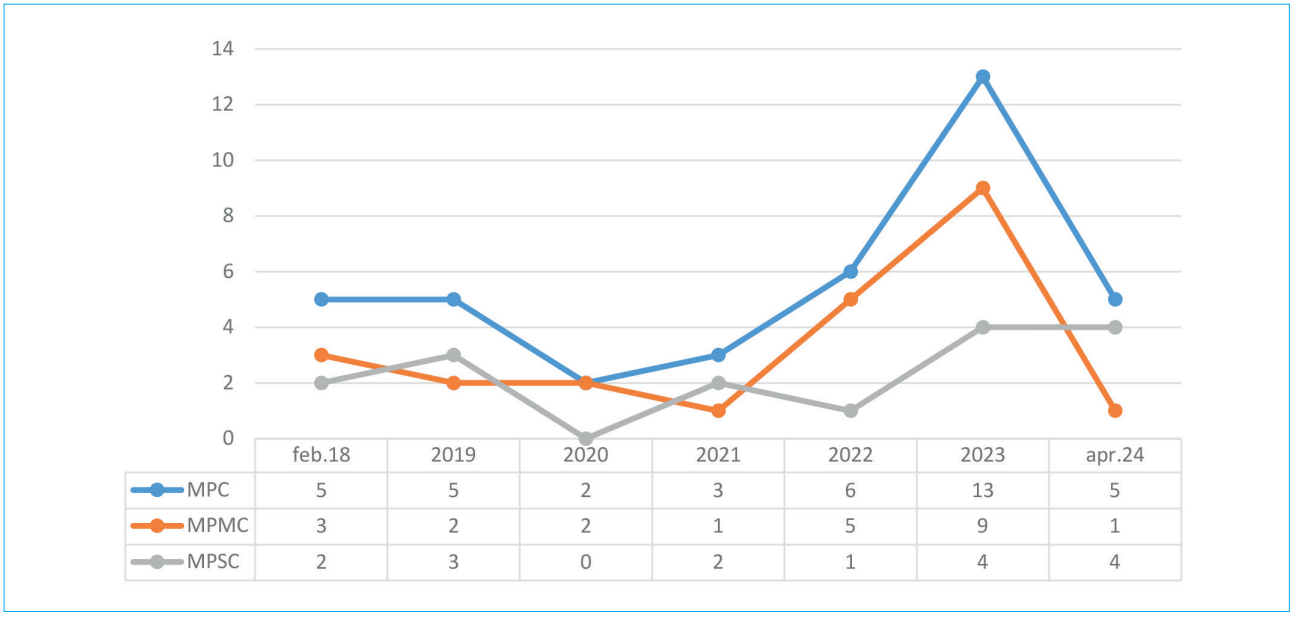
The database was compiled in Microsoft Excel 2020 (Microsoft Corp., USA), and statistical analysis was performed using SPSS Statistics Version 20 software (SPSS Inc., USA). Quantitative parameters were expressed as mean (*M*) and standard deviation (*SD*). A two-sample Student's *t*-test was used to compare means between two independent groups. Nominal variables were compared using the Pearson chi-square test. Long-term outcomes were assessed by interviewing patients or their relatives via telephone. Overall survival was measured from diagnosis of the second cancer to the date of death or last follow-up. Recurrence-free survival was measured from the diagnosis of the second cancer to the date of relapse/progression of either cancer, death or last follow-up. Overall and recurrence-free survival were analyzed using the Kaplan — Meier method. Comparison of overall and recurrence-free survival between the metachronous and synchronous groups was performed using the long-rank test.

Results

From February 2018 to April 2024, 39 patients with MPC of the colon and prostate were treated: 24 patients with the metachronous variant and 15 patients with the synchronous variant. The distribution of patients by time period is presented in Figure 1.

Multiple primary metachronous cancer

The characteristics of patients with metachronous variant of MPC and their immediate treatment outcomes are shown in Tables 1 and 3. The mean age of patients was 72.83 ± 7.80 years. In 95.8 % of cases, prostate cancer was the first malignancy detected, with colorectal cancer identified on average 84.0 ± 50.4 months later (range: 8–204 months, median: 69 months). In the only patient whose first malignancy was rectal cancer, prostate cancer was detected 33 years later. The distribution of colorectal cancer locations was as follows: 15 (54 %) patients — rectal cancer, 2 (8.5 %) — rectosigmoid cancer, 9 (37.5 %) — colon cancer.



	feb.18	2019	2020	2021	2022	2023	apr.24
MPC	5	5	2	3	6	13	5
MPMC	3	2	2	1	5	9	1
MPSC	2	3	0	2	1	4	4

Figure 1. Dynamics of the number of treated patients with multiple primary colorectal and prostate cancer: MPC — multiple primary cancer, MPMC — metachronous variant, MPSC — synchronous variant

Рисунок 1. Динамика количества пролеченных пациентов с первично-множественным раком толстой кишки и предстательной железы: MPC — первично-множественный рак, MPMC — метахронный вариант, MPSC — синхронный вариант

In 18 (75 %) cases, the primary treatment for prostate cancer was surgery, with transurethral resection of the prostate performed in one case and prostatectomy in 17 cases. The remaining 6 patients received hormonal therapy, external beam radiation therapy, or brachytherapy. Among 18 operated patients, three patients had progression of the disease, which required further hormonal therapy or radiotherapy. Combined treatment was used in 5 (20.8 %) patients.

Surgery was the main treatment method for colorectal cancer, with colon resection performed in 22 (91.7 %) patients. Two patients (8.3 %) did not undergo surgical management due to advanced disease: one person had multiple hepatic metastases and hepatic insufficiency and was given palliative treatment, the other one received curative polychemotherapy due to generalized lymphadenopathy. Combined treatment was employed in 7 (29.2 %) cases.

Among 17 patients with prostate cancer who underwent prostatectomy, the surgical approaches included open surgery in 10 (58.8 %) cases, robotic-assisted surgery — in 6 (35.3 %), and laparoscopic surgery — in one case (5.9 %). Among 22 patients operated for colorectal cancer, laparoscopic surgery was performed in 11 (50 %) cases, while open surgery was performed in the remaining 11 (50 %) cases. In three cases (27.3 %) the conversion was necessary due to the factors such as locally advanced tumor of the caecum (n = 1), cicatricial changes in the area of the removed prostate (n = 1), or pelvic peritoneum invasion (n = 1).

It was not possible to conduct a reliable analysis of complications after prostate cancer surgery in the metachronous group due to the long history of the operation and the lack of medical documentation. Post-operative complications after surgery for colorectal cancer occurred in nine patients (40.9 %). Among these patients, reoperation happened in one case (11.1 %) due to early adhesive bowel obstruction, while the remaining eight cases (89.9 %) involved complications that did not require reintervention (Clavien — Dindo I, II).

Multiple primary synchronous cancer

Characteristics of patients with synchronous cancer and short-term results are presented in Tables 2 and 3. The mean age in this group was 68.0 ± 8.4 years (range: 54–85 years; median: 67 [62–75] years). In 60 % of cases (9 out of 15), colorectal cancer was the first malignancy detected, with an interval of 59 days between the diagnoses of two cancers.

In 10 (67 %) patients, treatment started with colorectal cancer management. One patient (6.5 %) underwent simultaneous surgery for both cancers, including laparoscopic abdominoperineal resection of the rectum with radical prostatectomy. Another patient received concurrent medical treatment for both tumors, involving polychemotherapy for colorectal cancer and hormonal therapy for prostate cancer, due to unresectable hepatic metastases of colorectal cancer. In three cases (20 %), prostate cancer was primarily treated, consisting of external beam radiation therapy in one case and radical prostatectomy in two cases.

Surgical treatment was the primary approach for colorectal cancer, with 14 (93.3 %) patients undergoing colon resection. Hormonal therapy was the most common treatment for prostate cancer — 6 (40 %) patients, with two cases (13.3 %) involving hormonal therapy as part of combined neoadjuvant treatment during rehabilitation after colorectal cancer surgery and before radical prostatectomy. Radical prostatectomy was performed in 5 (33.3 %) patients, while radiation therapy was used in two cases (13.3 %) — one with external beam radiation therapy and the second with brachytherapy. Two patients (13.3 %) were not treated for prostate cancer: in the first case, the dynamic follow-up was prescribed due to metastatic lesions of the obturator lymph nodes and low life expectancy; in the second case, the treatment did not start because of the death of the patient after abdominoperineal resection due to undetected metastasis in the left hemisphere of the cerebellum.

For colorectal cancer surgery, a laparoscopic approach was used in 8 (57.1 %) cases, laparotomy — in 5 (35.7 %) cases, and robotic-assisted surgery — in one case (7.2 %). All five radical prostatectomy procedures in this group were minimally invasive, including 4 (80 %) laparoscopic surgeries and 1 (20 %) robotic surgery. No conversions were needed for minimally invasive treatments.

Post-operative complications after colorectal cancer surgery occurred in 7 (46.7 %) patients. There were no complications that required reoperation (Clavien — Dindo III) in this group. Among the five patients who underwent radical prostatectomy, one post-operative complication was urethrovesical anastomotic leakage, which healed with urinary catheter placement with no need of reintervention. Another case involved intraoperative injury to the anterior rectal wall during laparoscopic radical prostatectomy, necessitating defect suturing and sigmoid colostomy creation.

Comparison of metachronous and synchronous groups

A comparison of the main parameters between the groups with metachronous and synchronous variant of MPC is given in Table 3. The difference between age, localization of colon tumor,

methods of treatment of colorectal cancer, surgical approaches, rate of conversions and post-operative complications was not statistically significant ($p > 0.05$). Prostate cancer was detected first significantly more often in metachronous group than in the synchronous group (95.8 % vs. 40.0 %, respectively; $p < 0.001$). Surgical management of prostate cancer was also significantly more common in the metachronous group (75.0 % vs. 33.3 %; $p = 0.018$). Open radical prostatectomy was performed significantly less often in the synchronous group than in the metachronous group (0 % vs. 58.8 %; $p = 0.046$). Clavien — Dindo Grade I complications occurred significantly more often in the synchronous group (85.7 % vs. 11.1 %; $p = 0.01$), while Grade II complications were more frequent in the metachronous group (77.8 % vs. 14.3 %; $p = 0.041$).

Long-term results

Long-term results were assessed through a telephone survey, successfully completed by 18 (75 %) patients in the group with metachronous MPC and 13 (86.7 %) patients in the synchronous group. The mean follow-up period was 21.6 ± 18.0 months (median: 16 months; range: 3–65 months) in the metachronous group and 23.4 ± 25.0 months (median: 8 months; range: 2–70 months) in the synchronous group.

A comparison of overall and recurrence-free survival between the two groups is shown in Figures 2 and 3, respectively. No statistically significant differences were observed.

Discussion

The proportion of patients with multiple primary colorectal and prostate malignancies among all patients who underwent a preoperative multidisciplinary team in our clinic from February 2018 to April 2024 was 1.1 %, which exceeds the data in the global literature. According to D.O. Kavanagh et al., among 3,425 patients treated at St. Vincent's University Hospital with rectal ($n = 845$) and prostate ($n = 2580$) cancer from 2000 to 2011, only 12 (0.35 %) patients were diagnosed with MPC (9 synchronous and 3 metachronous variants) [9]. One of the latest and largest studies on this topic, conducted by B.U. Sidiqi et al. in 2023 in the USA, demonstrated the incidence of MPC of the colon and prostate at 0.45 % (10 out of 2,204 patients with colorectal and prostate cancer from 2017 to 2022) [2].

The higher incidence in our study is understandable for several reasons. First, unlike many studies, we included all colorectal cancer localizations, not just rectal cancer. Secondly, we had at our disposal the protocols of preoperative oncological multidisciplinary team only of those patients who were treated at the Clinic of Coloproctology and Minimally Invasive Surgery of Sechenov University, which specializes in the surgical treatment of colorectal cancer. Consequently, our study primarily included patients whose primary reason for visiting was colorectal cancer. It was not possible to include records of urological consultations in the study due to the lack of data. These factors naturally increased the proportion of patients of interest to us. This also explains the significantly higher frequency of prostate cancer as the first detected malignancy in the metachronous group compared to the group with synchronous variant of MPC (95.8 % vs. 40.0 %; $p < 0.001$). The average interval from prostate cancer diagnosis to colorectal cancer diagnosis in the metachronous group was 84.0 ± 50.4 months, with the longest interval being 204 months. This prolonged interval aligns with the favorable prognosis of prostate cancer, even in advanced cases [10].

Nevertheless, multiple primary colorectal and prostate cancers remain rare conditions, and global experience in managing such patients is limited to clinical cases and small case series. Our study represents one of the largest case series on this topic in the literature. To date, no similar studies have been identified in Russian sources. C.D. Jacobs et al. reported the largest series worldwide, publishing the results of 54 patients with synchronous MPC of the colon (from distal sigmoid to low third of the rectum) and prostate. It is noteworthy that the authors chose a time period of 12 months to distinguish between synchronous and metachronous MPC, which increased the sample with early metachronous cases [11].

Diagnosis of synchronous variant of multiple primary cancer of the colon and prostate

In 60 % of cases (9 out of 15), colorectal cancer was the first to manifest (blood in the stool, stool abnormalities, abdominal pain, etc.), and therefore the patient was prescribed an endoscopic examination with histological verification (Table 2). In all 9 cases, the tumors were located in the distal parts of the colon (rectum, rectosigmoid junction, distal part of the sigmoid colon). Prostate cancer was detected incidentally during pelvic MRI, which is a mandatory staging method for patients with distal colorectal cancer. This finding aligns with studies like that of M. Sturlud ttir et al., who observed that among 29 patients with synchronous MPC of the rectum and prostate, 20 were diagnosed with prostate cancer through pelvic MRI performed during rectal cancer staging. Their study also highlighted a rising incidence of colorectal and prostate MPSC from 1995 to 2011, attributed to advances in imaging techniques and

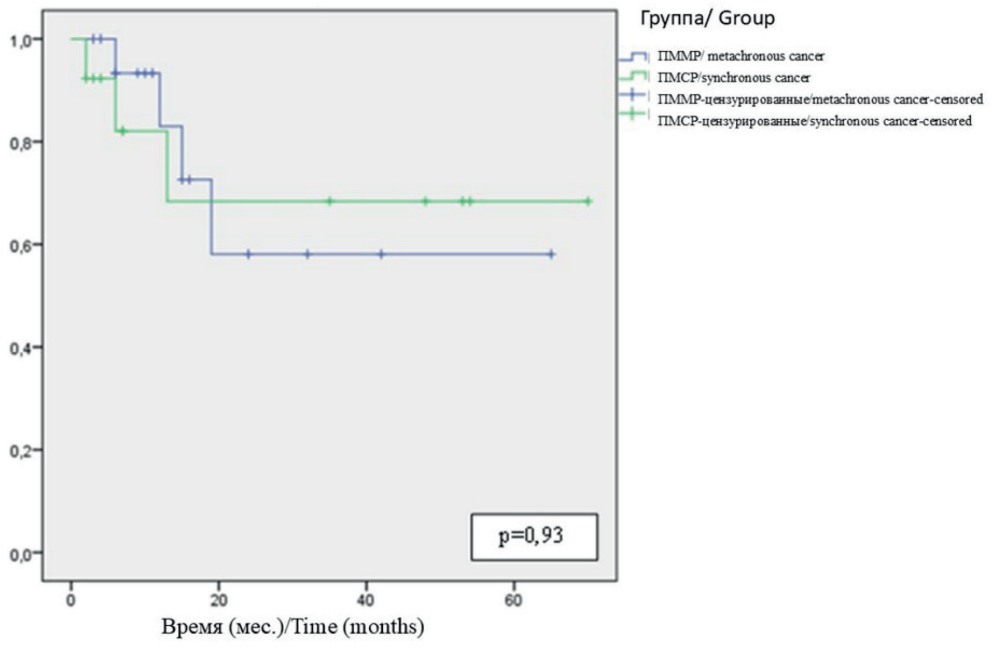


Figure 2. Recurrence-free survival in groups with metachronous and synchronous variants of multiple primary cancer

Рисунок 2. Безрецидивная выживаемость в группах с метахронным и синхронным вариантами первично-множественного рака

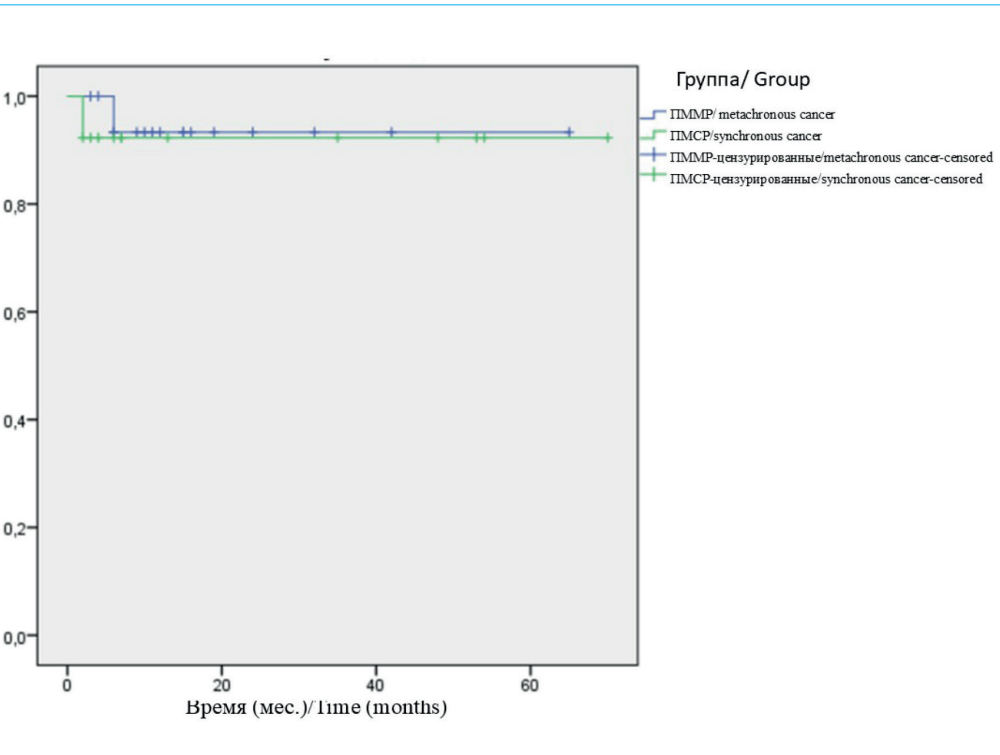


Figure 3. Overall survival in groups with metachronous and synchronous variants of multiple primary cancer

Рисунок 3. Общая выживаемость в группах с метахронным и синхронным вариантами первично-множественного рака

Table 1. Characteristics of patients with metachronous variant of multiple primary cancer and short-term outcomes
Таблица 1. Характеристика пациентов с метахронным вариантом первично-множественного рака и непосредственные результаты их лечения

No. №	Age, years Возраст, лет	First cancer Первый рак	Second cancer Второй рак	Interval, months Интервал, мес.	Prostate cancer TNM TNM рака ПЖ	Prostate cancer treatment Лечение рака ПЖ	Access for RPE Доступ при РПЭ	Colorectal cancer TNM TNM КРР	Colorectal cancer treatment Лечение КРР	Colorectal resection approach Доступ КРР	Clavien — Dindo colorectal cancer complications Осложнения КРР (по Клавиену — Дидо)	Follow-up, months Прослеженность, мес.
1	69	Prostate ПЖ	Caecum Слепая кишка	12	T3N0M0	HT ГТ	–	T3N0M0	RHCE ПГКЭ	L/s Л/с	None Не было	32
2	68	Prostate ПЖ	Caecum Слепая кишка	60	T2N0M1	EBRT, HT ДЛТ, ГТ	–	T4N1M1 (liver / печень)	Palliative Паллиативное	–	–	N/a Н/и
3	69	Prostate ПЖ	Caecum Слепая кишка	60	N/a Н/и	BT, HT БТ, ГТ	–	T4N0M0	RHCE, APCT ПГКЭ, АПХТ	L/s, conversion Л/с, конверсия	None Не было	65
4	67	Prostate ПЖ	Mid. rectum САОПК	8	T1N0M0	TURP ТУРП	–	T3N2M0	LAR, APCT, RecS НПРПК, АПХТ, РВО	L/t Л/т	I	67
5	72	Prostate ПЖ	Low rectum НАОПК	176	T2N0M0	RPE РПЭ	L/t Л/т	T2N1M0	NACRT, APRE + right LLND НАХЛТ, БПЭПК + ЛЛД справа	L/t Л/т	None Не было	N/a Н/и
6	79	Prostate ПЖ	Mid. rectum САОПК	60	T3N0M0	RPE, EBRT РПЭ, ДЛТ	Robot Робот	T3N0M0	ARR ПРПК	L/s Л/с	None Не было	35
7	75	Prostate ПЖ	Low rectum НАОПК	120	T3N0M0	RPE РПЭ	L/t Л/т	T3N2M0	LAR, APCT, RecS НПРПК, АПХТ, РВО	L/t Л/т	None Не было	42
8	72	Prostate ПЖ	Caecum Слепая кишка	78	T3N0M0	RPE + PLND, HT, BT РПЭ + ТЛАЭ, ГТ, БТ	L/t Л/т	T3N0M0	RHCE ПГКЭ	L/t Л/т	II	33
9	78	Prostate ПЖ	Low rectum НАОПК	144	T2N0M0	RPE + PLND РПЭ + ТЛАЭ	L/t Л/т	T2N1M0	LAR, RecS НПРПК, РВО	L/t Л/т	II	24

10	69	Prostate *ПЖ*	Mid. rectum *САОПК*	69	T2N0M0	RPE + PLND *РПЭ + ТЛАЭ*	L/s *Л/с*	T3N1M0	LAR *НПРПК*	L/t *Л/т*	II	15
11	83	Prostate *ПЖ*	Sigmoid colon *СК*	34	T3N0M0	RPE + PLND *РПЭ + ТЛАЭ*	Robot *Робот*	T3N1M0	ARR, RecS *ПРПК, РВО*	L/t *Л/т*	None *Не было*	16
12	62	Prostate *ПЖ*	Mid. rectum *САОПК*	48	T1N0M0	RPE *РПЭ*	Robot *Робот*	T3N0M0	LAR, APCT, RecS *НПРПК, АПХТ, РВО*	L/s, conversion *Л/с, конверсия*	None *Не было*	16
13	71	Prostate *ПЖ*	Mid. rectum *САОПК*	93	N/a *Н/и*	RPE + PLND *РПЭ + ТЛАЭ*	L/t *Л/т*	T3N2M0	LAR, APCT, RecS *НПРПК, АПХТ, РВО*	L/s, conversion *Л/с, конверсия*	III	3
14	79	Prostate *ПЖ*	Up. rectum *ВАОПК*	60	Н/и *N/a*	RPE *РПЭ*	L/t *Л/т*	T4N2M1 (*distant lymph nodes / отдаленные лимфоузлы*)	PCT *ПХТ*	—	—	4
15	79	Prostate *ПЖ*	Low rectum *НАОПК*	96	T2N0M0	RPE *РПЭ*	L/t *Л/т*	T3N0M0	APR *БАРПК*	L/t *Л/т*	II	N/a *Н/и*
16	52	Prostate *ПЖ*	Rectosigmoid *РСО*	84	N/a *Н/и*	RPE *РПЭ*	Robot *Робот*	T1N0M0	LAR *НПРПК*	L/s *Л/с*	None *Не было*	11
17	69	Prostate *ПЖ*	Rectosigmoid *РСО*	48	T3N1M1	HT *ГТ*	–	T2N1M0	ARR *ПРПК*	L/s *Л/с*	None *Не было*	10
18	76	Prostate *ПЖ*	Sigmoid colon *СК*	48	N/a *Н/и*	HT *ГТ*	–	T3N1M0	ARR *ПРПК*	L/s *Л/с*	II	9
19	84	Prostate *ПЖ*	Sigmoid colon *СК*	131	T3N0M0	PE + PLND, HT, PCT *НПЭ + ТЛАЭ, ГТ, ПХТ*	L/t *Л/т*	T3N1M0	ARR *ПРПК*	L/s *Л/с*	II	N/a *Н/и*
20	66	Prostate *ПЖ*	Low rectum *НАОПК*	60	T2N0M0	RPE *РПЭ*	EP Robot *Э/п робот*	T3N2M0	APR, APCT, ResS *БАРПК, АПХТ, РВО*	L/s *Л/с*	None *Не было*	7
21	69	Prostate *ПЖ*	Transverse colon *ПОК*	84	N/a *Н/и*	EBRT *ДЛТ*	–	T3N2M1 (liver /*печень*)	RHCE + ALR, APCT *ПГКЭ + АРП, АПХТ*	L/t *Л/т*	None *Не было*	6
22	89	Prostate *ПЖ*	Descending colon *НОК*	204	N/a *Н/и*	RPE *РПЭ*	L/t *Л/т*	T2N0M0	LCE *РЛООК*	L/s *Л/с*	None *Не было*	4

End of Table 1. Characteristics of patients with metachronous variant of multiple primary cancer and short-term outcomes

Окончание таблицы 1. Характеристика пациентов с метахронным вариантом первично-множественного рака и непосредственные результаты их лечения

23	76	Prostate *ПЖ*	Low rectum *НАОПК*	12	T2N0M0	RPE *РПЭ*	L/t *Л/т*	T1N0M0	LAR *НПРПК*	L/t *Л/т*	II	22
24	75	Mid. rectum *САОПК*	Prostate *ПЖ*	156	T1N0M0	RPE *РПЭ*	Robot *Робот*	N/a *Н/д*	LAR *НПРПК*	L/t *Л/т*	None *Не было*	1

Note: ALR – atypical liver resection; APCT – adjuvant polychemotherapy; APR – abdominoperineal resection; APRE – abdominoperineal rectal extirpation; ARR – anterior rectum resection; BT – brachytherapy; EBRT – external beam therapy; EP – extraperitoneal; HT – hormonal therapy; LAR – low anterior resection; LCE – left colectomy; LLND – lateral lymph node dissection; Low rectum – low third of the rectum; L/s – laparoscopy, L/t – laparotomy; Mid. rectum – middle third of the rectum; N/a – not available; NACRT – neoadjuvant chemoradiotherapy; PCT – polychemotherapy; PLND – pelvic lymph node dissection; RecS – reconstructive surgery; RHCE – right hemicolectomy; Robot – robotic approach; RPE – radical prostatectomy; TURP – transurethral resection of the prostate; Up. Rectum – upper third of the rectum.

Примечание: АПХТ – адъювантная полихимиотерапия; АРП – атипичная резекция печени; БАРПК – брюшно-анальная резекция прямой кишки; БПЭПК – брюшно-промежностная экстирпация прямой кишки; БТ – брахитерапия; ВАОПК – верхнеампулярный отдел прямой кишки; ГТ – гормонотерапия; ДЛТ – дистанционная лучевая терапия; КРР – колоректальный рак; Л/с – лапароскопия; Л/т – лапаротомия; ЛЛД – латеральная лимфодиссекция; НАОПК – нижнеампулярный отдел прямой кишки; НАХЛТ – неоадъювантная химиолучевая терапия; Н/и – неизвестно; НОК – нисходящая ободочная кишка; НПРПК – низкая передняя резекция прямой кишки; НПЭ – нерадикальная простатэктомия; ППКЭ – правосторонняя гемиколэктомия; ПЖ – предстательная железа; ПОК – поперечная ободочная кишка; ПРПК – передняя резекция прямой кишки; ПХТ – полихимиотерапия; РВО – реконструктивно-восстановительная операция; РЛООК – резекция левых отделов ободочной кишки; РПЭ – радикальная простатэктомия; РСО – ректосигмоидный отдел; САОПК – среднеампулярный отдел прямой кишки; СК – сигмовидная кишка; ТЛАЭ – тазовая лимфаденэктомия; ТУРП – трансуретральная резекция простаты; Э/п – экстраперитонеальный.

the widespread use of pelvic MRI [12]. Similarly, our study noted an increase in MPC of the colorectal and prostate diagnoses within a shorter timeframe (2018–2024) (Fig. 1).

This trend underscores the need for specialized diagnostic approaches. Thus, M.K. Terris et al. noted that diagnosing prostate cancer after performing abdominoperineal resection is difficult due to the lack of access to the prostate and the impossibility of performing transrectal biopsy of the prostate under ultrasound guidance. In their study, prostate cancer was identified in 3 of 19 patients scheduled for abdominoperineal resection, suggesting that all men over 50 years of age with a life expectancy of more than 10 years should be screened for prostate cancer before surgery. Their screening protocol involved transrectal biopsy for patients with prostate-specific antigen levels more than 4 ng/mL and irregular prostate surfaces on digital rectal examination [13]. This program has not received wide distribution; however, further research is needed on screening for prostate cancer in patients with rectal cancer who are planned for surgical treatment. It is also important to perform a colonoscopy before starting treatment of prostate cancer. This perspective is exemplified by Patient No. 15 (Table 2). A 66-year-old male patient underwent radical prostatectomy with extended laparoscopic pelvic lymph node dissection. During the operation, damage of the anterior wall of the rectum occurred, which required defect suturing and loop sigmostomy formation without conversion. The pathomorphological diagnosis was acinar adenocarcinoma (pT3N0M0, Gleason 4+4). The patient was discharged without other complications. Colonoscopy was performed 146 days after prostate cancer diagnosis and before stoma closure. It revealed a tumor of the proximal third of the sigmoid colon distal to the sigmostoma, verified as a well-differentiated adenocarcinoma. Computer tomography did not show any distant metastases. Open sigmoidectomy with D3 lymph node dissection and liquidation of the stoma was performed. Pathomorphological diagnosis was colorectal adenocarcinoma (pT3N2M0, Stage III). Postoperatively, the patient was discharged without complications and is currently receiving adjuvant chemotherapy.

A study by H.J. Sharp et al. showed that 3 % of patients with localized prostate cancer who underwent colonoscopy after brachytherapy were found to have asymptomatic undiagnosed synchronous or metachronous colorectal cancer. Moreover, in the group of patients without colorectal cancer who underwent screening colonoscopy, there were significantly fewer post-radiation complications compared to the group of patients where colorectal

Table 2. Characteristics of patients with synchronous variant of multiple primary cancer and short-term outcomes
Таблица 2. Характеристика пациентов с синхронным вариантом первично-множественного рака и непосредственные результаты их лечения

No. №	**Age, years** *Возраст, лет*	**First cancer** *Первый рак*	**Second cancer** *Второй рак*	**Interval, days** *Интервал, дни*	**First stage of treatment** *Первый этап лечения*	**Prostate cancer TNM** *TNM РПЖ*	**Prostate cancer treatment** *Лечение РПЖ*	**Access for RPE** *Доступ при РПЭ*	**Colorectal cancer TNM** *TNM КРР*	**Colorectal cancer treatment** *Лечение КРР*	**Colorectal resection approach** *Доступ КРР*	**Clavien — Dindo colorectal cancer complications** *Осложнения КРР (по Кловьену — Дидо)*	**Gleason score** *Глисон*	**Follow-up, months** *Прослеженность, мес.*
1	60	Prostate *ПЖ*	Low rectum *НАОПК*	61	Simult. *Симульт.*	T3N0M0	RPE *РПЭ*	L/s *Л/с*	T3N1M0	APR, APCT, RecS БАРПК, АПХТ, РВО	L/s *Л/с*	None *Не было*	6	70
2	64	Mid. rectum *САОПК*	Prostate *ПЖ*	16	CRC *КРР*	T2N0M0	HT *ГТ*	–	T3N2M0	LAR + 2-sided LLND *НПРПК + ЛЛД с обеих сторон*	L/t *Л/т*	I	8	48
3	61	Mid. rectum *САОПК*	Prostate *ПЖ*	14	CRC *КРР*	T2N0M0	HT *ГТ*	–	T3N1M0	LAR + right LLND *НПРПК + ЛЛД справа*	L/s *Л/с*	I	N/a *Н/и*	54
4	77	Mid. rectum *САОПК*	Prostate *ПЖ*	65	CRC *КРР*	T2N0M1 (cerebellum / *мозжечок*)	–	–	T3N2M0	APR *БАРПК*	L/t *Л/т*	II	7	2
5	63	Prostate *ПЖ*	Rectosigmoid *РСО*	172	PCa *РПЖ*	T1N0M0	RPE *РПЭ*	L/s *Л/с*	T3N1M0 (NEC / *НЭР*)	APR *БАРПК*	L/t *Л/т*	None *Не было*	7	53
6	67	Rectosigmoid *РСО*	Prostate *ПЖ*	22	CRC *КРР*	T2N0M0	HT, RPE *ГТ, РПЭ*	Робот *Robot*	T3N1M0	ARR, APCT *ПРПК, АПХТ*	L/s *Л/с*	None *Не было*	6	N/a *Н/и*
7	72	Up. rectum *ВАОПК*	Prostate *ПЖ*	64	CRC *КРР*	T2N1M0	ДН *AS*	–	T2N0M0	LAR, RecS *НПРПК, РВО*	L/t *Л/т*	None *Не было*	6	35
8	74	Low rectum *НАОПК*	Prostate *ПЖ*	50	Simult. *Симульт*	T3N0M0	HT *ГТ*	–	T4N0M1 (liver / *печень*)	PCT *ПХТ*	–	None *Не было*	N/a *Н/и*	N/a *Н/и*
9	61	Prostate *ПЖ*	Mid. rectum *САОПК*	15	CRC *КРР*	T2N0M0	HT, BT *ГТ, БТ*	–	T1N0M0	EPE, ARR *ЭПЭ, ПРПК*	L/s *Л/с*	I	6	15

End of Table 2. Characteristics of patients with synchronous variant of multiple primary cancer and short-term outcomes

Окончание таблицы 2. Характеристика пациентов с синхронным вариантом первично-множественного рака и непосредственные результаты их лечения

10	75	Low rectum *НАОПК*	Prostate *ПЖ*	16	CRC *КРР*	T2N0M0	HT *ГТ*	–	T3N2M1 (lung / *легкое*)	NACRT, APR *НАХЛТ, БАРПК*	Robot *Робот*	I	7	8
11	54	Prostate *ПЖ*	Caecum *Слепая кишка*	19	CRC *КРР*	T2N0M0	RPE *РПЭ*	L/s *Л/с*	T2N2M0	RHCE *ПГКЭ*	L/s *Л/с*	None *Не было*	7	7
12	75	Prostate *ПЖ*	Sigmoid colon *СК*	176	PCa *РПЖ*	T2N0M0	EBRT *ДЛТ*	–	T3N0M0	ARR *ПРПК*	L/s *Л/с*	None *Не было*	N/a *Н/и*	7
13	77	Sigmoid colon *СК*	Prostate *ПЖ*	18	CRC *КРР*	T2N0M1 (кости	HT *ГТ*	–	T2N0M0	ARR *ПРПК*	L/s *Л/с*	I	8	4
14	85	Rectosigmoid *РСО*	Prostate *ПЖ*	32	CRC *КРР*	T2N0M0	HT *ГТ*	–	T3N2M0	ARR, APCT *ПРПК, АПХТ*	L/s *Л/с*	None *Не было*	7	3
15	66	Prostate *ПЖ*	Sigmoid colon *СК*	146	PCa *РПЖ*	T3N0M0	RPE + PLND *РПЭ + ТЛАЭ*	L/s *Л/с*	T2N2M0	SE, APCT *РСК, АПХТ*	L/t *Л/т*	I	6	2

Note: APCT — adjuvant polychemotherapy; APR — abdominoperineal resection; ARR — anterior rectum resection; AS — active surveillance; BT — brachytherapy; CRC — colorectal cancer; EBRT — external beam therapy; EPE — endoscopic polypectomy; HT — hormonal therapy; LAR — low anterior resection; LLND — lateral lymph node dissection; Low rectum — low third of the rectum; L/s — laparoscopy; L/t — laparotomy; Mid. rectum — middle third of the rectum; N/a — not available; NACRT — neoadjuvant chemoradiotherapy; NEC — neuroendocrine cancer; PCa — prostate cancer; PCT — polychemotherapy; PLND — pelvic lymph node dissection; RecS — reconstructive surgery; RHCE — right hemicolectomy; Robot — robotic approach; RPE — radical prostatectomy; SE — sigmoidectomy; Simult. — simultaneous treatment; Up. Rectum — upper third of the rectum.

Примечание: АПХТ — адъювантная полихимиотерапия; БАРПК — брюшно-анальная резекция прямой кишки; БТ — брахитерапия; ВАОПК — верхнеампулярный отдел прямой кишки; ГТ — гормонотерапия; ДЛТ — дистанционная лучевая терапия; ДН — динамическое наблюдение; КРР — колоректальный рак; Л/с — лапароскопия; Л/т — лапаротомия; ЛЛД — латеральная лимфодиссекция; НАОПК — нижнеампулярный отдел прямой кишки; НАХЛТ — неоадъювантная химиолучевая терапия; Н/и — неизвестно; НПРПК — низкая передняя резекция прямой кишки; НЭР — нейроэндокринный рак; ПГКЭ — правосторонняя гемиколэктомия; ПЖ — предстательная железа; ПРПК — передняя резекция прямой кишки; ПХТ — полихимиотерапия; РВО — реконструктивно-восстановительная операция; РПЖ — рак предстательной железы; РПЭ — радикальная простатэктомия; РСК — резекция сигмовидной кишки; РСО — ректосигмоидный отдел; САОПК — среднеампулярный отдел прямой кишки; Симульт. — симультанное лечение; СК — сигмовидная кишка; ТЛАЭ — тазовая лимфаденэктомия; ЭПЭ — эндоскопическая полипэктомия.

Table 3. Comparative characteristics of groups with metachronous and synchronous variants of multiple primary cancer

Таблица 3. Сравнительная характеристика групп с метахронным и синхронным вариантами первично-множественного рака

	mMPC ***ПММР***	**sMPC** ***ПМСР***	***p***
Age, years / *Возраст, лет*	72.83 ± 7.80	68.0 ± 8.4	0.13
First cancer / *Первый рак*			
colon cancer / *рак толстой кишки*	1 (4.2 %)	9 (60 %)	<0.001
prostate cancer / *рак предстательной железы*	23 (95.8 %)	6 (40 %)	
Localization of colorectal cancer / *Локализация рака толстой кишки*			
rectum / *прямая кишка*	15 (62.5 %)	11 (73.3 %)	0.73
colon / *ободочная кишка*	9 (37.5 %)	4 (26.7 %)	
Colorectal cancer treatment / *Лечение рака толстой кишки*			
surgery / *хирургия*	22 (91.7 %)	14 (93.3 %)	1.0
polychemotherapy / *полихимиотерапия*	9 (37.5 %)	6 (40 %)	
external beam radiation therapy / *дистанционная лучевая терапия*	1 (4.2 %)	1 (6.7 %)	
combination / *комбинация*	7 (29.2 %)	5 (33.3 %)	
palliative / *паллиативное*	1 (4.2 %)	0	
Prostate cancer treatment / *Лечение рака предстательной железы*			
surgery / *хирургия*	18 (75 %)	5 (33.3 %)	0.018
radiation therapy / *лучевая терапия*	5 (20.8 %)	2 (13.3 %)	0.69
hormonal therapy / *гормональная терапия*	7 (29.2 %)	8 (53.3 %)	0.18
combination / *комбинация*	5 (20.8 %)	2 (13.3 %)	0.69
observation / *наблюдение*	0	2 (13.3 %)	0.69
Access for radical prostatectomy / *Доступ при радикальной простатэктомии*			
robotic approach / *робот*	6 (35.3 %)	1 (20 %)	1.0
laparoscopy / *лапароскопия*	1 (5.9 %)	4 (80 %)	0.03
laparotomy / *лапаротомия*	10 (58.8 %)	0	0.046
Access in colorectal cancer surgery / Доступ при хирургии колоректального рака			
robotic approach / *робот*	0	1 (7.1 %)	0.39
laparoscopy / *лапароскопия*	11 (50 %)	8 (57.1 %)	0.74
laparotomy / *лапаротомия*	11 (50 %)	5 (35.7 %)	0.50
conversion in colorectal cancer surgery *конверсия при хирургии колоректального рака*	3 (27.3 %)	0	0.22
Complications of colorectal cancer surgery (Clavien — Dindo grade) *Осложнения хирургии колоректального рака (класс по Клавьену — Диндо)*			
Total / *Всего*	9 (40.9 %)	7 (46.7 %)	0.75
I	1 (11.1 %)	6 (85.7 %)	0.01
II	7 (77.8 %)	1 (14.3 %)	0.041
III	1 (11.1 %)	0	1.0

Note: mMPC — metachronous variant of multiple primary cancer; sMPC — synchronous variant of multiple primary cancer.
Примечание: ПММР — метахронный вариант первично-множественного рака; ПМСР — синхронный вариант первично-множественного рака.

cancer was missed (6 % vs. 14 %; $p < 0.003$). The authors recommend performing colonoscopy before starting treatment for prostate cancer [10]. Similarly, C.D. Jacobs et al. advised colonoscopy for all men over 45 years with localized prostate cancer, especially if a colonoscopy had not been performed in the preceding three years [11].

Sequence and outcomes of surgical treatment for multiple primary cancer of the colon and prostate

As for metachronous variant of colorectal and prostate cancer, the sequence of treatment is generally not critical due to the long-time interval between the diagnoses of the two malignancies (mean: 84 months in our study). Treatment typically follows the order in which the cancers are detected. In our cohort, prostate cancer was the first malignancy in 95.8 % of cases, with surgical treatment performed in 75 % of these patients. Although robotic-assisted and laparoscopic radical prostatectomy are considered the gold standards, a high percentage of open radical prostatectomies (58.8 %) were observed in the metachronous group. This can be attributed to the fact that, at the time these radical prostatectomies were performed (up to 204 months prior), minimally invasive techniques were not widely available in Russia, particularly in remote regions. In contrast, all radical prostatectomies in the synchronous group were performed using minimally invasive techniques (robotic or laparoscopic). These procedures were conducted at the Institute for Urology, Sechenov University, where surgeons have significant expertise in minimally invasive prostate surgeries.

The selection of a surgical approach for colorectal cancer in patients with a history of prostate cancer poses significant challenges. Although the difference was not statistically significant ($p = 0.5$), open surgery for colorectal cancer resection was more frequently performed in the metachronous group (50 %) compared to the synchronous group (35.7 %). Furthermore, the metachronous group demonstrated a higher rate of conversions to open surgery (27.3 %) compared to no conversions in the synchronous group ($p = 0.22$). This preference for open surgery in metachronous cases is consistent with findings from other studies. For instance, Z. Lakkis et al. analyzed outcomes of rectal cancer surgery in patients with and without a history of prostate cancer (83 and 249 patients, respectively). They found that laparotomy was significantly more common in patients with prior prostate cancer ($p < 0.001$), and these patients also had higher rates of conversion to open procedures ($p = 0.003$), intraoperative blood transfusions ($p < 0.001$), and tumor perforation ($p < 0.001$). These intraoperative complications contributed to worse outcomes, including higher rates of major complications (28 % vs. 17.2 %; $p = 0.036$), anastomotic leakage (25 % vs. 13.7 %; $p = 0.019$), and permanent stomas (41 % vs. 12.4 %; $p < 0.001$). The authors attributed these outcomes to factors such as adhesions from prior radical prostatectomies, tissue fragility due to radiotherapy, and dissection difficulties in narrow pelvises [14]. In contrast, T. Tomminen et al. reported no statistically significant differences in conversion rates, blood loss, tumor perforation, or other adverse events between patients with ($n = 54$) and without ($n = 553$) a history of prostate cancer. However, their study highlighted high rates of open surgeries (77.8 % vs. 80.2 %; $p = 0.158$) and permanent stomas (61.5 % vs. 45.2 %; $p = 0.025$) across all groups. The authors recommended open surgery and avoidance of anastomosis in high-risk cases to minimize complications [15]. In our study, patients from the metachronous group experienced more severe complications, with a significantly higher rate of Grade II Clavien — Dindo complications (77.8 % vs. 14.3 %; $p = 0.041$). These results suggest that previous prostate cancer treatment may contribute to more challenging surgical conditions.

Performing radical prostatectomy after colorectal cancer surgery remains challenging due to periprostatic adhesions, which complicate seminal vesicle dissection. Some surgeons consider a history of colorectal resection a contraindication for minimally invasive radical prostatectomy [16]. In our study, one patient in the metachronous group underwent robotic radical prostatectomy 156 months after open low anterior resection of the rectum (Patient No. 24). In the synchronous group, two patients underwent minimally invasive radical prostatectomy following colorectal surgery: one robotic radical prostatectomy 5 months after laparoscopic anterior resection and adjuvant chemotherapy (Patient No. 6) and one laparoscopic radical prostatectomy 3 months after laparoscopic right hemicolectomy (Patient No. 11). None of these cases required conversion to open surgery (Tables 1, 2). These results suggest that prior colorectal resection, even via open approaches, is not necessarily a contraindication for minimally invasive radical prostatectomy. L.G. Luciani et al. further support this conclusion. In 2022, they reported their experience with 14 robotic radical prostatectomies performed within five years after colorectal surgery. Although three cases required conversion to open surgery, risk factors for conversion included reoperation, complications, previous conversions, and prolonged hospital stays (> 10 days). The authors concluded that robotic radical prostatectomy after colorectal surgery is both safe and

effective but recommended open surgery in high-risk cases [17].

In one case (Patient No. 1), we performed simultaneous laparoscopic abdominoperineal resection with D3 lymph node dissection and radical prostatectomy (Table 2). The postoperative course was uneventful, and the patient subsequently received adjuvant chemotherapy for metastatic regional lymph nodes. At present, this patient remains disease-free six years post-surgery.

Despite this success, simultaneous surgeries remain rare in our clinic and the global literature. Case reports and small series dominate publications on this topic [18–20]. Challenges include high blood loss [18], uncertain functional outcomes [19], and the risk of fistula formation between adjacent anastomoses in the bladder and bowel [5], making these procedures controversial.

Among patients with synchronous rectal cancer and prostate cancer (excluding those with colon or rectosigmoid junction cancer, as well as Patient No. 8, who received chemotherapy for metastatic rectal cancer), radical prostatectomy was performed in only one patient (Patient No. 1) during a simultaneous procedure (Table 2). The remaining six patients underwent hormonal therapy following rectal cancer surgery. Overall, surgical treatment of prostate cancer was significantly less common in the synchronous group compared to the metachronous group (33.3 % vs. 75 %; $p = 0.018$). These findings reflect a more conservative approach to prostate cancer management in patients with a history of rectal cancer surgery.

Our clinic's approach to synchronous MPC of the colon and prostate appears validated by this study and aligns with other literature [6]. For localized synchronous colon and prostate cancer, we recommend the following strategy: Step 1 — surgery for colorectal cancer; Step 2 — management of prostate cancer (minimally invasive radical prostatectomy if feasible for colon or rectosigmoid cancer; nonsurgical options, including external beam radiation therapy, brachytherapy, or hormonal therapy, for rectal cancer). For rectal cancer with indications for neoadjuvant chemoradiotherapy, radical-dose radiotherapy for the prostate may be added [9].

In metachronous cases, the surgical and radiation history should guide the approach. Both surgical and radiation previous treatment should be taken into account when choosing approach in patients with metachronous cancer. Laparotomy should be considered for patients with visceral obesity, pelvimetric signs of narrow pelvis, or anterior rectal tumors.

Lateral lymph node dissection in patients with synchronous variant of multicle primary cancer of the rectum and prostate

Pelvic lymphadenectomy plays a crucial role in the surgical treatment of both rectal and prostate cancers. In colorectal surgery, it is referred to as lateral lymph node dissection, while in urological oncology, it is called pelvic lymph node dissection [21].

In this study, surgical management of synchronous rectal cancer and prostate cancer was performed in seven patients. Among them, simultaneous colorectal resection and radical prostatectomy were carried out in Patient No. 1. The remaining six patients underwent surgery only for rectal cancer, with prostate cancer managed conservatively. Lateral lymph node dissection was performed in two cases: in Patient No. 2, bilateral lateral lymph node dissection was conducted due to a high risk of lateral lymph node metastases [22], and in Patient No. 3, right lateral lymph node dissection was performed because of a suspicious lymph node in the obturator space (Table 2). Histopathological examination revealed metastases of colorectal adenocarcinoma in Patient No. 2, while no metastatic involvement was confirmed in Patient No. 3.

Although lateral lymph node dissection for synchronous cancers is infrequently performed, it remains a relevant topic in recent studies. In 2018, T. Ishikawa et al. reported a rare clinical case involving a 72-year-old male diagnosed with cancer of the lower third of the rectum. MRI revealed tumor stage pT2 with two enlarged lateral lymph nodes along the right internal iliac artery. After four cycles of FOLFOX chemotherapy, laparoscopic abdominoperineal resection with right lateral lymph node dissection was performed. Histological analysis showed grade 2 therapeutic response, unaffected mesorectal lymph nodes, and metastases in two lateral lymph nodes — one affected by rectal carcinoma and the other by prostatic carcinoma. The patient was subsequently diagnosed with prostate cancer and received FOLFOX chemotherapy and hormonal therapy. The authors concluded that performing lateral lymph node dissection during rectal cancer surgery is reasonable in cases of coexisting rectal and prostate malignancies [23].

In 2021, M. Yaegashi et al. presented a similar case in which prostate cancer metastases were found in lateral lymph nodes following rectal resection with lateral lymph node dissection, despite no evidence of prostate cancer in preoperative diagnostics. Postoperative verification of prostate cancer led to hormonal therapy. The study highlighted the use of multispiral computed

tomography (rather than MRI) for rectal cancer staging. The authors suggested that prostate cancer should be suspected in patients with rectal cancer and suspicious pelvic lymph nodes [7].

For rectal cancer, lateral lymph node dissection is considered a curative surgery that improves long-term outcomes [24]. In contrast, pelvic lymphadenectomy for prostate cancer serves primarily as a diagnostic and staging procedure [25]. Identifying prostate cancer metastases in lateral lymph nodes during rectal cancer surgery in patients with synchronous rectal and prostatic carcinomas is classified as stage IV disease, negating the need for radical prostatectomy.

It is essential to distinguish between lateral lymph node dissection performed by colorectal surgeons and pelvic lymphadenectomy performed by oncological urologists. Lateral lymph node dissection for rectal cancer involves a more extensive dissection, including the internal iliac lymph nodes (263P and D), obturator lymph nodes (283), common iliac lymph nodes (273), external iliac lymph nodes (293), medial and lateral sacral lymph nodes (260 and 270), and lymph nodes at the aortic bifurcation (280), if necessary [26]. In contrast, pelvic lymphadenectomy for prostate cancer generally excludes the internal iliac artery region and the fatty tissue containing lymphatics between the internal iliac artery and the pelvic plexus [27].

Colorectal surgeons performing lateral lymph node dissection for rectal cancer have the advantage of addressing both potential lymphatic spread basins for rectal and prostatic carcinomas. Consequently, the presence of prostate cancer could serve as an additional factor favoring lateral lymph node dissection in rectal cancer patients, complementing existing prognostic tools for assessing lateral lymph node involvement.

This study has several limitations. First, the retrospective nature of the research precluded a detailed analysis of the postoperative period following prostate cancer treatment and limited the availability of histological grades (Gleason scores) in the metachronous group. Second, the rarity of synchronous rectal and prostate cancers resulted in a small sample size, which precluded reliable statistical analysis.

Despite these limitations, our findings, combined with a review of the literature, allow us to draw preliminary conclusions that could serve as a foundation for future research.

Conclusion

The incidence of multiple primary colorectal and prostate cancer has been arising in recent years. Despite the improvement of diagnostics, oncologists should be alert to the potential presence of synchronous and metachronous cancers of the colon and prostate, emphasizing the importance of adequate screening tests. In cases of synchronous colon and prostate cancers, surgical treatment of colorectal cancer should be prioritized as the first step. History of surgical treatment for one of these malignancies is not a contraindication for the use of minimally invasive techniques. However, the choice of surgical approach should be rational and individualized. Additionally, the presence of prostate cancer may serve as an additional indication for performing lateral lymph node dissection in patients with synchronous rectal cancer.

References / Литература

1. *Bray F., Laversanne M., Sung H., Ferlay J., Siegel R.L., Soerjomataram I., et al.* Global cancer statistics 2022: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. *CA Cancer J Clin.* 2024;74(3):229–63. DOI: 10.3322/caac.21834
2. *Sidiqi B.U., Nosrati J.D., Wu V., Kobritz M., La Gamma N., Whelan R.L., et al.* The prevalence and management of synchronous prostate and rectal cancer. *Int J Radiat Oncol Biol Phys.* 2023;117(2):e339. DOI: 10.1016/j.ijrobp.2023.06.2398
3. *Носов Д.А., Волкова М.И., Гладков О.А., Карабина Е.В., Крылов В.В., Матвеев В.Б. и др.* Практические рекомендации по лекарственному лечению рака предстательной железы. Практические рекомендации RUSSCO, часть 1. *Злокачественные опухоли.* 2023;13(3s2):640–60. [*Nosov D.A., Volkova M.I., Gladkov O.A., Karabina E.V., Krylov V.V., Matveev V.B., et al.* Practical recommendations for drug treatment of prostate cancer. Practical recommendations of RUSSCO, part 1. *Malignant tumours.* 2023;13(3s2):640–60. (In Russ.)]. DOI: 10.18027/2224-5057-2023-13-3s2-1-640-660
4. *Schaeffer E.M., Srinivas S., Adra N., An Y., Barocas D., Bitting R., et al.* Prostate cancer, version 4.2023, NCCN clinical practice guidelines in oncology. *J Natl Compr Canc Netw.* 2023;21(10):1067–96. DOI: 10.6004/jnccn.2023.0050
5. *Celentano G., Creta M., Napolitano L., Abate M., La Rocca R., Capece M., et al.* Prostate cancer diagnosis, treatment and outcomes in patients with previous or synchronous colorectal cancer: A systematic review of published evidence. *Diagnostics (Basel).* 2022;12(6):1475. DOI: 10.3390/diagnostics12061475
6. *Lavan N.A., Kavanagh D.O., Martin J., Small C., Joyce M.R., Faul C.M., et al.* The curative management of synchronous rectal and prostate cancer. *Br J Radiol.* 2016;89(1057):20150292. DOI: 10.1259/bjr.20150292
7. *Yaegashi M., Otsuka K., Nakamura Y., Hatanaka T., Takashimizu K., Sasaki A.* Advanced synchronous rectal and prostate cancers diagnosed by lateral lymph node dissection: A case report. *Int J Surg Case Rep.* 2021;88:106494. DOI: 10.1016/j.ijscr.2021.106494
8. *Степанова Ю.А., Калинин Д.В., Вишневский В.А.* Первично-множественные опухоли (обзор литературы). *Медицинская визуализация.* 2015;6:93–102. [*Stepanova Yu.A., Kalinin D.V., Vishnevsky V.A.* Multiple primary neoplasms (literature review). *Medical Visualization.* 2015;6:93–102. (In Russ.)].

9. *Kavanagh D.O., Quinlan D.M., Armstrong J.G., Hyland J.M., O'Connell P.R., Winter D.C.* Management of synchronous rectal and prostate cancer. *Int J Colorectal Dis.* 2012;27(11):1501–8. DOI: 10.1007/s00384-012-1465-z
10. *Sharp H.J., Swanson D.A., Pugh T.J., Zhang M., Phan J., Kudchadker R., et al.* Screening colonoscopy before prostate cancer treatment can detect colorectal cancers in asymptomatic patients and reduce the rate of complications after brachytherapy. *Pract Radiat Oncol.* 2012;2(3):e7–13. DOI: 10.1016/j.prro.2011.11.010
11. *Jacobs C.D., Trotter J., Palta M., Moravan M.J., Wu Y., Willett C.G., et al.* Multi-institutional analysis of synchronous prostate and rectosigmoid cancers. *Front Oncol.* 2020;10:345. DOI: 10.3389/fonc.2020.00345
12. *Sturludóttir M., Martling A., Carlsson S., Blomqvist L.* Synchronous rectal and prostate cancer – the impact of MRI on incidence and imaging findings. *Eur J Radiol.* 2015;84(4):563–7. DOI: 10.1016/j.ejrad.2014.12.030
13. *Terris M.K., Wren S.M.* Results of a screening program for prostate cancer in patients scheduled for abdominoperineal resection for colorectal pathologic findings. *Urology.* 2001;57(5):943–5. DOI: 10.1016/s0090-4295(01)00943-8
14. *Lakkis Z., Vernerey D., Mege D., Faucheron J.L., Panis Y., Tuech J.J., et al.* Morbidity and oncological outcomes of rectal cancer impaired by previous prostate malignancy. Br J Surg. 2019;106(8):1087–98. DOI: 10.1002/bjs.11176
15. *Tomminen T., Huhtala H., Kotaluoto S., Veitonmäki T., Wirta E.V., Hyöty M.* Surgical and oncological results after rectal resections with or without previous treatment for prostate cancer. *Front Surg.* 2024;11:1298865. DOI: 10.3389/fsurg.2024.1298865
16. *Liu Z., Li D., Chen Y.* Endoscopic extraperitoneal radical prostatectomy after radical resection of pT1-pT2 rectal cancer: A report of thirty cases. *Wideochir Inne Tech Maloinwazyjne.* 2017;12(1):68–74. DOI: 10.5114/wiitm.2017.66475
17. *Luciani L.G., Mattevi D., Puglisi M., Processali T., Anceschi U., Lauro E., et al.* Robotic-assisted radical prostatectomy following colorectal surgery: A user's guide. *J Robot Surg.* 2022;16(1):189–92. DOI: 10.1007/s11701-021-01228-1
18. *Klee L.W., Grmoljez P.* Combined radical retropubic prostatectomy and rectal resection. *Urology.* 1999;54(4):679–81. DOI: 10.1016/s0090-4295(99)00201-0
19. *Lin C., Jin K., Hua H., Lin J., Zheng S., Teng L.* Synchronous primary carcinomas of the rectum and prostate: Report of three cases. *Oncol Lett.* 2011;2(5):817–9. DOI: 10.3892/ol.2011.323
20. *Gys B., Fransis K., Hubens G., Van den Broeck S., Op de Beeck B., Komen N.* Simultaneous laparoscopic proctocolectomy (TaTME) and robot-assisted radical prostatectomy for synchronous rectal and prostate cancer. *Acta Chir Belg.* 2019;119(1):47–51. DOI: 10.1080/00015458.2017.1411550
21. *Безруков Е.А., Рапопорт Л.М., Морозов А.О., Мартиросян Г.А., Стрижова М.А.* Эволюция техники выполнения и роли радикальной простатэктомии. *Сибирское медицинское обозрение.* 2017;3(105):61–7. [*Bezrukov E.A., Rapoport L.M., Morozov A.O., Martirosyan G.A., Strizhova M.A.* Evolution of the technique of implementation and role of radical prostatectomy. *Siberian Medical Review.* 2017;3(105):61–7. (In Russ.)]. DOI: 10.20333/2500136-2017-3-61-67
22. *Царьков П.В., Бабаджанян А.Р., Тулина И.А., Хусаинов А.Р., Сидорова Л.В., Лукьянов А.М.* Факторы риска поражения латеральных тазовых лимфоузлов при раке прямой кишки. *Вестник НМХЦ им. Н.И. Пирогова.* 2021;16(1):57–61. [*Tsarkov P.V., Babajanyan A.R., Tulina I.A., Khusainov A.R., Sidorova L.V., Lukyanov A.M.* Risk factors for lateral pelvic lymph nodes damaging. *Bulletin of Pirogov National Medical & Surgical Center.* 2021;16(1):57–61. (In Russ.)]. DOI: 10.25881/BPNMSC.2021.97.93.010
23. *Ishikawa T., Homma S., Nishikawa M., Nakamoto H., Yokoyama R., Taketomi A.* Laparoscopic abdominoperineal resection with lateral lymph node dissection for advanced rectal and prostate cancer with synchronous lateral lymph node metastases. *Asian J Endosc Surg.* 2019;12(1):118–21. DOI: 10.1111/ases.12598
24. *Sugihara K., Kobayashi H., Kato T., Mori T., Mochizuki H., Kameoka S., et al.* Indication and benefit of pelvic sidewall dissection for rectal cancer. *Dis Colon Rectum.* 2006;49(11):1663–72. DOI: 10.1007/s10350-006-0714-z
25. *Joniau S., Van den Bergh L., Lerut E., Deroose C.M., Haustermans K., Oyen R., et al.* Mapping of pelvic lymph node metastases in prostate cancer. *Eur Urol.* 2013;63(3):450–8. DOI: 10.1016/j.eururo.2012.06.057
26. *Japanese Society for Cancer of the Colon and Rectum.* Japanese classification of colorectal, appendiceal, and anal carcinoma: The 3d English edition [secondary publication]. *J Anus Rectum Colon.* 2019;3(4):175–95. DOI: 10.23922/jarc.2019-018
27. *Porpiglia F., De Luca S., Bertolo R., Passera R., Mele F., Manfredi M., et al.* Robot-assisted extended pelvic lymph nodes dissection for prostate cancer: Personal surgical technique and outcomes. *Int Braz J Urol.* 2015;41(6):1209–19. DOI: 10.1590/S1677-5538.IBJU.2015.0055

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