https://doi.org/10.22416/1382-4376-2022-32-6-20-30
UDC 616.329+616.33]-006.6-089-036.8

Factors of Organizing Surgical Treatment of Upper Gastrointestinal Cancers and Patient Survival: Real-World Data

Dmitry A. Andreev[1,*], Aleksander A. Zavyalov[1,2]

[1] *Research Institute for Healthcare Organization and Medical Management of Moscow Health Department, Moscow, Russian Federation*
[2] *Russian State Research Center — Burnasyan Federal Medical Biophysical Center of Federal Medical Biological Agency, Moscow, Russian Federation*

Aim: to analyze the safety and effectiveness of the method of cold snaring resection with preliminary hydropreparation when removing superficially colorectal epithelial neoplasms with a diameter of 5 to 25 mm.
Material and methods. The number of complications and disease recurrence after endoscopic excisions by "cold" snaring resection with preliminary hydropreparation of superficially neoplasms with a diameter of 5 to 25 mm was assessed.
Results. Neoplasms were removed in a single block in 89/122 (72.95 %) cases. Neoplasms with a diameter of 5 to 9 mm were excisions in a single block in 100 % of cases, with a diameter of 9 to 14 mm in 28/30 (93.33 %) cases, with a diameter of 15 to 19 mm in 12/38 (31.57 %) cases. According to the results of a lifetime pathoanatomic examination of the removed material, serrated dysplasia (serrated dysplasia, low grade) was detected in 76 cases; micro vesicular hyperplastic polyps (Hyperplastic polyp, micro vesicular type MVHP) were established in 9 cases; hyperplastic polyps containing goblet cells (Hyperplastic polyp, goblet cell GCHP) were in 5 cases; tubular adenoma with dysplasia (Tubular adenoma, low grade) was in 32 cases. Delayed bleeding and perforation of the intestinal wall, both at the time of resection, and in the delayed period was not observed. No local recurrence was detected in the groups of patients with neoplasms diameters of 5–9 and 10–14 mm. One case of local recurrence was detected in a group of patients with a neoplasms diameter from 15 to 19 mm (1/38 = 2.63 %) and one case in a group with a neoplasms diameter of 20–25 mm (1/5 = 20 %).
Conclusions. Cold endoscopic snaring resection of colorectal epithelial neoplasms with preliminary hydropreparation in the submucosa is a safe and effective method of excisions superficially epithelial neoplasms of the colon with a diameter of 5 to 19 mm.
Key words: colorectal epithelial neoplasm, cold snaring mucosal resection, serrated dysplasia
Conflict of interest: The authors declare that there is no conflict of interest.

For citation: Andreev D.A., Zavyalov A.A. Factors of Organizing Surgical Treatment of Upper Gastrointestinal Cancers and Patient Survival: Real-World Data. Russian Journal of Gastroenterology, Hepatology, Coloproctology. 2022;32(6):20–30. https://doi.org/10.22416/1382-4376-2022-32-6-20-30

Факторы организации хирургического лечения опухолей верхних отделов гастроинтестинального тракта и выживаемость пациентов: данные клинической практики

Д.А. Андреев[1,*], А.А. Завьялов[1,2]

[1] *ГБУ «Научно-исследовательский институт организации здравоохранения и медицинского менеджмента Департамента здравоохранения города Москвы», Москва, Российская Федерация*
[2] *ФГБУ «Государственный научный Центр Российской Федерации — Федеральный медицинский биофизический центр имени А.И. Бурназяна» ФМБА России, Москва, Российская Федерация*

Цель исследования: оценить влияние факторов организации эзофагэктомии и гастрэктомии на прогноз у пациентов в реальной онкологической практике.
Основное содержание. Изучены некоторые факторы организации и оценки хирургического лечения опухолей верхних отделов гастроинтестинального тракта, активно обсуждаемые в индексируемых в PubMed оригинальных статьях. Анализировали итоговые результаты первичных оригинальных зарубежных исследований. Метаанализы и систематические обзоры в анализ не включали. Поиск научных публикаций проводили

с использованием PubMed и Google по следующим ключевым словам: «esophageal cancer», «gastric cancer», «surgical factors», «survival», «prognosis», etc. Временной горизонт поиска охватывал период с 2017 по 2021 г. При необходимости в исследование включали статьи за другие годы. Источники отбирали вручную, фильтры не применяли. Оперативное лечение рака пищевода и желудка является одним из наиболее технически сложных вмешательств, что отражается на клинических исходах у пациентов. Минимально инвазивные методы (лапароскопия и торакоскопия) становятся частью стандартной практики и должны внедряться после структурированного и контролируемого обучения хирургической бригады. Активно изучается практическая применимость новых хирургических технологий на основе роботизированных устройств. Вопросы оптимального планирования работы операционных бригад и определения других факторов, влияющих на результативность и безопасность хирургического лечения, остаются предметом дискуссий хирургов, онкологов, организаторов здравоохранения.

Выводы. Дополнительный мониторинг реальной онкологической практики позволит определить роль множества новых модифицируемых факторов организации онкохирургического лечения. Анализ этих факторов приведет к усовершенствованию действенных стратегий увеличения продолжительности и повышения качества жизни пациентов после эзофагэктомии и гастрэктомии.

Ключевые слова: организация здравоохранения, общественное здоровье, показатели качества, рак пищевода, рак желудка, хирургия

Конфликт интересов: авторы заявляют об отсутствии конфликта интересов.

Для цитирования: Андреев Д.А., Завьялов А.А. Факторы организации хирургического лечения опухолей верхних отделов гастроинтестинального тракта и выживаемость пациентов: данные клинической практики. Российский журнал гастроэнтерологии, гепатологии, колопроктологии. 2022;32(6):20–30. https://doi.org/10.22416/1382-4376-2022-32-6-20-30

Introduction

Surgical resection is an essential attribute of the radical treatment of cancer of the esophagus and stomach. The significant risk of recurrence and the low 5-year survival of patients after surgical removal of tumors of the upper gastrointestinal tract suggest the need for further identification of modifiable clinical factors that affect long-term outcomes.

In a number of relevant and authoritative foreign clinical studies, the influence of the weekend factor and the effect of choosing individual days of the week for surgery on the prognosis and survival in common types of malignant tumors (tumors of the esophagus, abdominal neoplasms, oncogynecological diseases, etc.) is discussed [1–5]. For example, the Swedish National Oncology Quality Study suggests that the accuracy and accuracy of surgical technique deteriorates towards the end of the working week. Findings suggesting a lower overall 5-year survival after esophagectomy performed Wednesday-Friday compared to Monday-Tuesday [6].

The effect of weekend hospitalization was reflected in 30-day mortality among patients with gastrointestinal tumors observed in clinics in England and Wales [7, 8]. Similar results on the influence of the choice of the day of the week for elective surgery on the prognosis and development of complications in gastric cancer in China were published by oncologists in 2017 [9].

In contrast, a large population-based cohort study, organized in the Netherlands, did not support the assumption of an association of individual days of the week with survival in patients with esophageal cancer with a potentially curable clinical profile treated in the national oncology network [10]. Also, there was no statistically significant association between days of the week and outcomes in patients after D2 gastrectomy in Germany [11].

Heated discussions of oncologists and healthcare organizers on the issues of optimal planning of the work of surgical teams and the identification of other primary causal factors that affect the effectiveness and safety of surgical treatment of malignant neoplasms do not cease abroad [2, 12–14]. However, there are not enough reports on this topic in the domestic scientific literature.

The aim of the study — to determine the influence of some factors in the organization of esophagectomy and gastrectomy on the prognosis in patients in real oncological practice abroad.

Some factors of organizing and evaluating the surgical treatment of tumors of the upper gastrointestinal tract, actively discussed in original scientific articles indexed in PubMed for 2020–2021, were studied. In this scientific work, the final results of primary original foreign studies were analyzed. Meta-analyses and systematic reviews were not included in the analysis.

Scientific publications were searched using PubMed and the Google system for the following keywords: “esophageal cancer”, “gastric cancer”, “surgical factors”, “survival”, “prognosis”, etc. The search time horizon covered the period from 2017 to 2021. Sources were selected manually, filters were not applied.

Cancer of the esophagus and stomach are combined into one group due to the general features of treatment and patient care [15]. The use of an endoscope for mucosal resection or submucosal dissection is the preferred surgical technique for early and superficial (exophytic growth) cancer of the esophagus and stomach (T — *in situ*, T1a without multifocal lesions) [16]. Surgical resection is performed for early-stage cancer that is not suitable for endoscopic resection and may be performed to cure [17].

The role of the surgeon, in this case, is to implement the following medical processes: 1) the choice of an appropriate surgical technique by assessing the extent of the tumor, including on the basis of the results of laparoscopy; 2) determining the degree of readiness of the patient in the framework of the implementation of an interdisciplinary approach; 3) performing a surgical operation; 4) taking responsibility for organizing comprehensive medical care in the perioperative period [17].

Despite the general patterns, the algorithms for the organization of surgical treatment, which determine the success of esophagectomy and gastrectomy, have some peculiarities.

Esophagectomy

Surgery is part of the definitive treatment of patients with esophageal cancer in about 25 % of cases [18]. Surgical treatment of esophageal cancer is one of the most technically complex interventions, which naturally affects the clinical outcomes of patients. The immediate and long-term results of treatment after esophagectomy directly depend on many factors. First of all, this is the stage of the disease at the time of surgery (according to the cumulative data, the overall 5-year survival rate after radical treatment rarely exceeds 43 % [19], up to 70 %, about 30 % and not more than 10 % at 0–I, II, III–IV stages, respectively [6]), the morphological structure of the tumor, the presence and severity of concomitant pathology, and much more. It is important to evaluate the impact of a complex of potentially modifiable elements of the organization of oncosurgical care in various healthcare systems on outcomes in patients after esophagectomy.

The choice of method of technical manipulation on the esophagus may affect the outcomes of treatment in patients. Today, minimally invasive methods (laparoscopy and thoracoscopy [20]) become part of standard practice and should be implemented after structured and supervised training of the surgical team [17]. The practical applicability of new surgical technologies based on robotic devices for manipulations in the upper gastrointestinal tract is being actively studied [21, 22].

Among the latest developments, we should also mention fluorescent laparoscopy, which allows for intraoperative assessment of blood flow. For example, in Germany, since December 2020, the practical use of the Visionsense laparoscope has begun as a standard of care for Ivor-Lewis esophagectomy. Livsmed devices are considered promising (especially for clinics that do not have access to robotics), providing robotic triangulation. The advantages of triangulation are especially evident in lymphadenectomy in anatomically difficult to reach areas and in reconstructions (eg, esophagogastroanastomosis, esophagojejunostomy).

It must be emphasized that the definitive and reliable benefits of new surgical techniques in terms of survival among patients with esophageal cancer, as well as to establish their clinical and economic characteristics in everyday practice, have yet to be determined. An important role in organizing high-quality work with complex laparoscopic instruments is played by the qualifications and accreditation of specialists [22]. The professional experience of the surgeon is of great importance [23], well-coordinated work of a team of doctors and other healthcare professionals, organization of work processes to ensure the provision of quality medical care.

With the introduction of new surgical techniques, medical organizations are increasingly required to modernize their quality control systems, including updating the so-called criteria and digital standards. In foreign literature (J.Hoeppner et al. (2021) [20]) established innovative quality assessment criteria (indicators) for the diagnosis and surgical treatment of esophageal cancer, allowing the development of effective measures to improve current oncological practice (Table) [20].

Standard surgical treatment for esophageal cancer usually takes several hours to complete. For example, in Sweden, the average duration of an esophagectomy is about 6.5 hours [6].

Can a heavy workload affect the concentration and degree of professional “burnout” of surgeons?

This research question was previously explored in a large population-based cohort study performed in Sweden (J. Lagergren et al., 2016 [6]). Almost all cancer patients (n = 1799) after esophagectomy performed between January 1, 1987 and December 31, 2010 and followed up to November 13, 2014 were analyzed. It should be noted that the study was made possible due to the coherence and organization of high-quality work of administrative databases of medical records, specialized national clinical and demographic registers: the Swedish

Table. Indicators of the quality of diagnosis and surgical treatment of esophageal cancer, developed based on the principles of evidence-based medicine (modified and adapted from: J. Hoeppneret et al. (2021) [20], Creative Commons Attribution 4.0 International License)

Indicator	Literature	Level of Evidence	Category
Minimum number: ≥20 resections/year/clinic	[24–27]	3	Structure
Using chromoendoscopy to detect intraepithelial neoplasia	[28]	1b	Process
Use of deep biopsy methods such as: "deep biopsy", "bite-on-bite biopsy"	[29, 30]	2a	
Combined EUS examination (possibly with fine needle biopsy) to detect locoregional lymph node metastases	[31, 32]	1b	
Use of PET-CT to identify affected lymph nodes or distant metastases	[33–36]	2a	
Preoperative assessment: – cardiovascular, pulmonary, hepatic and metabolic functions, – compliance (geriatric practice), – nutritional status (BMI, nutritional risk assessment, mini nutritional assessment)	[37–43]	2b	
The use of pre-rehabilitation and accelerated rehabilitation technologies after surgery to improve convalescence	[44–47]	1b	
Perform endoscopic mucosal resection or endoscopic submucosal dissection for: – submucosal infiltration <500 um, – absence of lymphovascular infiltration (L1, V1), – degrees of tumor tissue differentiation <G3, – low risk tumors (T1m1-2, T1sm1 "low risk")	[37], [48–53]	2a	
Performing primary esophagectomy for: – high risk (sub)mucosal tumors (T1a, T1sm1), – submucosal tumors (T1sm2–3), – T2N0 tumors	[54]	3	
Application of the concept of multimodal therapy in T2N+ and T3N0/N+ tumors: – neoadjuvant chemoradiotherapy, – perioperative chemotherapy → and surgical resection	[52–55]	1b	
Use of minimally invasive surgical technique to reduce the severity of complications: – hybrid technology, – completely minimally invasive technique	[56], [57]	1b	
Performing definitive/radical chemoradiotherapy for unresectable tumors or functionally inoperable patients (with the possibility of performing a "rescue resection")	[58–60]	2a	
– Optimization of intraoperative airway management – Epidural anesthesia	[61, 62]	3	
Structured assessment of complications according to the Esophagectomy Complications Consensus Group	[63, 64]	2b	
Reduction of negative indicators: – mortality, – number of anastomotic leaks/postoperative complications = by treatment in specialized centers	[24–26], [65, 66]	3	Outcome

Cancer Registry, the Swedish Patient Registry, the Swedish Cause of Death Registry.

A comparative analysis of planned esophagectomy performed at the end of the week (Wednesday-Friday) and operations at the beginning of the week (Monday-Tuesday) showed a higher 5-year mortality from all causes and from the progression of the tumor process when performing operations on the final days of the working week (Hazard Ratio [HR]: 1.13, 95 % CI, 1.01–1.26 and 1.15, 95 % CI, 1.02–1.29, respectively).

When studying the effect for each of the 5 working days, the value of the HR increased from Wednesday to Thursday and then to Friday. Compared with operations on Monday, esophagectomy performed on Friday resulted in an increase in all-cause and disease-related mortality by 46 % and 44 %, respectively (hazard ratio ≤1.46, 95 % CI, 1.15–1.85 and hazard ratio ≤1.44, 95 % CI, 1.13–1.84) [6]. This was the first study to show an association between the days of the week scheduled for surgery and long-term patient survival.

Additional analysis showed no association of working days with 30-day postoperative mortality and reoperation rates [67]. Thus, the found correlation of the working days choice factor with the long-term forecast was not explained by the influence of short-term outcomes. This indicated the presence of other hypothetical factors, for example, fatigue of surgeons, which probably causes a negative impact on the adequacy of the level of tumor dissection in the late postoperative stages. And, accordingly, increasing the risk of local recurrence

The findings were supported by the results of subsequent studies (included between January 1997 and December 31, 2014) by Lagergren et al., published in 2017, in which the planning of operations for cancer of the esophagus and stomach on the last days of the working week (Thursday or Friday) was associated with an increase in the HR for fatal outcomes. Comparing the outcome of surgery for esophageal and gastric cancer on Friday with surgery on Monday, the adjusted hazard ratio for cancer death was 1.57 (95 % CI, 1.31–1.88). In a separate analysis, for esophageal cancer and gastric cancer, the hazard ratios were 1.45 (0.87–2.39) and 1.70 (1.38–2.09), respectively. The Kaplan–Meier 5-year survival curves also differed depending on the chosen day of surgery [68].

Swedish scientists at the initial stage suggested that the revealed effect was partly due to the excessive level of centralization of oncological care. According to the authors, in the conditions of high-flow centers, surgeons are forced to perform complex, extensive operations (esophagectomy) throughout the entire working week. Thus, it is possible that the attention and accuracy of surgeons' actions decreased by the end of the working week. Another explanation was the lack of medical personnel or the lack of experience of surgeons on duty on weekends. Researchers recommend considering scheduling extensive surgeries for the start of the workweek [6].

Interestingly, J. Lagergren et al. (2017) found effects of working day selection on long-term prognosis in cohorts of patients with other gastrointestinal tumors, but did not find them for a number of common tumors (breast cancer, prostate cancer, etc. [68]). Because of these observations, clinicians are debating the need to review the evidence base to develop or update recommendations for scheduling surgical teams in cancer centers. J. Lagergren et al. did not reach an unequivocal and convincing conclusion about the causes of the observed phenomena, although they believe that the patterns found can be extended to other countries with a Swedish-style model for organizing cancer care.

A similar study by E. Visser et al. (2017) (covering 2005–2013) in the Dutch health care system found no association between days of the workweek and long-term outcomes in patients after esophagectomy [10].

E. Visser et al. emphasize that the results obtained in the J. Lagergren et al. studies are unlikely to be explained by over-centralization of cancer care. Measures for centralization [69] and an increase in the flow of patients lead to good, positive results (in the Netherlands, at least 20 esophagectomy are performed in each centralized clinic per year): high professionalism and extensive experience of all medical specialists, proven specialization and certification in gastrointestinal surgery, adaptation of surgeons to increased workloads and complex work regimes [10]. In addition, it is likely that short-term outcomes in patients better reflect the skill of surgeons and the quality of surgical treatment, and they did not depend on the planned day of surgery in the studies cited.

With the development of medical technologies in routine clinical practice, there is a natural transition to the use of minimally invasive surgical approaches. Randomized controlled trials (RCTs) and meta-analysis suggest that minimally invasive esophagectomy is likely associated with better long-term survival, although more evidence needs to be obtained from studies with larger patient cohorts [12].

In the Dutch population study D.M. Voeten et al. (2021) [70] the question was again raised about the association of the factor of choosing the day of elective surgery with the results of surgical treatment, but on the basis of a minimally invasive technique. We analyzed 4102 cases of minimally invasive interventions for tumors of the upper gastrointestinal tract (2968 patients with esophageal cancer and 1134 patients with gastric cancer). The minimally invasive technique is the standard of care in the Netherlands. The use of such a technique in the era of centralization (short-term outcomes: 30-day mortality, 30-day readmission rate, length of stay in the intensive

care unit, complication rate, composite quality assessment criterion — "textbook outcome", etc.) has not been associated with the choice of the day of the operation. A definite advantage of the D.M. Voeten et al. study design [70] began to take into account the factor of variability in the frequency of operations on the days of the week between clinics.

Gastrectomy

At the present stage, significant progress has been made in the early diagnosis of gastric carcinomas, due to the improvement of the methodological approach and the updating of endoscopic equipment. However, the results of treatment of malignant neoplasms of the stomach remain unsatisfactory. Medical researchers around the world are searching for potentially modifiable factors that affect prognosis with the ultimate goal of improving the life expectancy of patients with gastric cancer [71]. For example, in a recent study by Y. Li et al. (2022) [72], it is emphasized that a combination of factors such as the stage of the disease according to the TNM system at the time of diagnosis, the number of cycles of chemotherapy are closely associated with the risk of postoperative recurrence during the follow-up period for gastric cancer over 3 years.

A wide range of studies have examined a variety of factors that determine mortality rates and the development of complications in patient populations after gastrectomy [73–77]. It has been shown that minimally invasive laparoscopic interventions are beneficial in terms of short-term outcomes and long-term survival as an alternative to the "open technique" in certain circumstances in the surgical treatment of patients with gastric cancer [78]. However, a significant proportion of researchers believe that additional research is needed to finally establish all the possible advantages or disadvantages of innovative surgical approaches compared to common classical techniques [79, 80].

Some factors of planning the work of the operating team with a possible impact on the prognosis in patients have been identified. Chinese clinicians (Li et al 2017) found a hypothetical effect of planning the day of the week (for surgery) on the development of postoperative complications and long-term survival [9]. It was found that patients who underwent gastrectomy on the last weekdays of the week (Wednesday–Friday) are more at risk of developing postoperative complications. The choice of a day from the chain of days of the working week for the operation was one of the independent indicators of the prognosis in cancer patients after surgical treatment of gastric cancer (Figure). However, in the group of patients with complications, the effect of choosing the day of surgery was statistically significantly weaker.

Surgical treatment of gastric cancer in the early stages (I–II) in Chinese patients led to a lower incidence of complications, relapses and a better prognosis if it was planned at the beginning of the working week in conditions of good patient preparedness. Thus, according to Chinese researchers, proper planning of the operating room and high-quality perioperative management of the patient can help reduce the proportion of postoperative complications and improve prognosis.

The observations of Chinese specialists were not confirmed in the observational study by F. Berlth et al. (2018) [11] (analyzed data for the period from June 1996 to April 2016), carried out on the basis of data from surgical treatment of gastric adenocarcinoma (total resection or subtotal resection with D2-lymphadenectomy) at the University Hospital of Cologne. A total of 460 patients were included in the analysis, 71 % men and 29 % women. The average age was 65 years. The distribution by day of the week was the same and ranged from 86 cases (Wednesday) to 96 cases (Tuesday).

Survival analyzes between relatively clinically homogeneous samples of patients did not reveal any association of days of the week (Mon/Tue versus Wed/Thu/Fri) with outcome measures ($p = 0.863$; $p = 0.30$, respectively). Treatment outcomes did not differ in terms of mortality during the first 90 days after surgery ($p = 0.948$).

Thus, the German study, although performed on the basis of data from one center, did not prove the presence of a statistically significant effect of the factor of planning the day of the week for performing gastrectomy on treatment outcomes in patients with gastric adenocarcinoma. This study also demonstrated that hypothetical factors such as variability in the experience of the operating team and the quality of the surgical technique practiced on different days of the week, including weekends, may not be reflected in patient outcomes after gastrectomy performed at the University of Cologne.

However, given the limitations of this single-centre analysis, F. Berlth et al. argued in favor of conducting larger cohort studies in the German healthcare system to confirm findings before making final adjustments to clinical guidelines [11].

Conclusion

In general, the current data of the scientific literature indicate the critical importance of the qualifications of the operating team in the chain of factors that determine the immediate prognosis

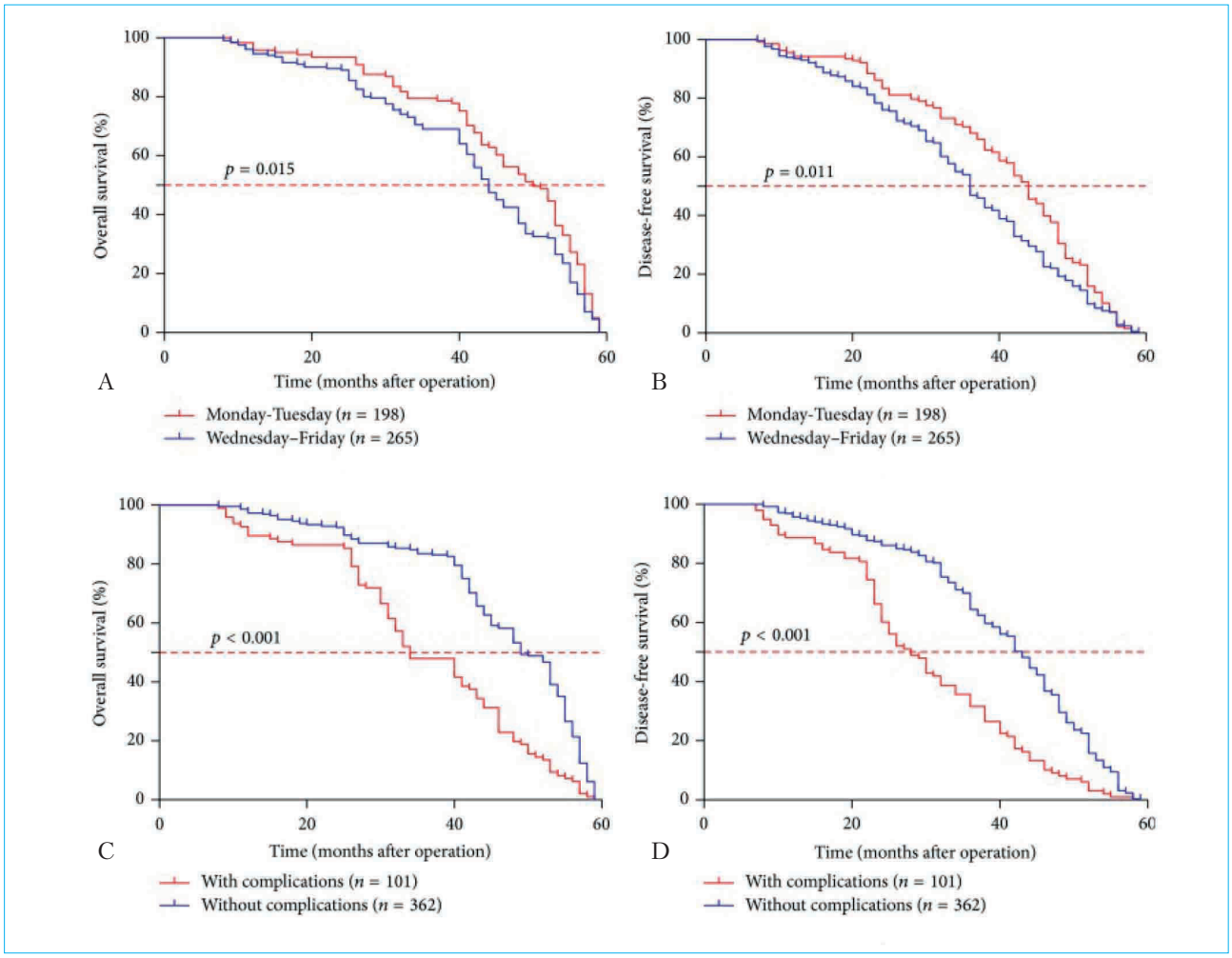

Fig. Influence of the factor of choosing the day of the week for elective gastrectomy and the factor of development of postoperative complications on the overall life expectancy and disease-free survival. Five-year overall survival and disease-free survival were statistically significantly lower in patients operated on Wednesday-Friday compared with Monday and Tuesday (A, B). Patients with postoperative complications had significantly lower OS and disease-free survival than patients without complications (C, D) (adapted from: R. Li et al., 2017 [9], Creative Commons Attribution 4.0 International licence)

in patients after esophagectomy and gastrectomy. Randomized clinical trials comparing different surgical approaches also infrequently reveal significant differences in long-term prognosis in patients after surgical treatment of tumors of the upper gastrointestinal tract. Currently, the operation performed by a highly qualified, experienced surgeon improves the chances of curing cancer and reduces the influence of factors caused by the surgical technology used [12]. It is possible that some particular factors directly related to the professional activities of surgeons (workload, qualifications, age and experience, etc.) may seem to have a greater influence on life expectancy in these patients [12].

It should be noted that the publications, as a rule, provide conflicting information about the association between the choice of the day of the working week for surgical treatment and survival in patients with malignant neoplasms. The discussed results of clinical observations may depend on the national characteristics of the healthcare systems of specific countries, regional ways of organizing high-tech oncological care, the level of its centralization, accreditation of specialists, the availability of certain resources in a medical institution, and a number of other circumstances.

It is necessary to conduct further clinical studies and study data from real oncological practice (for example, administrative databases and specialized cancer registries) to establish the role of the whole set of modifiable factors in the organization of oncosurgical treatment in ensuring long-term survival of patients after esophagectomy and gastrectomy.

References / Литература

1. *Uemura S., Endo H., Ichihara N., Miyata H., Maeda H., Hasegawa H., et al.* Day of surgery and mortality after pancreatoduodenectomy: A retrospective analysis of 29 270 surgical cases of pancreatic head cancer from Japan. *J Hepatobiliary Pancreat Sci*. 2022;29(7):778–84. DOI: 10.1002/jhbp.1043
2. *Groes-Kofoed N., Hasselgren E., Björne H., Johansson H., Falconer H., Salehi S.* Surgery performed later in the week is associated with inferior survival in advanced ovarian cancer. *Acta Oncol (Madr)*. 2021;60(11):1513–9. DOI: 10.1080/0284186X.2021.1970221
3. *Palsdottir K., Joneborg U., Hasselgren E., Johansson H., Salehi S.* Surgery performed later in the week is associated with failure to achieve complete radical surgical resection in advanced ovarian cancer. *Acta Oncol (Madr)*. 2020;59(7):760–5. DOI: 10.1080/0284186X.2020.1726456
4. *Huijts D.D., Guicherit O.R., Dekker J.W.T., van Groningen J.T., van Bodegom-Vos L., Bastiaannet E., et al.* Do Outcomes in Elective Colon and Rectal Cancer Surgery Differ by Weekday? An Observational Study Using Data From the Dutch ColoRectal Audit. *J Natl Compr Canc Netw*. 2019;17(7):821–8. DOI: 10.6004/jnccn.2018.7282
5. *Njølstad T.S., Werner H.M., Marcickiewicz J., Tingulstad S., Staff A.C., Oddenes K., et al.* Late-week surgical treatment of endometrial cancer is associated with worse long-term outcome: Results from a prospective, multicenter study. *PLoS One*. 2017;12(8):e0182223. DOI: 10.1371/journal.pone.0182223
6. *Lagergren J., Mattsson F., Lagergren P.* Weekday of Esophageal Cancer Surgery and Its Relation to Prognosis. *Ann Surg*. 2016;263(6):1133–7. DOI: 10.1097/SLA.0000000000001324
7. *Roberts S.E., John A., Lewis K.E., Brown J., Lyons R.A., Williams J.G.* Weekend admissions and mortality for major acute disorders across England and Wales: record linkage cohort studies. *BMC Health Serv Res*. 2019;19(1):619. DOI: 10.1186/s12913-019-4286-8
8. *Roberts S.E., Brown T.H., Thorne K., Lyons R.A., Akbari A., Napier D.J., et al.* Weekend admission and mortality for gastrointestinal disorders across England and Wales. *Br J Surg*. 2017;104(12):1723–34. DOI: 10.1002/bjs.10608
9. *Li R., Leng A.M., Liu T., Zhou Y.W., Zeng J.X., Liu X.M., et al.* Weekday of Surgery Affects Postoperative Complications and Long-Term Survival of Chinese Gastric Cancer Patients after Curative Gastrectomy. *Biomed Res Int*. 2017;2017:5090534. DOI: 10.1155/2017/5090534
10. *Visser E., van Rossum P.S.N., Verhoeven R.H.A., Ruurda J.P., van Hillegersberg R.* Impact of Weekday of Esophagectomy on Short-term and Long-term Oncological Outcomes: A Nationwide Population-based Cohort Study in the Netherlands. *Ann Surg*. 2017;266(1):76–81. DOI: 10.1097/SLA.0000000000001909
11. *Berlth F., Messerle K., Plum P.S., Chon S.H., von Ambüren J., Hohn A., et al.* Impact of the Weekday of Surgery on Outcome in Gastric Cancer Patients who Underwent D2-Gastrectomy. *World J Surg*. 2018;42(6):1811–18. DOI: 10.1007/s00268-017-4398-4
12. *Markar S.R., Lagergren J.* Surgical and Surgeon-Related Factors Related to Long-Term Survival in Esophageal Cancer: A Review. *Ann Surg Oncol*. 2020;27(3):718–23. DOI: 10.1245/s10434-019-07966-9
13. *Chiou L.J., Chen H.M., Pan L.F., Lee C.C.* Holiday ratio of hospitalization and 30-day readmission rates among cancer patients after major surgery. *Cancer Med*. Published online December 2021. DOI: 10.1002/cam4.4482
14. *Jackson V., Al-Ameri M., Sartipy U.* Weekday and Survival After Pulmonary Resections for Lung Cancer: A Swedish Nationwide Cohort Study. *Chest*. 2018;153(5):1284–6. DOI: 10.1016/j.chest.2018.03.022
15. *Allum W.* ECCO essential requirements for quality cancer care for oesophageal and gastric cancer: Defining how to organise care. *Eur J Surg Oncol J Eur Soc Surg Oncol Br Assoc Surg Oncol*. 2018;44(4):379–80. DOI: 10.1016/j.ejso.2018.02.009
16. *Habbous S., Yermakhanova O., Forster K., Holloway C.M.B., Darling G.* Variation in Diagnosis, Treatment, and Outcome of Esophageal Cancer in a Regionalized Care System in Ontario, Canada. *JAMA Netw open*. 2021;4(9):e2126090. DOI: 10.1001/jamanetworkopen.2021.26090
17. *Allum W., Lordick F., Alsina M., Andritsch E., Ba-Ssalamah A., Beishon M., et al.* ECCO essential requirements for quality cancer care: Oesophageal and gastric cancer. *Crit Rev Oncol Hematol*. 2018;122:179–93. DOI: 10.1016/j.critrevonc.2017.12.019
18. *NHS.* National Oesophago-Gastric Cancer Audit–2016. Annual Report. Published 2016. Accessed February 11, 2022. URL: https://webarchive.nationalarchives.gov.uk/ukgwa/20180328130148tf_/http://digital.nhs.uk/catalogue/PUB21561
19. *Hoefnagel S.J.M., Boonstra J.J., Russchen M.J.A.M., Krishnadath K.K.* Towards Personalized Treatment Strategies for Esophageal Adenocarcinoma; A Review on the Molecular Characterization of Esophageal Adenocarcinoma and Current Research Efforts on Individualized Curative Treatment Regimens. *Cancers (Basel)*. 2021;13(19):4881. DOI: 10.3390/cancers13194881
20. *Hoeppner J., Plum P.S., Buhr H., Gockel I., Lorenz D., Ghadimi M., et al.* Chirurgische Therapie des Ösophaguskarzinoms – Qualitätsindikatoren für Diagnostik und Therapie. *Der Chir*. 2021;92(4):350–60. DOI: 10.1007/s00104-020-01267-8
21. *Krüger C.M., Rückbeil O., Sebestyen U., Schlick T., Kürbis J., Riediger H.* DeRAS I – deutsche Situation der robotisch assistierten Chirurgie – eine Online-Survey-Studie. *Der Chir*. 2021;92(12):1107–13. DOI: 10.1007/s00104-021-01404-x
22. *Schmidt T., Babic B., Bruns C.J., Fuchs H.F.* Chirurgische Therapie des Ösophaguskarzinoms – neue Technologien, moderne Konzepte. Der Chir. 2021;92(12):1100–6. DOI: 10.1007/s00104-021-01525-3
23. *Rustgi A.K., El-Serag H.B.* Esophageal carcinoma. *N Engl J Med*. 2014;371(26):2499–509. DOI: 10.1056/NEJMra1314530
24. *Busweiler L.A.D., Wijnhoven B.P.L., van Berge Henegouwen M.I., Henneman D., van Grieken N.C.T., Wouters M.W.J.M., et al.* Early outcomes from the Dutch Upper Gastrointestinal Cancer Audit. *Br J Surg*. 2016;103(13):1855–63. DOI: 10.1002/bjs.10303
25. *Kjaer D.W., Larsson H., Svendsen L.B., Jensen L.S.* Changes in treatment and outcome of oesophageal cancer in Denmark between 2004 and 2013. *Br J Surg*. 2017;104(10):1338–45. DOI: 10.1002/bjs.10586
26. *Nimptsch U., Peschke D., Mansky T.* [Minimum Caseload Requirements and In-hospital Mortality: Observational Study using Nationwide Hospital Discharge Data from 2006 to 2013]. *Gesundheitswes (Bundesverband der Arzte des Offentl Gesundheitsdienstes)*. 2017;79(10):823–34 [in German]. DOI: 10.1055/s-0042-100731
27. *Nimptsch U., Haist T., Krautz C., Grützmann R., Mansky T., Lorenz D.* Hospital Volume, In-Hospital Mortality, and Failure to Rescue in Esophageal Surgery. *Dtsch Arztebl Int*. 2018;115(47):793–800. DOI: 10.3238/arztebl.2018.0793
28. *Qumseya B.J., Wang H., Badie N., Uzomba R.N., Parasa S., White D.L., et al.* Advanced imaging technologies increase detection of dysplasia and neoplasia in patients with Barrett's esophagus: a meta-analysis and systematic review. *Clin Gastroenterol Hepatol Off Clin Pract J Am Gastroenterol Assoc*. 2013;11(12):1562. DOI: 10.1016/j.cgh.2013.06.017
29. *Tae H.J., Lee H.L., Lee K.N., Jun D.W., Lee O.Y., Han D.S., et al.* Deep biopsy via endoscopic submucosal dissection in upper gastrointestinal subepithelial tumors: a prospective study. *Endoscopy*. 2014;46(10):845–50. DOI: 10.1055/s-0034-1377627

30. *Ji J.S., Lee B.I., Choi K.Y., Kim B.W., Choi H., Huh M., et al.* Diagnostic yield of tissue sampling using a bite-on-bite technique for incidental subepithelial lesions. *Korean J Intern Med*. 2009;24(2):101–5. DOI: 10.3904/kjim.2009.24.2.101
31. *Thosani N., Singh H., Kapadia A., Ochi N., Lee J.H., Ajani J., et al.* Diagnostic accuracy of EUS in differentiating mucosal versus submucosal invasion of superficial esophageal cancers: a systematic review and meta-analysis. *Gastrointest Endosc*. 2012;75(2):242–53. DOI: 10.1016/j. gie.2011.09.016
32. *Puli S.R., Reddy J.B., Bechtold M.L., Antillon D., Ibdah J.A., Antillon M.R.* Staging accuracy of esophageal cancer by endoscopic ultrasound: a meta-analysis and systematic review. *World J Gastroenterol*. 2008;14(10):1479–90. DOI: 10.3748/wjg.14.1479
33. *Heeren P.A.M., Jager P.L., Bongaerts F., van Dullemen H., Sluiter W., Plukker J.T.M.* Detection of distant metastases in esophageal cancer with (18)F-FDG PET. J Nucl Med. 2004;45(6):980–7.
34. *Flamen P., Lerut A., Van Cutsem E., De Wever W., Peeters M., Stroobants S., et al.* Utility of positron emission tomography for the staging of patients with potentially operable esophageal carcinoma. *J Clin Oncol Off J Am Soc Clin Oncol*. 2000;18(18):3202–10. DOI: 10.1200/JCO.2000.18.18.3202
35. *Barber T.W., Duong C.P., Leong T., Bressel M., Drummond E.G., Hicks R.J.* 18F-FDG PET/CT has a high impact on patient management and provides powerful prognostic stratification in the primary staging of esophageal cancer: a prospective study with mature survival data. *J Nucl Med*. 2012;53(6):864–71. DOI: 10.2967/jnumed.111.101568
36. *Noble F., Bailey D., Tung K., Byrne J.P.* Impact of integrated PET/CT in the staging of oesophageal cancer: a UK population-based cohort study. *Clin Radiol*. 2009;64(7):699–705. DOI: 10.1016/j.crad.2009.03.003
37. *Porschen R., Fischbach W., Gockel I., Hollerbach S., Hölscher A., Jansen P.L., et al.* [Not Available]. *Z Gastroenterol*. 2019;57(3):336–418. DOI: 10.1055/a-0833-5712
38. *Lagarde S.M., Maris A.K.D., de Castro S.M.M., Busch O.R.C., Obertop H., van Lanschot J.J.B.* Evaluation of O-POSSUM in predicting in-hospital mortality after resection for oesophageal cancer. *Br J Surg*. 2007;94(12):1521–6. DOI: 10.1002/bjs.5850
39. *Awdeh H., Kassak K., Sfeir P., Hatoum H., Bitar H., Husari A.* The SF-36 and 6-Minute Walk Test are Significant Predictors of Complications After Major Surgery. *World J Surg*. 2015;39(6):1406–12. DOI: 10.1007/s00268-015-2961-4
40. *Pfirrmann D., Simon P., Mehdorn M., Hänsig M., Stehr S., Selig L., et al.* [Preconditioning prior to visceral oncological surgery : A paradigm shift in visceral surgery?]. *Chirurg*. 2018;89(11):896–902. German. DOI: 10.1007/s00104-018-0709-z
41. *Moyes L.H., McCaffer C.J., Carter R.C., Fullarton G.M., Mackay C.K., Forshaw M.J.* Cardiopulmonary exercise testing as a predictor of complications in oesophagogastric cancer surgery. *Ann R Coll Surg Engl*. 2013;95(2):125–30. DOI: 10.1308/003588413x13511609954897
42. *Weimann A., Breitenstein S., Breuer J.P., Gabor S.E., Holland-Cunz S., Kemen M., et al.* [Clinical nutrition in surgery. Guidelines of the German Society for Nutritional Medicine]. *Chirurg*. 2014;85(4):320–6. German. DOI: 10.1007/s00104-014-2737-7
43. *Le Gall J.R., Lemeshow S., Saulnier F.* A new Simplified Acute Physiology Score (SAPS II) based on a European/North American multicenter study. *JAMA*. 1993;270(24):2957–63. DOI: 10.1001/jama.270.24.2957
44. *Dettling D.S., van der Schaaf M., Blom R.L.G.M., Nollet F., Busch O.R.C., van Berge Henegouwen M.I.* Feasibility and effectiveness of pre-operative inspiratory muscle training in patients undergoing oesophagectomy: a pilot study. *Physiother Res Int J Res Clin Phys Ther*. 2013;18(1):16–26. DOI: 10.1002/pri.1524
45. *van Adrichem E.J., Meulenbroek R.L., Plukker J.T.M., Groen H., van Weert E.* Comparison of two preoperative inspiratory muscle training programs to prevent pulmonary complications in patients undergoing esophagectomy: a randomized controlled pilot study. *Ann Surg Oncol*. 2014;21(7):2353–60. DOI: 10.1245/s10434-014-3612-y
46. *Low D.E., Allum W., De Manzoni G., Ferri L., Immanuel A., Kuppusamy M., et al.* Guidelines for Perioperative Care in Esophagectomy: Enhanced Recovery After Surgery (ERAS(®)) Society Recommendations. *World J Surg*. 2019;43(2):299–330. DOI: 10.1007/s00268-018-4786-4
47. *Liao G., Zhao Z., Yang H., Chen M., Li X.* Can Prognostic Nutritional Index be a Prediction Factor in Esophageal Cancer?: A Meta-Analysis. *Nutr Cancer*. 2020;72(2):187–93. DOI: 10.1080/01635581.2019.1631859
48. *Plum P.S., Hölscher A.H., Pacheco Godoy K., Schmidt H., Berlth F., Chon S.H., et al.* Prognosis of patients with superficial T1 esophageal cancer who underwent endoscopic resection before esophagectomy—A propensity score-matched comparison. *Surg Endosc*. 2018;32(9):3972–80. DOI: 10.1007/s00464-018-6139-7
49. *Bouchard P., Molina J.C., Cools-Lartigue J., Spicer J., Mueller C.L., Ferri L.E.* Endoscopic Submucosal Dissection for Esophageal Adenocarcinoma: A North American Perspective. *J Gastrointest Surg Off J Soc Surg Aliment Tract*. 2019;23(6):1087–94. DOI: 10.1007/s11605-018-04093-w
50. *Suzuki G., Yamazaki H., Aibe N., Masui K., Sasaki N., Shimizu D., et al.* Endoscopic submucosal dissection followed by chemoradiotherapy for superficial esophageal cancer: choice of new approach. *Radiat Oncol*. 2018;13(1):246. DOI: 10.1186/s13014-018-1195-7
51. *Gockel I., Hoffmeister A.* Endoscopic or Surgical Resection for Gastro-Esophageal Cancer. Dtsch Arztebl Int. 2018;115(31-32):513–9. DOI: 10.3238/arztebl.2018.0513
52. *Zeki S.S., Bergman J.J., Dunn J.M.* Endoscopic management of dysplasia and early oesophageal cancer. Best Pract Res *Clin Gastroenterol*. 2018;36–37:27–36. DOI: 10.1016/j.bpg.2018.11.003
53. *Pech O., Bollschweiler E., Manner H., Leers J., Ell C., Hölscher A.H.* Comparison between endoscopic and surgical resection of mucosal esophageal adenocarcinoma in Barrett's esophagus at two high-volume centers. *Ann Surg*. 2011;254(1):67–72. DOI: 10.1097/SLA.0b013e31821d4bf6
54. *Reeh M., Nentwich M.F., Asani S., Uzunoglu F.G., Bockhorn M., Sauter G., et al.* Locally advanced esophageal carcinoma: is there still a role of surgery alone without neoadjuvant treatment? *J Gastrointest Surg Off J Soc Surg Aliment Tract*. 2015;19(4):587–593. DOI: 10.1007/s11605-015-2762-y
55. *van Hagen P., Hulshof M.C.C.M., van Lanschot J.J.B., Steyerberg E.W., Henegouwen M.I. van B., Wijnhoven BPL, et al.* Preoperative Chemoradiotherapy for Esophageal or Junctional Cancer. *N Engl J Med*. 2012;366(22):2074–84. DOI: 10.1056/NEJMoa1112088
56. *Mariette C., Markar S., Dabakuyo-Yonli T.S., Meunier B., Pezet D., Collet D., et al.* Health-related Quality of Life Following Hybrid Minimally Invasive Versus Open Esophagectomy for Patients With Esophageal Cancer, Analysis of a Multicenter, Open-label, Randomized Phase III Controlled Trial: The MIRO Trial. *Ann Surg*. 2020;271(6):1023–9. DOI: 10.1097/SLA.0000000000003559
57. *Straatman J., van der Wielen N., Cuesta M.A., Daams F., Roig Garcia J., Bonavina L., et al.* Minimally Invasive Versus Open Esophageal Resection: Three-year Follow-up of the Previously Reported Randomized Controlled Trial: the TIME Trial. *Ann Surg*. 2017;266(2):232–6. DOI: 10.1097/SLA.0000000000002171
58. *Ariga H., Nemoto K., Miyazaki S., Yoshioka T., Ogawa Y., Sakayauchi T., et al.* Prospective comparison of surgery alone and chemoradiotherapy with selective sur-

gery in resectable squamous cell carcinoma of the esophagus. *Int J Radiat Oncol Biol Phys*. 2009;75(2):348–56. DOI: 10.1016/j.ijrobp.2009.02.086
59. *Levinsky N.C., Wima K., Morris M.C., Ahmad S.A., Shah S.A., Starnes S.L., et al.* Outcome of delayed versus timely esophagectomy after chemoradiation for esophageal adenocarcinoma. *J Thorac Cardiovasc Surg*. 2020;159(6):2555–66. DOI: 10.1016/j.jtcvs.2019.09.169
60. *Markar S.R., Karthikesalingam A., Penna M., Low D.E.* Assessment of short-term clinical outcomes following salvage esophagectomy for the treatment of esophageal malignancy: systematic review and pooled analysis. *Ann Surg Oncol*. 2014;21(3):922–31. DOI: 10.1245/s10434-013-3364-0
61. *Lorimer P.D., Motz B.M., Boselli D.M., Reames M.K., Hill J.S., Salo J.C.* Quality Improvement in Minimally Invasive Esophagectomy: Outcome Improvement Through Data Review. *Ann Surg Oncol*. 2019;26(1):177–87. DOI: 10.1245/s10434-018-6938-z
62. *Durkin C., Schisler T., Lohser J.* Current trends in anesthesia for esophagectomy. *Curr Opin Anaesthesiol*. 2017;30(1):30–5. DOI: 10.1097/ACO.0000000000000409
63. *van der Werf L.R., Busweiler L.A.D., van Sandick J.W., van Berge Henegouwen M.I., Wijnhoven B.P.L.* Reporting National Outcomes After Esophagectomy and Gastrectomy According to the Esophageal Complications Consensus Group (ECCG). *Ann Surg*. 2020;271(6):1095–101. DOI: 10.1097/SLA.0000000000003210
64. *Low D.E., Alderson D., Cecconello I., Chang A.C., Darling G.E., D'Journo X.B., et al.* International Consensus on Standardization of Data Collection for Complications Associated With Esophagectomy: Esophagectomy Complications Consensus Group (ECCG). *Ann Surg*. 2015;262(2):286–94. DOI: 10.1097/SLA.0000000000001098
65. *Low D.E., Kuppusamy M.K., Alderson D., Cecconello I., Chang A.C., Darling G., et al.* Benchmarking Complications Associated with Esophagectomy. *Ann Surg*. 2019;269(2):291–8. DOI: 10.1097/SLA.0000000000002611
66. *Schmidt H.M., Gisbertz S.S., Moons J., Rouvelas I., Kauppi J., Brown A., et al.* Defining Benchmarks for Transthoracic Esophagectomy: A Multicenter Analysis of Total Minimally Invasive Esophagectomy in Low Risk Patients. *Ann Surg*. 2017;266(5):814–21. DOI: 10.1097/SLA.0000000000002445
67. *Lagergren J., Mattsson F., Lagergren P.* Weekday of oesophageal cancer surgery in relation to early postoperative outcomes in a nationwide Swedish cohort study. *BMJ Open*. 2016;6(5):e011097. DOI: 10.1136/bmjopen-2016-011097
68. *Lagergren J., Mattsson F., Lagergren P.* Weekday of cancer surgery in relation to prognosis. *Br J Surg*. 2017;104(12):1735–43. DOI: 10.1002/bjs.10612
69. *Henneman D., Dikken J.L., Putter H., Lemmens V.E.P.P., Van der Geest L.G.M., van Hillegersberg R., et al.* Centralization of esophagectomy: how far should we go? *Ann Surg Oncol*. 2014;21(13):4068–74. DOI: 10.1245/s10434-014-3873-5
70. *Voeten D.M., Elfrink A.K.E., Gisbertz S.S., Ruurda J.P., van Hillegersberg R., van Berge Henegouwen M.I.* Minimally Invasive Oncologic Upper Gastrointestinal Surgery can be Performed Safely on all Weekdays: A Nationwide Cohort Study. *World J Surg*. 2021;45(9):2816–29. DOI: 10.1007/s00268-021-06160-x
71. *Chen W., Zheng R., Baade P.D., Zhang S., Zeng H., Bray F., et al.* Cancer statistics in China, 2015. *CA Cancer J Clin*. 2016;66(2):115–32. DOI: 10.3322/caac.21338
72. *Li Y., Zhao H.* Postoperative recurrence of gastric cancer depends on whether the chemotherapy cycle was more than 9 cycles: Based on a retrospective and observational study of follow-up within 3 years of 843 patients. *Medicine (Baltimore)*. 2022;101(5):e28620. DOI: 10.1097/MD.0000000000028620
73. *Fan Y., Liu M., Li S., Yu J., Qi X., Tan F., et al.* Surgical and oncological efficacy of laparoscopic-assisted total gastrectomy versus open total gastrectomy for gastric cancer by propensity score matching: a retrospective comparative study. *J Cancer Res Clin Oncol*. 2021;147(7):2153–65. DOI: 10.1007/s00432-020-03503-4
74. *Brisinda G., Chiarello M.M., Crocco A., Adams N.J., Fransvea P., Vanella S.* Postoperative mortality and morbidity after D2 lymphadenectomy for gastric cancer: A retrospective cohort study. *World J Gastroenterol*. 2022;28(3):381–98. DOI: 10.3748/wjg.v28.i3.381
75. *Endo S., Yamatsuji T., Fujiwara Y., Higashida M., Kubota H., Matsumoto H., et al.* Prognostic factors for elderly gastric cancer patients who underwent gastrectomy. World J Surg Oncol. 2022;20(1):10. DOI: 10.1186/s12957-021-02475-0
76. *Lin M., Chen Q.Y., Zheng C.H., Li P., Xie J.W., Wang J.B., et al.* Effect of Preoperative Tumor Under-Staging on the Long-term Survival of Patients Undergoing Radical Gastrectomy for Gastric Cancer. *Cancer Res Treat*. 2021;53(4):1123–33. DOI: 10.4143/crt.2020.651
77. *Tan E., Lam S., Han S.P., Storey D., Sandroussi C.* Perioperative outcomes and survival in elderly patients aged≥75 years undergoing gastrectomy for gastric cancer: an 18-year retrospective analysis in a single Western centre. *Langenbeck's Arch Surg*. 2021;406(4):1057–69. DOI: 10.1007/s00423-021-02116-w
78. *Long D., Feng Q., Li Z.S., Zhao Y.L., Qian F., Tang B., et al.* Laparoscopic versus open gastrectomy for serosa-invasive gastric cancer: A single-center retrospective cohort study. *Surgery*. 2021;169(6):1486–92. DOI: 10.1016/j.surg.2020.11.032
79. *Zhang W., Huang Z., Zhang J., Che X.* Long-term and short-term outcomes after laparoscopic versus open surgery for advanced gastric cancer: An updated meta-analysis. *J Minim Access Surg*. 2021;17(4):423–34. DOI: 10.4103/jmas.JMAS_219_20
80. *Garbarino G.M., Costa G., Laracca G.G., Castagnola G., Mercantini P., Di Paola M., et al.* Laparoscopic versus open distal gastrectomy for locally advanced gastric cancer in middle-low-volume centers in Western countries: a propensity score matching analysis. *Langenbeck's Arch Surg*. 2020;405(6):797–807. DOI: 10.1007/s00423-020-01951-7

Information about the authors

Dmitry A. Andreev* — MD, PhD, dermatovenerologist, Leading Research Fellow, Scientific-Clinical Department, Research Institute for Healthcare Organization and Medical Management of Moscow Health Department.
Contact information: AndreevDA@zdrav.mos.ru;
115088, Moscow, Sharikopodshipnikovskaya str., 9.
ORCID: https://orcid.org/0000-0003-0745-9474

Aleksander A. Zavyalov — Dr. Sci. (Med.), Sciences, Professor, Oncologist, Head of the Scientific- Clinical Department of the Research Institute for Healthcare Organization and Medical Management of Moscow Health Department.
Contact information: ZavyalovAA3@zdrav.mos.ru;
115088, Moscow, Sharikopodshipnikovskaya str., 9.
ORCID: https://orcid.org/0000-0003-1825-1871

Сведения об авторах

Андреев Дмитрий Анатольевич* — кандидат наук, врач-дерматовенеролог; ведущий научный сотрудник научно-клинического отдела Научно-исследовательского института организации здравоохранения и медицинского менеджмента Департамента здравоохранения города Москвы.
Контактная информация: AndreevDA@zdrav.mos.ru;
115088, Москва, Шарикоподшипниковская улица, д. 9.
ORCID: https://orcid.org/0000-0003-0745-9474

Завьялов Александр Александрович — доктор медицинских наук, профессор, врач-онколог, заведующий научно-клиническим отделом Научно-исследовательского института организации здравоохранения и медицинского менеджмента Департамента здравоохранения города Москвы.
Контактная информация: ZavyalovAA3@zdrav.mos.ru;
115088, Москва, Шарикоподшипниковская улица, д. 9;
ORCID: https://orcid.org/0000-0003-1825-1871

Submitted: 11.03.2022 Accepted: 20.09.2022 Published: 30.12.2022
Поступила: 11.03.2022 Принята: 20.09.2022 Опубликована: 30.12.2022

* Corresponding author / Автор, ответственный за переписку