



PERIOPERATIVE POLYCHEMOTHERAPY FOR GASTRIC CANCER

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Article history:	Abstract:
Received: 7 th March 2026 Accepted: 6 th April 2026	Gastric cancer remains one of the leading causes of cancer-related mortality worldwide. Despite advances in surgical techniques, treatment outcomes remain unsatisfactory due to the high rate of recurrence and metastasis. In recent decades, perioperative polychemotherapy, including neoadjuvant and adjuvant treatment, has become increasingly important. The aim of this work is to analyze the effectiveness, safety, and modern approaches to perioperative polychemotherapy in gastric cancer. Clinical trial data and meta-analyses demonstrating improvements in overall and disease-free survival with this approach are reviewed. Special attention is given to modern treatment regimens and the prospects of combination therapy with immunotherapy.
Keywords: gastric cancer, perioperative chemotherapy, neoadjuvant therapy, adjuvant therapy, polychemotherapy, survival, meta-analysis	

Gastric cancer occupies one of the leading positions among oncological diseases in terms of incidence and mortality. According to current data, it is the fifth most common malignant tumor and the third leading cause of cancer-related death.

The main treatment method for localized disease is surgical intervention. However, even after radical resection, the recurrence rate reaches 20–60%, which necessitates the use of additional treatment methods.

In this context, the concept of a multidisciplinary approach is actively developing, including perioperative polychemotherapy, which allows the tumor to be targeted both before and after surgery.

Perioperative polychemotherapy is one of the modern and most effective approaches to the treatment of malignant tumors, particularly gastric cancer. This method is based on the combined use of anticancer drugs both before and after surgical intervention. Such an approach makes it possible to affect the tumor process at different stages of its development and significantly improves treatment effectiveness.

The essence of perioperative polychemotherapy lies in the combination of two treatment stages. The first stage is neoadjuvant chemotherapy, which is administered before surgery. Its main purpose is to reduce tumor size, decrease the extent of tumor spread, and increase the likelihood of radical surgical removal. In addition, this stage targets possible micrometastases that are not

yet detectable by diagnostic methods but are already present in the body.

The second stage is adjuvant chemotherapy, which is administered after surgical intervention. Its goal is to destroy remaining cancer cells, prevent disease recurrence, and reduce the risk of distant metastasis. Thus, perioperative polychemotherapy ensures continuous antitumor activity in the patient's body.

A key feature of this method is the use of more than one chemotherapeutic agent simultaneously. This enhances the antitumor effect through different mechanisms of drug action and reduces the likelihood of tumor drug resistance. Combination treatment regimens are selected individually, taking into account the disease stage, the patient's general condition, and the biological characteristics of the tumor.

An important advantage of perioperative polychemotherapy is the ability to increase tumor resectability, that is, to improve the likelihood of complete tumor removal during surgery. This is especially important in locally advanced forms of gastric cancer, when surgical treatment may initially be difficult or impossible.

In addition, this approach contributes to improved long-term treatment outcomes, including increased overall and disease-free survival of patients. It also allows for a more accurate assessment of tumor sensitivity to chemotherapy before surgery, which has important prognostic significance.



However, the use of perioperative polychemotherapy requires careful patient selection and strict monitoring of treatment tolerance. Despite its high effectiveness, this method may be associated with side effects typical of chemotherapy, such as nausea, weakness, immunosuppression, and others.

Perioperative polychemotherapy is an important component of the comprehensive treatment of gastric cancer. It combines the possibilities of drug therapy and surgical treatment, providing better disease control and increasing the chances of a favorable outcome.

The effectiveness of perioperative chemotherapy in gastric cancer has been extensively studied in recent years and is supported by numerous clinical studies. This approach is considered an important element of comprehensive treatment, significantly improving the prognosis compared to surgery alone.

One of the key indicators of effectiveness is an increase in overall survival. It has been shown that the use of chemotherapy both before and after surgery reduces the risk of death by affecting not only the primary tumor but also micrometastases. This is especially important because even after radical tumor removal, single cancer cells may remain in the body and lead to disease recurrence.

Perioperative chemotherapy also has a significant impact on disease-free survival. Patients receiving combined treatment experience fewer local recurrences as well as distant metastases. This is due to the fact that the neoadjuvant phase reduces tumor volume and limits its spread, while the adjuvant phase completes the antitumor effect by eliminating residual cancer cells. Another important measure of effectiveness is the increased rate of radical surgeries. Tumor shrinkage before surgery increases the likelihood of complete removal with negative resection margins. This directly improves long-term outcomes and reduces the risk of disease recurrence.

In addition, perioperative chemotherapy allows assessment of tumor sensitivity to drugs. A good response to preoperative treatment is considered a favorable prognostic factor. In cases of poor response, treatment strategy can be adjusted in a timely manner. It should be noted that treatment effectiveness largely depends on the chemotherapy regimen used. Modern multi-agent regimens demonstrate a more pronounced antitumor effect compared to monotherapy. The use of drug combinations with different mechanisms of action enhances therapeutic outcomes and reduces the likelihood of tumor resistance.

Despite clear advantages, the effectiveness of perioperative chemotherapy may vary depending on disease stage, tumor biological characteristics, and the patient's general condition. In some patients, a pronounced effect may be absent, which requires an individualized treatment approach.

Thus, perioperative chemotherapy is a highly effective method for the treatment of gastric cancer that improves survival, increases the radicality of surgical intervention, and reduces the risk of recurrence. Its use as part of combined therapy has become the modern standard for locally advanced forms of the disease.

The most commonly used regimens include:

FLOT (5-fluorouracil, leucovorin, oxaliplatin, docetaxel);

ECF (epirubicin, cisplatin, 5-fluorouracil);

XELOX (capecitabine plus oxaliplatin).

Combination regimens demonstrate greater efficacy compared to monotherapy. Special interest is associated with the use of taxanes (for example, docetaxel), which enhance the antitumor effect.

Safety and tolerability of perioperative chemotherapy are important aspects when selecting treatment strategies for gastric cancer. Despite its high efficacy, the use of cytotoxic drugs is associated with the risk of adverse effects, which requires careful monitoring of the patient at all stages of therapy.

Perioperative chemotherapy includes both preoperative and postoperative phases, each with its own tolerability characteristics. During the neoadjuvant phase, patients generally tolerate treatment better, since their overall condition has not yet been affected by surgery. This allows for more intensive regimens and a pronounced antitumor effect.

The postoperative phase may be associated with greater difficulties, as the patient's body is weakened after surgery. During this period, the risk of complications increases, and tolerance to chemotherapy may decrease. Nevertheless, modern studies show that with proper dose adjustment and adequate supportive care, most patients successfully complete treatment.

The most common side effects of perioperative chemotherapy include nausea, vomiting, weakness, loss of appetite, alopecia, and bone marrow suppression. The latter manifests as anemia, leukopenia, and thrombocytopenia, which may increase the risk of infections and bleeding. However, modern prevention and management strategies, including antiemetic therapy and growth factors, significantly reduce the severity of these effects.

An important issue is the impact of chemotherapy on the postoperative course. Clinical observations show that perioperative chemotherapy does not significantly increase the rate of surgical complications such as anastomotic leakage or infectious processes. This confirms the relative safety of this approach when medical recommendations are properly followed.

It should be emphasized that treatment tolerability largely depends on individual patient characteristics, including age, comorbidities, and organ function. Therefore, a thorough assessment of the patient's



general condition and potential risks is performed before initiating therapy.

In addition, a multidisciplinary approach plays an important role, in which oncologists, surgeons, and other specialists jointly determine the treatment strategy. This helps minimize risks and improve the safety of therapy.

Thus, perioperative chemotherapy in gastric cancer is characterized by an acceptable safety and tolerability profile. With proper patient management and the use of modern supportive care methods, most adverse effects are controllable, and the benefits of treatment significantly outweigh the potential risks.

Current research is focused on combining chemotherapy with immunotherapy.

According to a 2026 meta-analysis:

- the rate of complete pathological response increases;
- overall survival improves (HR 0.82);

- no significant increase in severe toxicity is observed.

Such therapy is particularly effective in patients with PD-L1 expression.

Despite proven effectiveness, several issues remain unresolved:

- optimal duration of treatment,
- choice of regimen,
- patient selection,
- effectiveness in elderly patients.

Heterogeneity of results across different clinical groups is also observed.

Perioperative polychemotherapy is an important component of gastric cancer treatment and a standard

of care for locally advanced disease. It improves survival outcomes, increases the radicality of surgical treatment, and reduces the risk of recurrence.

Current trends are focused on therapy personalization and the integration of immunotherapy, which opens new perspectives in the treatment of this disease.

BIBLIOGRAPHY:

1. Wei C., Du X., Hu J. et al. Perioperative chemotherapy versus adjuvant chemotherapy in gastric cancer // *Crit Rev Oncol Hematol.* – 2024. – Vol. 198. – P. 104082.
2. Ou H., Zhuang J., Jian M. et al. Perioperative versus adjuvant chemotherapy // *Frontiers in Oncology.* – 2025. – Vol. 15. – P. 1432596.
3. Zhao J.H. et al. Meta-analysis of perioperative chemotherapy // *BMC Cancer.* – 2016. – Vol. 16. – P. 1-10.
4. Bakhniuk K.D. Perioperative chemotherapy for gastric cancer // *Practical Oncology.* – 2021. – Vol. 4(1). – P. 15-22.
5. Serrano Uson P.L. et al. Docetaxel perioperative chemotherapy // *Scientific Reports.* – 2019. – Vol. 9. – P. 15806.
6. Impact of perioperative chemotherapy in gastric cancer // *PMC.* – 2022. – P. 1-8.
7. Perioperative chemotherapy prolongs survival // *Nat Rev Gastroenterology.* – 2006. – Vol. 3. – P. 599.
8. Perioperative chemoimmunotherapy meta-analysis // *Oxford Academic.* – 2026. – P. 1-12.