

Thesis title:

GASTRIC CANCER: A MULTIMODAL APPROACH

Phd student: Dr. Suciu Nicolae Emil
Coordinator: Prof. Dr. Coros Marius Florin

The motivation for this scientific research derives from the major impact of gastric cancer on global public health, being a pathology with a significant prevalence worldwide, but also in Romania. This disease represents a challenge for surgeons, both because of its biological complexity and because of the difficulties of early diagnosis in the absence of national screening programs and in establishing effective therapeutic strategies that optimize patient survival and quality of life.

In the context of a complex and multidisciplinary approach, this doctoral thesis aims to contribute to the understanding and fight against gastric cancer from several fundamental and clinical perspectives.

The present study covers four distinct but complementary research directions, as well as a systematic review.

The first chapter entitled: "Evaluation of tensile strength of manual anastomoses after gastric resections - an ex vivo experimental study" focuses on biomechanical and physiological aspects of surgical involvement in the treatment of gastric cancer, by evaluating ex vivo the tensile strength of gastrointestinal anastomoses, a crucial aspect for reducing postoperative complications related to surgical technique. The results of this study show that biplane gastrojejunal (Roux-en-Y) and end-to-end esophagojejunal anastomoses have the highest tensile strength. Biplane anastomoses showed a significantly higher tensile strength compared to monoplane ones. The results suggest that the biplane suture technique offers better mechanical stability, which may reduce the risk of postoperative complications.

The second chapter entitled: "Inflammatory biomarkers as prognostic factors in short-term postoperative complications in operable gastric cancer" explores the role of inflammatory biomarkers as prognostic factors in postoperative complications, especially in the context of surgical treatment of gastric cancer. Evaluation and understanding the role of these biological markers in the context of postoperative complications, commonly used in daily medical practice, can lead to optimizing the management of gastric cancer patients, leading to a significant reduction in postoperative complications. The conclusion of this study was that systemic inflammatory markers play a significant role in predicting postoperative complications in gastric cancer. The interaction between inflammatory markers, surgical techniques, nutritional support and management of complications forms a complex approach to predicting postoperative outcomes.

The following chapter aims to assess the quality of life of patients operated for gastric cancer, as an essential measure of the long-term impact of oncological treatment on their general well-being, recovery and social adaptation. Analyzing the data obtained through the questionnaire, we conclude that there are no statistically significant differences between patients with total or partial gastrectomy, in terms of quality of life.

Postoperative weight loss was significantly greater in the total gastrectomy group. In our case series, digestive symptoms were present in both groups, but reflux,

dysphagia and fatigue were more evident in the total gastrectomy group. Specialized nutritional intervention for malignant pathologies is missing from the treatment of neoplastic patients, at least in the state hospitals in Romania, although it is a crucial part of the treatment and postoperative care. Adequate nutrition supports tissue healing, maintains muscle mass and improves quality of life, thus contributing to a better long-term prognosis.

The fourth chapter follows the survival of patients after curative surgical interventions for gastric cancer, fundamental research to identify prognostic factors in a center with a low volume of gastric cancer cases.

The conclusion of the study entitled "Study on survival in gastric cancer - lymph node status as an independent prognostic factor" was that the survival of patients with gastric cancer is significantly influenced by the patient's age, tumor location, T stage, vascular invasion, type of surgery, N stage and lymph node ratio, based on univariate analysis.

Lymph node ratio has also been shown to be an independent prognostic factor for survival. We believe that it would be useful to implement a probability calculation tool to obtain a more accurate prediction of survival, which can be very useful in daily medical practice.

The last chapter of the thesis represents a rigorous systematic review, which aims to evaluate the relationship between *Helicobacter pylori* infection and the occurrence of gastric cancer, with particular emphasis on the particularities in bariatric patients.

This topical topic, which combines microbiological, surgical and oncological aspects, has the potential to provide new insights into the mechanisms of carcinogenesis and prevention. The conclusion of the study was that the increased number of patients undergoing bariatric surgery increases the number of research questions that arise regarding their clinical management. The prevalence of *H. pylori* in bariatric surgery candidates varies depending on the geographical region.

with *H. pylori* opens a Pandora's box regarding the clinical management of patients undergoing bariatric surgery. Screening, eradication therapy, and surgical planning remain nonstandardized, with long-term implications yet to be discovered. Larger studies are needed to evaluate the utility of *H. pylori* screening in bariatric surgery candidates and the long-term impact of eradication therapy. The complex relationship between obesity and *H. pylori* deserves to be explored in future research

In conclusion, an approach is needed to reduce postoperative complications and improve outcomes and quality of life in patients with gastric cancer. Key strategies include proper preoperative assessment, starting at the time of diagnosis, appropriate and safe surgical techniques to minimize complications, optimization of perioperative care, risk stratification, structured surveillance, and a focus on improving patient recovery and well-being. Continued research and integration of these strategies into comprehensive care and treatment modalities are essential to improve the overall management of gastric cancer.