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INFLUENCE OF THE EXTENT OF RADICAL SURGICAL RESECTION ON LONG-TERM SURVIVAL IN LOCALLY ADVANCED GASTRIC CANCER

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Relevance

Radical surgical resection remains the cornerstone of curative treatment for locally advanced gastric cancer (LAGC). However, the optimal extent of surgical resection remains controversial, particularly in patients with advanced local tumor invasion. The choice between total gastrectomy, subtotal gastrectomy, and combined multivisceral resections may significantly influence both postoperative outcomes and long-term survival. Although TNM stage remains the principal prognostic indicator, accumulating evidence suggests that the extent and radicality of surgical treatment play an equally important role in achieving durable oncological control. Evaluation of long-term outcomes following different types of radical surgical procedures is therefore essential for optimizing treatment strategies and improving survival in patients with LAGC.

Keywords: Locally advanced gastric cancer; radical gastrectomy; surgical resection; R0 resection; long-term survival; multivisceral resection; prognosis; clinicopathological factors.

Objective of the Study

To evaluate the influence of the extent of radical surgical resection on long-term survival in patients with locally advanced gastric cancer and to determine the prognostic significance of different surgical approaches.

Materials and Methods

A retrospective study included **267 patients** with locally advanced and disseminated gastric cancer who underwent radical surgical treatment at the **N.N. Blokhin National Medical Research Center of Oncology (Moscow, Russian Federation)** between **1999 and 2011**. The study findings were subsequently

introduced into the clinical practice of the **Tashkent Regional Branch of the Republican Specialized Scientific and Practical Medical Center of Oncology and Radiology (Uzbekistan).**

The study population consisted of **164 men (61.4%)** and **103 women (38.6%)**, with a mean age of **53.8 ± 10.4 years** (range **24–74 years**). According to long-term survival, patients were divided into three groups: **62 patients (23.3%)** who survived more than **10 years**, **106 patients (39.8%)** who survived **5–10 years**, and **99 patients (36.9%)** with survival less than **5 years**.

Clinicopathological evaluation included tumor localization, Borrmann classification, Lauren histological type, tumor differentiation, pathological TNM stage, lymph node status, type and extent of radical surgical resection, and immunohistochemical assessment of **Ki-67, VEGFR, p53, and BCL-2**. Tumor invasion corresponded to **T3 in 42.8%**, **T4a in 36.4%**, and **T4b in 20.7%** of patients. Radical surgical procedures included total gastrectomy, subtotal gastrectomy, and combined multivisceral resections when required to achieve complete tumor removal. Statistical analyses were performed to evaluate the relationship between the extent of surgery and long-term survival.

Results and Discussion

Among the **267** patients included in the study, **168 (62.9%)** survived for at least **5 years**, whereas **62 patients (23.3%)** achieved survival exceeding **10 years** following radical surgery.

Total gastrectomy represented the predominant surgical procedure among long-term survivors and was performed in **88.1%** of patients who survived for more than **10 years**. Patients undergoing radical gastrectomy demonstrated significantly better long-term survival than those treated with subtotal gastric resections. Complete tumor removal with microscopically negative margins (**R0**

resection) remained one of the strongest predictors of prolonged survival regardless of tumor stage.

Combined multivisceral resections were more frequently required in patients with **T4b** tumors to achieve radical surgery. Despite the greater complexity of these procedures, complete en bloc resection provided acceptable long-term outcomes in carefully selected patients and contributed to improved local disease control.

Clinicopathological analysis demonstrated that favorable long-term survival was associated with female sex, age younger than **60 years**, intestinal-type adenocarcinoma according to Lauren classification, and well- or moderately differentiated tumors (**G1–G2**). Median overall survival reached **94.7 months** in patients with intestinal-type tumors compared with **51.3 months** in diffuse-type gastric cancer and **15.4 months** in the control group. Poorly differentiated tumors (**G3**), diffuse histological type, advanced lymph node metastases, and extensive local tumor invasion were associated with significantly worse prognosis.

Immunohistochemical evaluation revealed statistically significant associations between long-term survival and the expression of **Ki-67, VEGFR, p53, and BCL-2** ($p \leq 0.002$). Integration of these biological markers with surgical and clinicopathological variables improved prognostic assessment beyond conventional TNM staging and facilitated more accurate identification of patients most likely to benefit from extensive radical surgery.

The study findings were incorporated into routine clinical practice at the **Tashkent Regional Branch of the Republican Specialized Scientific and Practical Medical Center of Oncology and Radiology**, where they are currently applied to optimize surgical planning, multidisciplinary treatment strategies, and postoperative follow-up of patients with locally advanced gastric cancer.

Conclusions

The extent of radical surgical resection has a substantial impact on long-term survival in patients with locally advanced gastric cancer. Radical gastrectomy with complete **R0** resection provides the greatest likelihood of prolonged survival and should be considered the preferred surgical strategy whenever technically feasible. Combined multivisceral resections can achieve satisfactory long-term oncological outcomes in selected patients with locally advanced disease when complete tumor removal is possible. Long-term prognosis depends on the interaction between surgical radicality and clinicopathological characteristics, including tumor differentiation, Lauren histological type, lymph node involvement, and biological tumor markers. These findings support individualized surgical planning and have been successfully implemented into routine oncological practice.