POSTOPERATIVE OUTCOMES AFTER OPEN VERSUS MINIMALLY INVASIVE GASTRECTOMY FOR GASTRIC CANCER: A EUROPEAN MULTICENTER STUDY WITH PROPENSITY SCORE MATCHING BASED ON THE GASTRODATA REGISTRY.

Authors

Lorena Torroni[1], Maria Bencivenga[2], Kammy Keywani[3]Federica Filippini[2], Simone Giacopuzzi[2], Mark Van Berge Henegouwen[2], Suzanne Gisbertz[2], Giovanni De Manzoni[2], Giuseppe Verlato[1] on behalf of the Gastrodata Group.

Affiliation

1 Unit of Epidemiology and Medical Statistics, University of Verona – Verona (Italy),
2. University of Verona 1General And Upper Gastrointestinal Surgery Verona University – Verona (Italy)
3. Department of Surgery, Amsterdam UMC location University of Amsterdam, Amsterdam, the Netherlands

Introduction: Several randomized clinical trials (RCTs) have shown comparable postoperative outcomes between minimally invasive (MIG) and open gastrectomy (OG) for gastric cancer (GC) in selected patients. Large population-based studies comparing the two approaches outside the setting of RCTs in Europe are lacking.
Objective: We aimed to evaluate morbidity and mortality after OG and MIG in a large European GC population in real-life practice, including a subgroup analysis for TG and subtotal gastrectomy (STG).
Methods: This is a retrospective study including GC patients operated with curative intent between January 2017 and December 2021 at 24 European high-volume referral centres involved in the prospective GASTRODATA registry. Primary outcome was the overall postoperative complication (POC) rate after MIG versus OG in all patients and in those undergoing TG versus STG. Secondary outcomes were specific POCs and postoperative mortality rates. Group differences were assessed using percentages or medians with interquartile range and evaluated using Fisher's exact or chi-square test and non- parametric Mann–Whitney U test as appropriate. Propensity score matching (PSM) with 1:1 nearest-neighbour matching without replacement was used to create two matched groups. A conditional logistic model analysis was performed to estimate the effect of the surgical approach in the paired groups.
Results Of 2430 patients, 1800 (74%) underwent OG and 630 (26%) MIG. MIG was performed for smaller tumors ($p<0.001$), earlier clinical ($p<0.001$) and pathological ($p<0.001$) stages, less frequently after neoadjuvant treatment ($p<0.001$) and in fewer patients that underwent TG ($p<0.001$).
In the entire population, MIG had lower POC rate than OG (23% vs 31.6%, $p<0.001$) and lower 30 and 90-days mortality (1.6% vs 3.3%, $p=0.026$ and 1.9% vs 4.7%, $p=0.002$). For STG, MIG had lower overall POC compared to OG (17.9% vs 25.3%, $p=0.004$) and a significantly lower rate of postoperative abdominal collections ($p=0.047$). The protective effect of MIG on POC rate remained after adjusting for sex, age, ASA, pT, pN (OR=0.64; CI 95% 0.47- 0.87 $p=0.007$).
After TG, POC did not differ between MIG and OG (31.5% vs 36.1%, $p=0.180$) despite a significantly lower postoperative abdominal collection rate in MIG (1.3% vs 6.2%, $p=0.002$). The lack of a protective effect of MIG on complications was evident in multivariate analysis (OR=0.89; CI 95% 0.65-1.23 $p=0.486$). Lower POC for MIG was also observed after PSM analysis for STG (OR=0.60; CI 95% 0.41-0.87 $p=0.008$) but not for TG (OR=0.78; CI 95% 0.50-1.22 $p=0.286$).
Conclusion In clinical practice, European surgeons select easier cases for MIG. STG and TG were associated with different safety and feasibility profiles that must be considered in future studies. In this real-life series of European dedicated gastric cancer centres, minimally invasive STG was associated with a lower POC rate than open STG. This was not demonstrated for TG.