

Minimally invasive gastric cancer surgery: a literature review

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Introduction

Gastric cancer remains one of the most common cancers worldwide [1]. Surgical treatment is the only potentially curative treatment option for it. Historically open gastrectomy was considered as the gold standard approach. However, in the last two decades, the development of minimally invasive surgery has led to large scale clinical trials being carried out in Asia, and later in the Western world. These trials have shown promising results.

Results

Overall, 16 randomized clinical trials, which evaluated short-term, long-term, or both outcomes, have been analyzed. Reviewed articles were published in the 2013-2021 period. 10 studies compared postoperative morbidity between MIGCS and OGCS groups. 6 trials with overall 3458 patients found no difference in post-operative morbidity between MIGCS and OGCS groups [2–7], and 4 trials with overall 2725 patients discovered lower morbidity in the MIGCS group [8–11]. Lymph node yield, which was compared in 4 studies with overall 2159 patients, did not differ between the MIGCS and OGCS groups [2,8,12,13]. 4 studies with overall 1695 patients evaluated operation time between the two groups, which was significantly longer in the MIGCS group [2,5,6,14]. Long-term results were published by 8 studies with overall 4371 patients. 3-year and 5-year disease-free survival did not differ between MIGCS and OGCS groups [12,15,16]. 5-year cancer-specific survival was also the same in the two groups [11,17]. There was no difference in overall survival, which was calculated at 1 year [2], 3 years [12,15], or 5 years [11,14,16,17] after surgery.

Aim

To evaluate the results of clinical trials comparing short-term and long-term outcomes between minimally invasive gastric cancer surgery (MIGCS) and open gastric cancer surgery (OGCS).

Conclusions

Major trials mostly from Asia have proved that MIGCS is non-inferior to open surgery in the number of lymph nodes extracted, disease-specific, cancer-specific, and overall survival, making it a safe alternative. What is more, some trials concluded the superiority of MIGCS in terms of postoperative morbidity. The main disadvantages of using this method are a longer operating time and a steep learning curve. The Western population, with fewer gastric cancer cases, is slower to adopt this method and requires more clinical research to be done in the local setting.



Methods

Articles comparing minimally invasive gastric cancer treatment to open surgical treatment were found using MeSH terms in PubMed, Google Scholar, Scopus, and Web of Science research tools: “minimally invasive surgery”, “gastric cancer”, “clinical trial”. The following aspects have been evaluated in the studies: short-term outcomes of the treatment (operation time, lymph node yield, post-operative morbidity), and long-term outcomes (disease-free survival, cancer-specific survival, and overall survival).

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