

Esophageal Cancer

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Safety of Minimally Invasive Esophagectomy in Malignancy

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Introduction: Minimally invasive surgery has been applied in a number of ways to esophagectomy. Newer techniques have improved patient outcomes while maintaining oncological principles, however, mortality still exists. The approach to esophagectomies (transthoracic, transhiatal, or three-field approach) and the fields of lymphadenectomies have been an area of debate, with many studies reporting equivocal outcomes. Most series have reported mortality rates ranging from 2% to 14%. The aim of this study was to document the safety and efficacy of minimally invasive esophagectomy in achieving equitable perioperative outcome and resectional status in patients with significant comorbidities and a high Charlson score.

Methods: Minimally invasive esophagectomies (MIE) in the form of combined thoracoscopic and laparoscopic esophageal resections that were performed cooperatively by two surgeons between September 2005 and April 2008 were retrospectively reviewed. The Charlson comorbidity index was assigned to each patient and certain parameters including age, gender, medical history, presenting symptoms, preoperative weight, and need for preoperative stenting were collected. The Charlson comorbidity score is used for evaluating prognosis based on age and comorbid conditions. It indicates increased cumulative mortality with each increased level of the comorbidity index, attributable to comorbid disease. Intraoperative data including estimated blood loss, operative time, need for intraoperative blood transfusions, and American Society of Anesthesiologists (ASA) class were collected. Postoperative data including length of hospital stay, need for intensive care unit, need for postoperative blood transfusions, morbidities, and 30-day mortality were evaluated.

Results: Twenty eight (28) patients underwent minimally invasive esophagectomy for esophageal malignancies, 64% for adenocarcinomas, 14% for squamous carcinomas, and 11% for high-grade dysplasia with Barrett's. There was a male predominance with a male to female ratio of 1:0.4. Mean age at presentation was 64.4 years. Comorbidities were documented in 82% of the study group, with 58% being ASA class III and 35% as ASA class IV. The mean Charlson age-adjusted comorbidity index was 5.29. Most patients (54%) presented with dysphagia. A total of 13 patients (46%) had received preoperative chemoradiotherapy. The mean operating time was 300 minutes. Mean blood loss was 305 mL. The mean intraoperative transfusion rate was 30%. Two patients (8%) required conversion to open celiotomy. The mean length of hospital stay was 14.8 days. Delayed gastric emptying was the most common complication in the postoperative period, and was seen in 15% of patients. Two patients (8%) required a reoperation. There was no mortality reported in the series.

Conclusions: Minimally invasive esophagectomy can be performed with results that meet and exceed reported benchmarks in terms of perioperative outcome and resectional status. This technique may help to achieve low mortality and hence better safety. With this approach, esophageal malignancies can be treated more aggressively even in the presence of significant comorbidities and high comorbidity scores. The surgical technique would need to be standardized to achieve this outcome. It is a team-based approach, as factors beyond the surgical technique affect the outcomes of surgery.