

The effect of enhanced recovery after minimally invasive esophagectomy: a randomized controlled trial

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Background: The purpose of this randomized controlled trial was to determine if enhanced recovery after surgery (ERAS) would improve outcomes for three-stage minimally invasive esophagectomy (MIE).

Methods: Patients with esophageal cancer undergoing MIE between March 2016 and August 2018 were consecutively enrolled, and were randomly divided into 2 groups: ERAS+ group that received a guideline-based ERAS protocol, and ERAS- group that received standard care. The primary endpoint was morbidity after MIE. The secondary endpoints were the length of stay (LOS) and time to ambulation after the surgery. The perioperative results including the Surgical Apgar Score (SAS) and Visualized Analgesia Score (VAS) were also collected and compared.

Results: A total of 60 patients in the ERAS+ group and 58 patients in the ERAS- group were included. Postoperatively, lower morbidity and pulmonary complication rate were recorded in the ERAS+ group (33.3% vs. 51.7%; $p = 0.04$, 16.7% vs. 32.8%; $p = 0.04$), while the incidence of anastomotic leakage remained comparable (11.7% vs. 15.5%; $p = 0.54$). There was an earlier ambulation (3 [2–3] days vs. 3 [3–4] days, $p = 0.001$), but comparable LOS (10 [9–11.25] days vs. 10 [9–13] days; $p = 0.165$) recorded in ERAS+ group. The ERAS protocol led to close scores in both SAS (7.80 ± 1.03 vs. 8.07 ± 0.89 , $p = 0.21$) and VAS (1.74 ± 0.85 vs. 1.78 ± 1.06 , $p = 0.84$).

Conclusions: Implementation of an ERAS protocol for patients undergoing MIE resulted in earlier ambulation and lower pulmonary complications, without a change in anastomotic leakage or length of hospital stay. Further studies on minimizing leakage should be addressed in ERAS for MIE.