

# Safety and Effectiveness of Endoluminal Vacuum-Assisted Closure for Esophageal Defects: Systematic Review and Meta-Analysis

Muhammad Aziz<sup>1\*</sup>, Hossein Haghbin<sup>1</sup>, Sachit Sharma<sup>2</sup>, Simcha Weissman<sup>1</sup>, Saad Saleem<sup>1</sup>, Wade Lee-Smith<sup>3</sup>, Abdallah Kobeissy<sup>1</sup>, Ali Nawras<sup>1</sup>, Yaseen Alastal<sup>1</sup>

<sup>1</sup>Division of Gastroenterology and Hepatology, Department of Medicine, The University of Toledo, Toledo, OH 43614

<sup>2</sup>Division of Internal Medicine, Department of Medicine, The University of Toledo, Toledo, OH 43614

<sup>3</sup>Department of University Libraries, The University of Toledo, Toledo, OH 43614

\*Corresponding author: [Muhammad.Aziz@utoledo.edu](mailto:Muhammad.Aziz@utoledo.edu)

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**Background:** Esophageal defects (leaks, fistulas, and perforations) are associated with significant morbidity and mortality. Endoluminal vacuum-assisted closure (EVAC) is a novel intervention that entails the use of sponges in the defect along with negative pressure to achieve granulation tissue formation and healing and has been gaining popularity. We performed a systematic review and pooled analysis of available literature to assess the safety and effectiveness of EVAC for esophageal defects.

**Methods:** We queried PubMed/Medline, Embase, Cochrane, and Web of Science through September 25, 2020 to include all pertinent articles highlighting the safety and effectiveness profile of EVAC for esophageal defects. Pooled rates, 95 % confidence intervals (CIs), and heterogeneity (I<sup>2</sup>) were assessed for each outcome.

**Results:** A total of 18 studies with 423 patients were included (mean age 64.3 years and males 74.4 %). The technical success for EVAC was 97.1 % (CI: 95.4 %-98.7 %, I<sup>2</sup> = 0 %). The clinical success was 89.4 % (CI: 85.6 %-93.1 %, I<sup>2</sup> = 36.8 %). The overall all-cause mortality and adverse events (AEs) noted were 7.1 % (CI: 4.7 %-9.5 %, I<sup>2</sup> = 0 %) and 13.6 % (CI: 8.0 %-19.1 %, I<sup>2</sup> = 68.9 %), respectively. The pooled need for adjuvant therapy was 15.7 % (CI: 9.8 %-21.6 %, I<sup>2</sup> = 71.1 %).

**Conclusion:** This systematic review and meta-analysis showed high rates of technical success, clinical success, and low all-cause mortality and AEs using EVAC. Although the technique is a promising alternative, the lack of comparative studies poses a challenge in making definite conclusions regarding use of EVAC compared to other endoscopic modalities, such as clips and stents.