INPLASY

# Prophylactic Wound Closure After ESD Reduces Post-ESD Bleeding: A Meta-analysis

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## ADMINISTRATIVE INFORMATION

**Support -** N/A.

**Review Stage at time of this submission -** Completed but not published.

**Conflicts of interest -** None declared.

**INPLASY registration number:** INPLASY202590065

**Amendments -** This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 17 September 2025 and was last updated on 17 September 2025.

## INTRODUCTION

**Review question / Objective** To evaluate whether prophylactic wound closure after endoscopic submucosal dissection (ESD) reduces the risk of delayed bleeding compared with non-closure, and to explore whether this effect is influenced by lesion size or rectal location.

**Rationale** Delayed bleeding is one of the most common and clinically relevant adverse events after endoscopic submucosal dissection (ESD). Prophylactic wound closure has been proposed as a preventive strategy, but the evidence remains inconsistent across studies. A systematic review and meta-analysis is therefore warranted to clarify its efficacy and safety.

**Condition being studied** Gastrointestinal neoplasia treated with endoscopic submucosal dissection (ESD), with a focus on procedure-related complications such as delayed bleeding, perforation, and post-ESD coagulation syndrome (PECS).

## METHODS

**Search strategy** A comprehensive literature search will be conducted in PubMed, Embase, Web of Science, and Cochrane Library from inception to September, 2025 to identify relevant studies. Search terms will include combinations of keywords and Medical Subject Headings (MeSH) related to “endoscopic submucosal dissection,” “ESD,” “wound closure,” “clip,” “endoloop,” “over-the-scope clip,” “bleeding,” and “hemorrhage.” Boolean operators (“AND,” “OR”) will be applied to combine terms.

**Participant or population** Adults undergoing endoscopic submucosal dissection (ESD) for gastrointestinal epithelial neoplasia.

**Intervention** Prophylactic wound closure after endoscopic submucosal dissection (ESD).

**Comparator** No prophylactic wound closure after ESD (standard care).

**Study designs to be included** Randomized controlled trials and comparative cohort studies.

**Eligibility criteria** Studies were included if they met the following criteria: (1) randomized controlled trials or observational comparative cohort studies involving human participants; (2) studies comparing prophylactic wound closure versus non-closure after endoscopic submucosal dissection (ESD); and (3) trials reporting quantitative data on relevant outcomes, including delayed bleeding, perforation, or post-ESD coagulation syndrome (PECS).

Exclusion criteria included: (1) studies with single-arm or non-comparative designs; (2) reports without sufficient or extractable data for meta-analysis; (3) overlapping or duplicate study populations; and (4) conference abstracts, reviews, editorials, or other non–peer-reviewed publications.

**Information sources** We will systematically search PubMed, Embase, Web of Science, and the Cochrane Library from database inception to September 2025. Reference lists of all eligible articles and relevant review papers will also be manually screened to identify additional studies. Only articles published in English and peer-reviewed journals will be considered.

**Main outcome(s)** Incidence of delayed post-ESD bleeding.

**Additional outcome(s)** Incidence of procedure-related perforation and post-ESD coagulation syndrome (PECS).

**Data management** Data from included studies will be extracted independently by two reviewers using a standardized form and cross-checked for accuracy. Discrepancies will be resolved by discussion or a third reviewer.

**Quality assessment / Risk of bias analysis** Two reviewers will independently assess the risk of bias of included studies. The Cochrane Risk of Bias 2 (RoB 2) tool will be applied for randomized controlled trials, while the Newcastle–Ottawa Scale (NOS) will be used for observational cohort studies. Disagreements will be resolved by discussion or adjudication by a third reviewer. The overall quality of evidence for each outcome will be evaluated according to GRADE recommendations.Risk of bias will be assessed using the Cochrane Risk of Bias 2 (RoB 2) tool for randomized controlled trials and the Newcastle–Ottawa Scale (NOS) for observational studies.

**Strategy of data synthesis** We will perform meta-analyses using a random-effects model (DerSimonian–Laird method) to calculate pooled odds ratios (ORs) with 95% confidence intervals (CIs). Statistical heterogeneity will be assessed using the Cochran Q test ($p < 0.10$) and quantified with the $I^2$ statistic. Subgroup analyses and meta-regression will be conducted to explore potential effect modifiers such as tumor size and rectal lesion proportion. Sensitivity analyses (leave-one-out method) will be used to test the robustness of findings.

**Subgroup analysis** Subgroup analyses will be conducted according to tumor size.

**Sensitivity analysis** Sensitivity analyses will be conducted by sequentially excluding individual studies to assess the robustness of pooled estimates.

**Language restriction** English.

**Country(ies) involved** Taiwan.

**Keywords** Endoscopic submucosal dissection, Wound closure, Prophylactic closure, Post-ESD bleeding, Gastrointestinal neoplasia, Meta-analysis, Systematic review.

**Contributions of each author**

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