

# Prophylactic Epinephrine Injection for the Prevention of Postpolypectomy Bleeding: A Meta-Analysis

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## Introduction

Bleeding is the most common major complication from colonoscopic polypectomy. We performed a meta-analysis to evaluate whether submucosal epinephrine injections prevent postpolypectomy bleeding.

## Methods

The dataset was defined by searching PubMed for randomized controlled and retrospective studies published before December 2021 that compared the use of epinephrine (alone or with another preventative measure) to no prophylaxis for bleeding. Groups were defined as either epinephrine injection only (group A), mechanical prophylaxis via detachable snare and/or clip only (group B), combined therapy group (group C), and a control group. Group differences were analyzed by using a random-effects models. Effect sizes were calculated as Cohen's d for continuous data or a log of the odds ratio (OR) for percentage (binary) data.

## Results

- In all, we identified ten studies: six used in a prior meta-analysis [Tullavardhana et al., 2017, Ann Med Surg (Lond), 19:65-73] and four additional studies (see Figure).

Table: Study Characteristics

Study	Population	Group Comparisons	Number of patients	Age (year)	Number of polyps	Polyp size (mean) (mm)
Rohde	NA	A: Epinephrine B: No prophylaxis	NA	A: 70 (53–88), B: 65 (33–78)	40	A: 15 (7–28), B: 15 (11–35)
Lee SH.	Multicenter	A: Epinephrine B: No prophylaxis	486	A: 51.6 ± 11.4, B: 56.8 ± 11.3	561	A: 14.5 ± 5.7, B: 15.0 ± 6.8
Hsieh Yh.	Single center	A: Epinephrine B: No prophylaxis	129	A: 62.9 (59.8–62.1), B: 64.9 (62.1–67.8)	151	A: 8.0 (8–13), B: 8.0 (8–11)
Dobrowolski S.	Single center	A: Epinephrine B: No prophylaxis	69	A: 63.7 ± 9.7, B: 66.8 ± 11.5	100	A: 16.3 ± 5.4, B: 16.1 ± 5.9
Paspatis GA.	Multicenter	A: Combined therapy (detachable snare with epinephrine) B: Epinephrine	159	A: 61.7 ± 13.8, B: 64.5 ± 11	159	A: 27.1 ± 8.9, B: 26.3 ± 8.1
Kouklakis G.	Single center	A: Mechanical therapy (Endloop with postpolypectomy clipping) B: Epinephrine	64	A: 57.9 ± 9.7, B: 58.8 ± 11.2	64	A: 25.6 ± 12.0, B: 27.0 ± 11.0
Di Giorgio P.	Single center	A: Mechanical therapy (detachable snare) B: Epinephrine C: No prophylaxis	488	A: 64 ± 9.2, B: 63 ± 8.9, C: 62 ± 9.0	488	A: 22.2 ± 5.9, B: 24.7 ± 5.3, C: 21.6 ± 4.8
Yamaguchi	Single center	A: Epinephrine B: No prophylaxis	204	A: 73.7 ± 8.7, B: 73.7 ± 8.3	204	A: 10.0 ± 5.8, B: 10.0 ± 5.0
Bahin	Multicenter	A: Combined therapy (epinephrine and succinylated gelatin injection with electrocoagulation) B: Epinephrine and succinylated gelatin injection	347	A: 66.0, B: 70.0	347	A: 39.5, B: 39.8
Park	Multicenter	A: Combined therapy (clipping with epinephrine) B: Mechanical therapy (clipping)	148	A: 59 ± 11, B: 60 ± 10	173	A: 17.5 ± 6.7, B: 17.2 ± 6.6

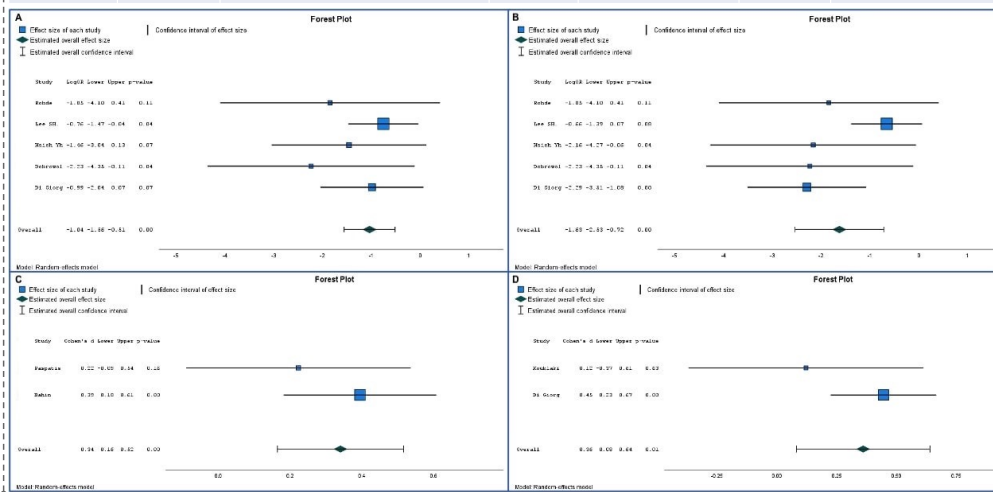


Figure: Comparison of (A) overall and (B) early postpolypectomy bleeding in the epinephrine and control group. (C) Group A was significantly older than Group C. (D) Group A identified larger polyp size than Group B.

## Results Cont.

- Overall, 2,125 patients with 2,287 total polyps were included in nine randomized controlled trials and one retrospective chart review.
- Overall bleeding was lower in group A than in controls on the basis of five studies (OR, -1.038; confidence interval [CI] -1.560 to -0.515;  $p \leq 0.001$ ). One study indicated that overall bleeding was lower in group B than in the controls (OR, -1.524; CI, -2.799 to -0.249;  $p = 0.019$ ).
- Early bleeding was lower in group A than in the controls on the basis of five studies (OR, -1.626; CI, -2.535 to -0.718;  $p \leq 0.001$ ) and lower in group B on the basis of one study (OR, -2.719; CI, -4.175 to -1.263;  $p \leq 0.001$ ).
- There were no significant group differences associated with late onset bleeding.
- Group A was significantly older than group C and had larger polyps than group B.
- There were no differences among the groups in terms of patient sex, polyp histology, polyp morphology, or stalk size.

## Conclusion

The results indicate that epinephrine prophylaxis reduces overall and early postpolypectomy bleeding but does not affect late bleeding.