Outcome of endoscopic treatment for peptic ulcer bleeding: is a second look necessary? A meta-analysis

CRD summary
This review examined the effectiveness of second-look endoscopy and repeat treatment within 24 hours of a first endoscopy. The authors concluded that second-look endoscopy significantly reduced recurrent bleeding but did not reduce mortality or requirement for surgery. This was a reasonably well-conducted review and the conclusions appear reliable.

Authors' objectives
To determine whether second-look endoscopy with re-treatment reduces recurrent bleeding, salvage surgery and death in patients with peptic ulcer bleeding (PUB).

Searching
MEDLINE, EMBASE, and Current Contents were searched from January 1990 to December 2000; the search terms were stated. Results prior to 1990 were reported by the National Institutes of Health Consensus Conference on therapeutic endoscopy and bleeding ulcers (see Other Publications of Related Interest no.1). No language restrictions were applied. In addition, the reference lists in identified studies and reviews were checked. Only the most recent publication of duplicate reports was included. Abstracts, letters, editorials, comments and preliminary reports were excluded.

Study selection
Study designs of evaluations included in the review
Randomised controlled trials (RCTs) that reported results in full were eligible for inclusion. The studies had to report sufficient data to estimate the relative risk (RR).

Specific interventions included in the review
Studies that compared scheduled second-look endoscopy with no scheduled second-look endoscopy were eligible for inclusion. Second-look endoscopy was defined as scheduled endoscopy within 24 hours of the index endoscopy plus repeat treatment of the ulcer base, using the same treatment method as at the index endoscopy. In the included studies, endoscopic treatment was carried out using injection therapy with epinephrine or fibrin glue, or a heat probe. Cointerventions were intravenous ranitidine or omeprazole. The time until second-look endoscopy ranged from 16 to 24 hours.

Participants included in the review
Studies of adults with PUB who had been treated endoscopically were eligible for inclusion. Studies that included all patients with an index endoscopy were eligible, as were studies that only included patients with visible bleeding stigmata at the index endoscopy. All of the included studies excluded patients with malignancy or coagulation defects. All studies were of patients with high-risk stigmata of recent haemorrhage (active bleeding, visible vessels, or adherent clot). The mean age of the participants ranged from 61 to 70 years and the percentage of patients taking non-steroidal anti-inflammatory drugs ranged from 39 to 59% across the treatment groups.

Outcomes assessed in the review
Studies that presented explicit data on recurrent bleeding, need for surgery, and mortality associated with treatment were eligible for inclusion. Mortality was defined as any death within 30 days of the index endoscopy. The duration of follow-up ranged from hospital discharge to 30 days.

How were decisions on the relevance of primary studies made?
Two reviewers reached consensus on study selection. Any disagreements were resolved by evaluating the report jointly.
Assessment of study quality
Validity was assessed using criteria described by Cook et al. (see Other Publications of Related Interest no.2). The authors did not state how the papers were assessed for validity, or how many reviewers performed the validity assessment.

Data extraction
Two researchers independently extracted the data using a standardised form. Any disagreements were resolved by evaluating the report jointly. For the outcomes of recurrent bleeding, mortality and surgery, the absolute risk reduction (ARR) and number-needed-to-treat (NNT) were estimated for each RCT, along with the respective 95% confidence intervals (CIs).

Methods of synthesis
How were the studies combined?
The study characteristics were summarised in the text and then the trials were combined using a meta-analysis. Weighted pooled odds ratios (ORs) and 95% CIs were calculated using a fixed-effect model (Mantel-Haenszel) in the absence of significant heterogeneity (P<0.05). For studies with a zero event rate, a correction value of 0.5 was added to each cell in 2x2 tables. Publication bias was assessed for the significant finding by calculating the number of non significant studies required to remove the significance of the findings.

How were differences between studies investigated?
Statistical heterogeneity was assessed using the chi-squared statistic.

Results of the review
Four RCTs (785 patients) were included.

The quality scores ranged from 15 to 21 (median 17.5). The studies were similar with respect to patient characteristics such as mean age and percentage taking non-steroidal anti-inflammatory or anti-secretory drugs, and for time until second-look endoscopy and length of follow-up.

Recurrent bleeding: second-look endoscopy treatment significantly reduced recurrent bleeding (18.2% versus 12%, ARR 6.25); the OR was 0.64 (95% CI: 0.44, 0.95); the NNT was 16 (95% CI: 9, 75) in the treatment group compared with the control group. No significant heterogeneity was detected (P=0.15). The one RCT using a cointervention with omeprazole (rather than ranitidine) found no significant difference between the treatments.

Surgery: there were no significant differences in the risk of surgery between second-look endoscopy treatment and control; the OR was 0.68 (95% CI: 0.35, 1.3); the NNT was 58 (95% CI: -64, 28). No significant heterogeneity was detected (P=0.56).

Mortality: the results showed no significant differences in mortality between second-look endoscopy treatment and control; the OR was 0.80 (95% CI: 0.42, 1.54); the NNT was 97 (95% CI: -25, 53). There appears to be an error in the latter since the NNT (97) lies outside the CIs (-25, 53). No significant heterogeneity was detected (P=0.85).

It was estimated that the inclusion of one additional study could remove the significant result for recurrent bleeding.

Authors’ conclusions
Second-look endoscopy treatment significantly reduced recurrent bleeding in patients with PUB, but did not significantly reduce either surgery or mortality.

CRD commentary
This was a reasonably well-conducted and clearly presented review. The review question was clear in terms of the study design, intervention, participants and outcomes. Several relevant sources were searched, the search terms were stated and no language restrictions were applied. However, no attempt was made to locate unpublished studies, thus raising the possibility of publication bias. Two reviewers independently selected the studies and extracted the data; this reduces the potential for bias and errors. Validity was assessed using validated criteria and the overall validity scores for individual RCTs were reported. Some relevant information on the included studies was tabulated, but drop-outs were not reported. The data were appropriately combined in a meta-analysis, and statistical heterogeneity and publication bias were assessed. The evidence presented appears to support the authors’ conclusions.

**Implications of the review for practice and research**
Practice: The authors stated that further studies are required before any change in current practice can be recommended.

Research: The authors stated that further research is required to focus on pharmacologic and economic aspects, including the influence of repeat endoscopic treatment on hospital stay and the number of patients who require a transfusion.

**Bibliographic details**

**PubMedID**
12518133

**DOI**
10.1067/mge.2003.48

**Other publications of related interest**

**Indexing Status**
Subject indexing assigned by NLM

**MeSH**
Hemostasis, Endoscopic /methods; Humans; Peptic Ulcer Hemorrhage /therapy; Randomized Controlled Trials as Topic; Retreatment; Secondary Prevention; Treatment Outcome

**AccessionNumber**
12003000317

**Date bibliographic record published**
28/02/2005

**Date abstract record published**
28/02/2005

**Record Status**
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.