Meta-analysis and systematic review of colorectal endoscopic mucosal resection
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CRD summary
The review evaluated the success of endoscopic mucosal resection technique in resecting large colorectal polyps and found it to be an effective alternative to surgery. The authors’ conclusions are questionable given the lack of information on study quality and a reliance on uncontrolled studies; the results may not be generalisable due to the considerable variability across studies.

Authors' objectives
To evaluate the success of endoscopic mucosal resection (EMR) technique in resecting large colorectal polyps.

Searching
MEDLINE, old MEDLINE, MEDLINE Non-Indexed Citations, PubMed, HealthSTAR, CINAHL, ACP journal club, DARE, IPA and Cochrane Central Register of Controlled Trials (CENTRAL) databases and Japanese language literature and journals@ovid were searched. Search terms were reported, but not search dates were not.

Study selection
Studies that evaluated EMR technique to resect large (>2 cm) colorectal polyps were eligible for inclusion. The outcome of interest was successful complete cure en-bloc resection defined as one piece removal with tumour-free vertical and lateral margins. Study design was not specified.

In the included studies, EMR was performed using snare (which included a strip biopsy technique, snare with needle spike and snare with suction). Polyps were mostly lateral spreading tumours with a mean size of 22.48 mm (SD 4.52).

The authors did not state how papers were selected for the review.

Assessment of study quality
The authors stated that they did not assess validity.

Data extraction
Data on proportion of en-bloc resections with associated 95% confidence intervals (CI) were extracted from each study.

Two authors independently extracted data. Differences were resolved by consensus.

Methods of synthesis
Individual study proportions were transformed using the Freeman-Tukey variant of arcsine square root before pooling. Transformed proportions were pooled using a fixed-effect model with inverse arcsine variance weights or, where there was statistically significant heterogeneity, a random-effects model using DerSimonian and Laird weights. The pooled estimate was then back-transformed. Results were combined separately for successful en-bloc resections and successful cure en-bloc resections. Statistical heterogeneity was assessed with Cochran's Q test (p>0.10). Publication bias was assessed statistically using Begg-Mazumdar correlation test and graphically with funnel plots. Outcomes were further analysed in three subgroups based on the sample size in each study (<100 patients, 100 to 200 patients and >200 patients).

Results of the review
Twenty-five studies (n=5,221 patients, range 19 to 935) were included. Studies were uncontrolled and appeared to be case series.

Successful complete cure en-bloc resections: The pooled proportion was 58.66% (95% CI 47.14 to 69.71). There was
evidence of statistical heterogeneity (result not reported) and a random-effects model was used to combine the results. There was no evidence of publication bias as shown by the funnel plot and Begg-Mazumdar test (p=0.17).

**Successful en-bloc resections**: Using a random-effects model, the pooled proportion was 62.85% (95% CI 51.50 to 73.52).

Results from the subgroup analyses showed that the proportion of both successful cure en-bloc resections and successful en-bloc resections increased as sample sizes increased.

**Authors' conclusions**
EMR is an effective technique for the resection of large colorectal polyps and offers an alternative to surgery.

**CRD commentary**
The review addressed a well-defined question supported by clear inclusion criteria. A number of relevant databases were searched to identify published studies. No attempts were made to identify unpublished studies. It was unclear whether efforts were made to identify studies in languages other than English and Japanese. Potential for publication bias was assessed and no evidence was found. Study quality was not assessed. The authors justified their reasons by explaining that there was no consensus on how to assess studies without a control arm, but the absence of quality assessment made the risk of bias in the included studies unclear. Steps were taken to minimise bias and errors by carrying out search and data extraction in duplicate. Details on individual studies were lacking (especially population characteristics and study design). Use of a random-effects model was appropriate given the evidence of heterogeneity. The source of heterogeneity was not investigated. It was unclear whether there was clinical and/or statistical heterogeneity in the analysis grouping studies by sample size.

The reliability of the authors' conclusions is unclear due to the lack of information on study quality and populations, and the reliance on uncontrolled studies. The overall pooled estimates may not be generalisable across all settings due to the evidence of considerable variability in treatment effects across studies, which may partly be explained by the experience of centres (reflected in the number of cases) although other possible sources of heterogeneity were not investigated.

**Implications of the review for practice and research**
**Practice**: The authors stated that EMR offered an alternative to surgery

**Research**: The authors did not state any recommendations for further research.

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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.