Sham feed or sham? A meta-analysis of randomized clinical trials assessing the effect of gum chewing on gut function after elective colorectal surgery

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CRD summary
This review of gum chewing after elective colorectal surgery concluded that there was no convincing evidence that was beneficial for earlier gut function recovery and it did not reduce hospital stay or postoperative complications. Due to significant clinical, methodological and statistical heterogeneity, the meta-analysis results may not be reliable. But the overall conclusion appears suitably cautious.

Authors' objectives
To evaluate current evidence for the effects of gum chewing on gut function after colorectal surgery.

Searching
MEDLINE, EMBASE, CINAHL and The Cochrane library were searched between January 1990 and July 2008. Search terms were reported. There were no language restrictions. Reference lists were searched.

Study selection
Randomised controlled trials (RCTs) that compared gum chewing against no gum chewing (in conjunction with standard postoperative management) in patients who underwent open or laparoscopic colorectal resection for any pathology were eligible for inclusion. Outcomes of interest were time to flatus and time to passing of faeces (both defined as time from surgery to first passage), in-hospital postoperative complications and length of hospital stay.

Included studies investigated chewing of sugar-free gum three or four times a day. Where reported, mean patient age ranged from 55.6 to 68 years. One study assessed gum chewing together with an enhanced recovery programme, one was of any colorectal resection and the rest were of surgery for colorectal cancer. Most studies assessed open surgery alone or open or laparoscopic surgery; only one study was of laparoscopic surgery alone.

The authors did not state how many reviewers performed the study selection.

Assessment of study quality
Study validity was assessed using the Jadad scale of randomisation, blinding and reporting of study withdrawals (maximum of 5 points). Studies that scored less than 2 were considered to be low quality.

The authors did not state how many reviewers performed validity assessment.

Data extraction
Dichotomous outcomes were extracted and used to calculate odds ratios (OR) and 95% confidence intervals (CI) for each study. Mean differences (MD) were calculated for continuous outcomes.

Two authors independently extracted data. Cross-checking was used to reach consensus.

Methods of synthesis
Studies were pooled in meta-analyses using both fixed-effect and random-effects models. Interpretation of results was based on the level of statistical heterogeneity assessed using the Q statistic (p<0.05) and by calculating standardised mean differences (Hedge's g and Cohen's d). Publication bias was assessed using a funnel plot.

Results of the review
Six RCTs (256 patients) were included. Mean Jadad score was 2. All studies were described as randomised, but only two described a valid method of randomisation. None were double-blind. Two studies scored 3 points, three scored 2 and one scored only 1.

Patients who received gum had a statistically significant reduction in mean time to flatus compared with control patients.
(p=0.001 fixed-effect model, p=0.02 random-effects model, effect size not reported). Gum-chewing patients had a statistically significant reduction in mean time to faeces (p=0.003 fixed-effect model, p=0.07 random-effects model, effect size not reported). Statistically significant heterogeneity was observed for both outcomes (p<0.0001 and p=0.002).

There was no evidence of differences for hospital stay or postoperative complications. There was no indication of publication bias.

Authors' conclusions
There was no convincing evidence that gum chewing was beneficial in terms of earlier recovery of gut function when early postoperative feeding was being adopted increasingly. Gum chewing did not reduce hospital stay or postoperative complications after elective colorectal resection.

CRD commentary
This review had clearly stated study inclusion criteria for study design, intervention, participants and outcomes. The search covered a number of relevant databases and was not restricted by language. The authors stated that data were extracted by two reviewers; it was unclear if similar steps to reduce reviewer error and bias were taken during study selection and validity assessment. Study validity was assessed using an appropriate but limited scale and results were reported in full for each study. Methods of meta-analysis appeared appropriate. Results for both fixed-effect and random-effects models were presented on forest plots. However, the authors did not report pooled estimates and their confidence intervals. There appeared to be significant clinical, methodological and statistical heterogeneity, so the pooled results should be treated with caution. But the overall conclusion appears suitably cautious.

Implications of the review for practice and research
Practice: The authors stated that surgical practice should focus on earlier feeding strategies rather than gum chewing.

Research: The authors did not state any implications for research.

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