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Review Article

Usefulness of chewing gum for recovering intestinal function after cesarean delivery: A systematic review and meta-analysis of randomized controlled trials

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ABSTRACT

Chewing gum has been reported to enhance bowel function. However, the efficacy remains unclear for women undergoing cesarean delivery. The aim of this meta-analysis is to evaluate the efficacy of chewing gum for recovering intestinal function following cesarean delivery in the early postoperative period. Electronic databases including MEDLINE, EMBASE, Cochrane Library were searched to identify English language randomized controlled trials comparing chewing gum with other procedures for promoting the recovery of intestinal function after cesarean delivery. Two of the authors independently extracted data from the eligibility studies, and Review Manager Version 5.2 was used to pool the data. Finally, five randomized controlled trials involving 882 patients were included and all the trials were considered as at high risk of bias. The pooled findings showed that chewing gum after cesarean delivery can significantly shorten the time to first flatus [standardized mean difference (SMD) = −0.73; 95% confidence interval (CI) = −1.01 to −0.14; $p < 0.001$]; time to first hearing of normal intestinal sounds (SMD = −0.69; 95% CI = −1.20 to −0.17; $p = 0.009$; $I^2 = 92\%$). Time to the first defecation (SMD = −0.53; 95% CI = −1.61 to −0.07; $p = 0.07$; $I^2 = 92\%$) and length of hospital stay (SMD = −0.59; 95% CI = −1.18 to 0.00; $p = 0.05$; $I^2 = 93\%$) were also reduced in the chewing gum group; however, these results were not statistically significant. The current evidence suggests that chewing gum has a positive effect on intestinal function recovery following cesarean delivery in the early postoperative period. However, more large-scale and high-quality randomized controlled trials are needed to confirm these results.

Introduction

The rate of cesarean delivery, one of the most common operations worldwide, has increased in many parts of the world over the last decade, especially in developed countries [1]. Physicians traditionally forbid oral feeding until normal intestinal function returns after cesarean delivery. However, this procedure may lead to intestinal ileus, which can prolong the length of hospital stay and increase financial burden [2,3].

In recent years, with the development of enhanced recovery after surgery, the safe and effective promotion of the recovery of gastrointestinal function after surgery and prevention of postoperative complications have caused widespread concern among medical staff. The use of chewing gum to simulate bowel movement has been reported in several randomized clinical trials in patients following cesarean delivery [4–8]. The results of some previous meta-analysis reviews in patients undergoing gastrointestinal surgery have shown that chewing gum can shorten the time to bowel movement and the length of hospital stay [9–12].

We conducted this meta-analysis of randomized clinical trials to assess the efficacy of chewing gum for intestinal function recovery in the early postoperative period after cesarean delivery. We assumed that chewing gum has a beneficial effect on bowel function recovery after cesarean delivery.

Material and methods

Search strategy

The Preferred Reporting Items for Systematic Reviews and Meta-Analyses statement was utilized to report this meta-analysis

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[13]. The electronic databases MEDLINE, EMBASE, and Cochrane Library were systematically searched from their inception to December 31, 2013. The searches were restricted to English language publications. The following Medical Subject Headings (MeSH) terms or key words were used: *sham* or *chewing gum* or *gum chewing* or *gum* and *caesarean section* or *postoperative*. The reference lists of the original and related reviews were also scanned to identify any additional relevant studies.

Study selection

All studies included in the analysis met the following criteria: (1) a randomized control trial design; (2) compared chewing gum with usual care after cesarean delivery; (3) evaluated at least one of the outcomes of intestinal function (time to first flatus; time to first sounds; time to the first defecation); and (4) reported the sample size, mean difference, and other appropriate data. Studies were excluded if they: (1) were not randomized clinical trials; (2) did not report the outcomes of intestinal function; (3) did not use chewing gum as an intervention method; (4) were letter, comments, correspondence, editorials, reviews, or gray literature; and (5) had considerable overlap between authors, centers, and participants in the published articles.

Data extraction

Data from each study were independently extracted by the two authors. Any disagreements were resolved by discussion and consensus. The following information was extracted: first author, year of publication, country, sample size, participant characteristics (age, mean, and standard deviation), intervention methods, and primary outcomes included intestinal function and length of hospital stay (days).

Study quality assessment

The quality of included studies was assessed by using the assessment tool described in the *Cochrane Handbook for Systematic Reviews of Interventions* [14]. All studies were assigned a judgment of low, unclear or high risk of bias for the following items: random sequence generation; allocation concealment; blinding (performance bias, detection bias); incomplete outcome data (attrition bias); selective reporting (reporting bias); and other sources of bias. Studies with low risk of bias for all key domains were considered as at low risk of bias. Studies with low or unclear risk for all key domains were considered as at unclear risk of bias. Studies with high risk of bias for any one or more key domains were considered as at high risk of bias [15].

Statistical analysis

All of the data analyses were performed using Review Manager 5.2 (Cochrane Collaboration, Oxford, UK) following recommendations from the Cochrane handbook (http://handbook.cochrane.org/). Continuous variables were analyzed using standardized mean difference (SMD) and expressed with 95% confidence intervals (CI).

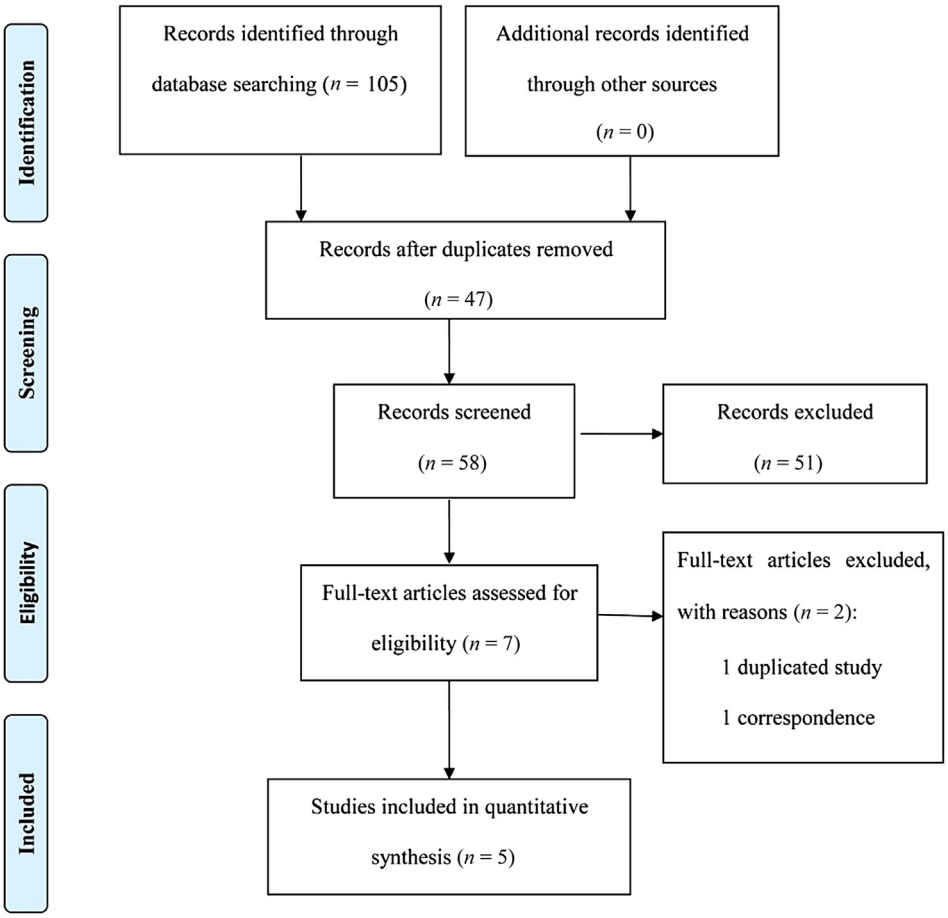

Fig. 1. Flowchart of studies selection.