Systematic review with meta analysis

Gum chewing is associated with early recovery of bowel motility and shorter length of hospital stay for women after caesarean section

10.1136/ebmed-2014-110058

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Commentary on: Zhu YP, Wang WJ, Zhang SL, *et al*. Effects of gum chewing on postoperative bowel motility after caesarean section: a meta-analysis of randomised controlled trials. *BJOG* 2014;121:787–92.

Context

Caesarian section (CS) is one of the most common types of surgical procedure performed worldwide. Postoperative ileus (POI) is a recognised consequence of abdominal surgery, defined as the 'transient cessation of coordinated bowel motility after surgical intervention, which prevents effective transit of intestinal contents and/or tolerance of intake'.[1] POI is associated with delayed recovery, prolonged hospital stay and increased healthcare costs. Despite evidence showing the benefit of gum chewing in the reduction of POI following gastrointestinal (GI) surgery,[2] a conflicting evidence base surrounds its use following CS. This systematic review and meta-analysis examines the effect of chewing gum on postoperative recovery following CS in order to determine its efficacy in routine postoperative care.

Methods

Studies included in the analysis reported on at least one of the following outcomes: time to first flatus, time to first bowel sound, time to first stool or length of hospital stay. Sensitivity analysis and publication bias were performed. The DerSimonian and Laird random effects model was used if there was evidence of heterogeneity within study outcomes. The mean difference (MD) with a 95% CI for continuous data was used. The study adhered to protocols defined in the PRISMA statement.

Findings

Six randomised controlled trials met the inclusion criteria, including 939 women. The chewing of gum postoperatively was associated with a significant reduction in time to first flatus (MD −6.42 h, 95% CI −7.55 to −5.29, p<0.00 001), time to first bowel sound (MD −3.62 h, 95% CI −6.41 to −0.83, p=0.01), time to first stool (MD −6.58 h, 95% CI −10.10 to −3.07, p=0.0002) and length of hospital stay (LOS) (MD −5.94 h, 95% CI −9.39 to −2.49, p=0.0007). The random effects model reported significant heterogeneity for time to first bowel sound (I^2=95%, p<0.00 001), time to first stool (I^2=79%, p=0.003) and LOS (I^2=77%, p=0.001).

Commentary

This review suggests that gum chewing is associated with early recovery of bowel motility and shorter LOS for women after CS. The mechanisms behind POI are still not fully recognised but immunological, inflammatory, neurological, electrolyte and receptor-mediated functioning all contribute.[3] Chewing gum, as a form of 'sham feeding', may target some of these mechanisms. However, sorbitol, a common constituent of sugar-free gum, is an osmotic laxative and, may also be responsible for improved GI motility. Therefore, it is important to note that the types of chewing gum used were not reported in any of the studies analysed.

Chewing gum is not equally beneficial for all types of surgery, and therefore the same efficacy cannot be assumed for its use following CS. Greater efficacy has been demonstrated in open surgery compared with laparoscopic GI surgery,[2] and without routine bowel manipulation during CS it is reasonable to believe that the benefit will be reduced, which appears to be supported by the results. A previous meta-analysis in bowel surgery suggested a 23.8 h difference in LOS[2] compared to only 5.9 h in this review.

The authors conclude that the use of chewing gum should be routine following CS. However, the clinical and economic significance of such a short reduction is debatable, particularly set against the poor quality of the studies included and their heterogeneity. If it is to be used, the optimum regimen for gum chewing is not established and it is not risk free; the physical process of chewing has been shown to suppress short-term appetite that could reduce a patient's desire to restart their normal diet.[4] The risk of gum inhalation and airway obstruction also remains.[5]

Guidelines for perioperative care in elective rectal/pelvic surgery recommend gum chewing as part of a multifactorial approach in the prevention of POI, in addition to the optimisation of fluid balance, careful analgesic selection and the avoidance of postoperative nausea and vomiting.[6] Chewing gum is not a single solution, but instead forms part of a wider group of measures to reduce POI. Patient demographics along with the complexity of the CS, degree of GI handling and tolerance of early feeding may help identify those patients who will benefit from such treatment.

Competing interests None.

Provenance and peer review Commissioned; internally peer reviewed.

CrossMark

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