Interventions at caesarean section for reducing the risk of aspiration pneumonitis

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RHL Summary

Findings of the review: Pneumonitis from aspiration of acidic stomach contents during caesarean section under general anaesthesia is potentially fatal, but too rare to be measured in randomized controlled trials. Trials of generally low quality found that the surrogate outcome gastric pH <2.5 is reduced most effectively by antacids plus H₂-antagonists or antacids alone (preferably non-particulate such as sodium citrate).

Implementation: In women undergoing caesarean section under general anaesthesia (this should apply to all women undergoing caesarean section since in case spinal analgesia fails and general anaesthesia is required), the potential benefits of antacid medications justify their continued use. Other strategies include avoiding general anaesthesia whenever possible, particularly in low-resource settings where general anaesthesia skills may be limited, and when unavoidable, rapid sequence anaesthesia induction with cricoid pressure and cuffed endotracheal intubation to protect the airway.

Cochrane review

Citation: Paranjothy S, Griffiths JD, Broughton HK, Gyte GML, Brown HC, Thomas J. Interventions at caesarean section for reducing the risk of aspiration pneumonitis. Cochrane Database of Systematic Review 2010, Issue 1. Art. No.: CD004943. DOI:10.1002/14651858.CD004943.pub3.

Abstract

Aspiration pneumonitis is a syndrome resulting from the inhalation of gastric contents. The incidence in obstetric anaesthesia has fallen, largely due to improved anaesthetic techniques and the increased use of regional anaesthesia at caesarean section. However, aspiration pneumonitis is still a cause of maternal morbidity and mortality, and it is important to use effective prophylaxis.

To determine whether interventions given prior to caesarean section reduce the risk of aspiration pneumonitis in women with an uncomplicated pregnancy.

We searched the Cochrane Pregnancy and Childbirth Group's Trials Register (April 2009).

Randomised controlled trials were included. Quasi-randomised trials were excluded.

Authors independently assessed the studies for inclusion, assessed risk of bias and carried out data
Twenty-two studies, involving 2658 women, are included, all having a caesarean section under general anaesthesia. The studies covered a number of comparisons, but were mostly small and of unclear or poor quality.

When compared to no treatment or placebo, there was a significant reduction in the risk of intragastric pH < 2.5 with antacids (risk ratio (RR) 0.17, 95% confidence interval (CI) 0.09 to 0.32, two studies, 108 women), H₂ antagonists (RR 0.09, 95% CI 0.05 to 0.18, two studies, 170 women) and proton pump antagonists (RR 0.26, 95% CI 0.14 to 0.46, one study 80 women). H₂ antagonists were associated with a reduced the risk of intragastric pH < 2.5 at intubation when compared with proton pump antagonists (RR 0.39, 95% CI 0.16 to 0.97, one study, 120 women), but compared with antacids the findings were unclear. The combined use of ‘antacids plus H₂ antagonists’ was associated with a significant reduction in the risk of intragastric pH < 2.5 at intubation when compared with placebo (RR 0.02, 95% CI 0.00 to 0.15, one study, 89 women) or compared with antacids alone (RR 0.12, 95% CI 0.02 to 0.92, one study, 119 women).

The quality of the evidence was poor, but the findings suggest that the combination of antacids plus H₂ antagonists was more effective than no intervention, and superior to antacids alone in preventing low gastric pH. However, none of the studies assessed potential adverse effects or substantive clinical outcomes. These findings are relevant for all women undergoing caesarean section under general anaesthesia.