Prophylaxis against Acid Aspiration Syndrome in Obstetric Practice

To the Editor.—We read with interest the report by Gibbs et al.1 concerning the effectiveness of 0.3 m sodium citrate as an antacid in parturients undergoing cesarean section and the subsequent correspondence from Stoops et al.2 Unlike Gibbs and his co-workers, we have studied the effectiveness of 0.3 m sodium citrate in patients undergoing emergency obstetric surgery as well as elective operative delivery. We, too, found that a single dose of 30 ml 0.3 m sodium citrate given immediately prior to the induction of anesthesia effectively elevated the $pH$ of liquid stomach contents above $pH$ 3.0 in all of 24 elective obstetric patients. However, in the emergency obstetric group receiving a similar single preanesthetic 30 ml dose of 0.3 m sodium citrate, 9 of 30 patients had a dangerously low intragastric $pH$ ($pH < 3$). Unlike Stoops and her colleagues, we found 6 of 29 elective obstetric patients and 9 of 24 emergency obstetric patients receiving 15 ml 0.3 m sodium citrate prior to induction of anesthesia had an intragastric $pH < 3$ (Whatman $pH$ sensitive paper). Moreover, progression to the administration of 15 ml 0.3 m sodium citrate two hourly throughout labor or 1 h preoperatively for elective cesarean section, coupled with 30 ml 0.3 m sodium citrate supplementation just prior to the commencement of anesthesia, still failed to adequately elevate intragastric $pH$ above 3 in 5 of 17 elective and 3 of 17 emergency operative deliveries. (Radiometer Digital Acid-Base Analyzer PHM 72 calibrated against standard buffer solutions for $pH$ 2, $pH$ 4, $pH$ 7). With such shortcomings, particularly in the emergency situation, we necessarily progressed to a combined regime of histamine $H_2$ receptor antagonist therapy (ranitidine) six hourly during labor or 2 h before scheduled elective cesarean section, and a single 30 ml preanesthetic dose of 0.3 m sodium citrate in the event of operative delivery. To date, in over 100 consecutive obstetric patients undergoing emergency cesarean section, no such patient has had a $pH$ less than 3, and there also has been a reduction in intragastric volume compared with multiple-dose antacid therapy alone.3 Similarly, more than 70 consecutive patients undergoing elective cesarean section all have had intragastric $pH$ values in the safe range.4 No untoward effects on either the mother or baby have been detected in the emergency or elective groups.

In conclusion, we therefore would submit that Gibbs and his co-workers cannot extrapolate from their starved elective patients to the emergency situation, the group most at risk of regurgitation and Mendelson’s syndrome.5,6 Our findings are also at variance with Stoops and her colleagues. We feel, however, that we have demonstrated that a combination regime of the histamine $H_2$ receptor antagonist, ranitidine, with the antacid 0.3 m sodium citrate reliably can prepare women for elective or emergency cesarean section. Intragastric $pH$ levels in all cases to date have been shown to be above the accepted thresholds for severe pneumonitis,4 should vomiting and aspiration of gastric contents occur, despite strict adherence to established methods of inducing anaesthesia in patients whose stomachs are not empty.

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