

aspiration of antacid-containing liquid gastric contents may produce worse sequelae than aspiration of gastric acid itself.

Many factors in addition to the pH of the aspirate are involved in the genesis of chemical aspiration pneumonitis. Alexander³ has shown that pulmonary edema may develop after aspiration of water or saline solution as a result of distortion of the osmotic gradient across the alveolar-capillary membrane, and that the presence of acid in the fluid merely potentiates the exudative reaction. Intestinal bacteria have been implicated in the pathogenesis of aspiration pneumonitis,⁴ although bile, digestive enzymes, and gastric bacteria have been found to be of little importance.⁵ Finally, as pointed out by Gibbs *et al.*,¹ antacid suspensions contain not only the magnesium and aluminum elements, but also preservatives, stabilizers and flavorings. Thus, the antacid preparation used may be of some significance if one of the many additives has the propensity to cause a pulmonary lesion. It may, therefore, be of interest to describe two cases of pulmonary inhalation of the antacid Mylanta® (aluminum hydroxide, 40 mg/ml, magnesium hydroxide 40 mg/ml, simethicone 4 mg/ml) that resulted in no pulmonary complication.

REPORT OF TWO CASES

The first patient was a healthy primigravida who, about an hour after her last dose of 15 ml of antacid, suffered a grand mal seizure due to inadvertent intravascular injection of lidocaine, 1 per cent, during an attempted pudendal block. She regurgitated and aspirated whitish fluid, the pH of which was above 3. She was treated with pharyngeal and laryngeal suctioning and administration of 100 per cent oxygen via an endotracheal tube. Twelve minutes later she awoke. There was no clinical or laboratory evidence of pulmonary abnormality, and the infant, delivered by outlet forceps immediately after the convulsion, was in good condition.⁶

The second patient, a secundipara in active labor, regurgitated and aspirated white gastric contents during an epileptic convulsion 10 min after her first 15-ml dose of Mylanta. Again, the pH of the aspirate was above 3. The mother, delivered of a healthy infant about three hours later, made a totally uneventful recovery.

These two histories do not prove that the patients involved would have suffered some pulmonary dysfunction had they not previously ingested antacid, or that Mylanta is better than other brands of antacid. We have simply presented another side of the

question in an attempt to spur further investigation of the role of antacids in preventing the acid-aspiration syndrome. Further, when one considers the data obtained by Lewis *et al.*⁷ in non-obstetric patients, where inhalation of gastric juice of confirmed low pH without preceding oral antacid was followed by hypoxemia of a mean duration of 5.6 days, the 72-hour episode of hypoxemia in the case of Bond *et al.*² may be seen as an improved outcome due to prior antacid therapy.

Obviously, measures to thwart regurgitation and pulmonary aspiration are the first line in the prevention of the acid-aspiration syndrome, but routine administration of antacids to parturients during labor should be continued until there is solid evidence either that it does no good or that it does more harm than good.

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Avoiding Complications during Jet Ventilation

To the Editor:—Oliverio *et al.*'s recent report¹ of a ball-valve obstruction and pneumothorax following the use of the Sanders' jet injector during removal

of laryngeal papillomas in a 2½-year-old child deserves comment, for two reasons.

First, in 1974 Smith² pointed out that high intra-

tracheal airway pressures can be avoided if the delivered O_2 pressure is reduced. In the case of Oliverio *et al.* an intermittent jet of O_2 from a 50-psi wall source was used, and after the first inspiration the chest remained in the inspiratory position. As Sanders³ demonstrated in his original paper, at 50 psi, pressures as high as 42 cm H_2O were measured at the distal end of a 3.5-mm \times 30-cm bronchoscope (partially obstructed), with flows of 100 l/min. I also reported⁴ that the use of a single-stage variable-pressure regulator is mandatory to reduce the delivered O_2 pressure (and flow rate) to an acceptable level according to the size of the bronchoscope (or trachea). Without appropriate adjustments complications such as that reported can result.

The other point to be remembered is that even at reduced injector pressures, the injected gas must have a way to escape in order to prevent the possible ball-valve obstruction described. Our technique, utilizing a small bronchoscope, avoids this complication but is not always the ideal choice for laryngeal surgery. Smith's² and Carden's⁵ methods are alternatives so long as meticulous attention is paid to the necessary pressure adjustments and the O_2 catheter

can be disconnected instantly to prevent overinflation of the lung.

We have used the Sanders' technique for more than 13 years without a single serious complication, and are convinced that it is the method of choice, particularly for infants.

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Ionized Calcium Concentration and Q-T Intervals

To the Editor:—In their recent article¹ Scheidegger and Drop indicated that corrected Q-T intervals ($Q-T_c$, $Q-oT_c$) increased when serum ionized calcium concentration ($[Ca^{++}]$) decreased. We believe, however, that the relationship between these variables should be more clearly defined to assess the clinical significance of this information. Investigating the hemodynamic effects of massive blood replacement, we have proven² that a logarithmic correlation existed, where $[Ca^{++}]$ was the independent variable and $Q-T_c$ and $Q-oT_c$ were the dependent variables (fig. 1). The correlation coefficient was 0.835, and the determination coefficient, 0.697. A linear regression resulted in a significantly lower correlation coefficient (0.600). As a consequence, changes of $Q-T_c$, $Q-oT_c$ were indicative only of changes of serum ionized calcium concentration when the latter decreased below 0.5 mM. Recently, investigating metabolic consequences of the transfusion of large volumes of citrated blood and blood products, we again verified the existence of a logarithmic relationship between $[Ca^{++}]$ and $Q-T_c$, $Q-oT_c$.³ Our data also indicated that patients with normal serum ionized calcium levels

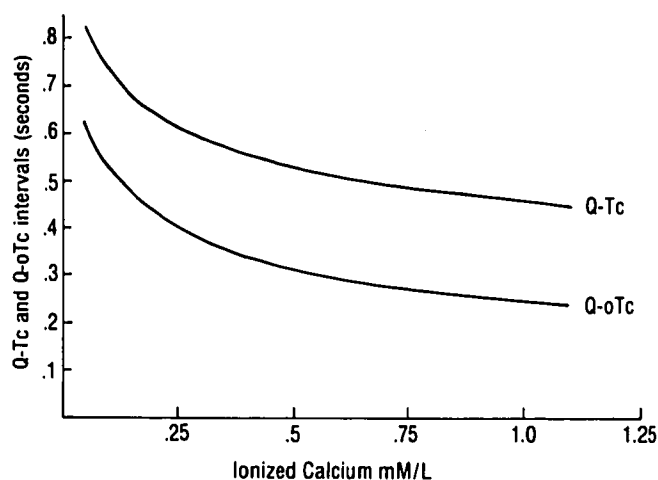


FIG. 1. Logarithmic regression of $Q-T_c$ and $Q-oT_c$ on serum ionized calcium concentration. Reproduced by permission of *Surgery, Gynecology and Obstetrics* (Howland WS, Schweizer O, Carlson GC, et al) 145:581-586, 1977.

(0.9–1.1 mM) required a transfusion of 10 l of blood, before their ionized calcium decreased below 0.5 mM, where influences on Q-T intervals could be detected.