anaesthetist can monitor the pulse, observe respirations and support or elevate the mandible by reaching across the patient's chest from the front when access to the head is blocked by the seated dentist and his assistant.

DONALD BLATCHLEY
London

REFERENCES


ACID PULMONARY ASPIRATION

Sir,—Dr Gordon Taylor's report (1975) on "Acid pulmonary aspiration" occurring following the aspiration of gastric contents with a pH of 3.5 is extremely disquieting to those of us who use prophylactic antacids and have, hitherto, considered a pH of 2.5 as critical. Careful scrutiny of the time sequence, however, casts doubt on whether or not aspiration really occurred at the stated pH. The patient's first dose of antacid was at 2 a.m. and the second dose, 5.5 hr later at 7.30 a.m. Our work shows that an interval of more than 4 hr after ingestion of oral antacid may be followed by acid rebound (Roberts and Shirley, 1974). Hence it is possible that at 7.30 a.m., the pH was lower than it would have been had the first dose been omitted, particularly in view of the large volume involved. Aspiration occurred at 7.50 a.m., 20 min after the second oral dose of antacid. At 8.00 a.m., more senior anaesthetic assistance arrived and the gastric sample was stated to be taken at the time of endotracheal intubation. We must assume that some time passed during which the senior anaesthetist performed endotracheal intubation and brought the situation under control. As such, 8.05 a.m. is probably the earliest time at which the sample could have been taken. Our own work shows that up to 30 min may be required for adequate mixing and buffering of gastric contents by antacids, and if the pH was 3.5 at 35 min after ingestion of antacid, it was not necessarily 3.5 at 20 min after ingestion.

The use of a mixture of aluminium and magnesium hydroxide in 200 cases resulted in the increase of the pH to more than 5 in 67% of elective Caesarean sections and 64% of vaginal deliveries. However, if the antacid was given more than 4 hr before delivery, only 27% and 30% of patients in the latter two groups respectively had a pH higher than 5, while 64% and 44% of patients in the same two groups had a pH of below 2.5.

I believe Dr Taylor's present contribution in no way diminishes the value of his classical work in introducing the use of prophylactic antacids (Taylor and Pryse-Davies, 1966), but points out again that prophylactic antacids are only one of a number of preventive measures which must be adhered to rigorously in order to prevent the occurrence of the acid pulmonary aspiration syndrome.

R. BRYAN ROBERTS
New York

REFERENCES


Sir,—Thank you for allowing me to respond on this subject. Dr Roberts highlights the time sequence accurately and presents a valid argument. However, there are a number of points which led me to believe that the critical value may be higher than pH 2.5 in man:

1) The critical value of pH 2.5 in man should be considered as arbitrary and is based solely on animal experiments. There is a species difference of critical pH (rats pH 1.7; rabbits pH 2.1-2.4) (Teabeaut, 1952; Taylor and Pryse Davies, 1966, 1968). No information is available relating to critical pH in man.

2) Mixing of magnesium trisilicate and stomach contents with the subsequent elevation of pH occurs very quickly, particularly with patients in labour. This was shown by aspiration of gastric contents of mean volume 150 ml (range 47-348) and pH greater than 4.6 (range 4.6-6.6) from five patients in whom the mixing time was less than 20 min.

3) In vitro unpublished experiments by the author, mixing antacid and acid, show that equilibration takes place within 5 min and that 70% of the equilibrated pH will be attained within 2 min.

Therefore I believe that the critical pH of 3.5 is reasonably accurate at the time of the aspiration incident in this patient. For those who take the opposite view, I would plead that the details of this case report be retained for use when more evidence becomes available.

GORDON TAYLOR
Stanford, California

REFERENCES


COMPUTING ACID BASE STATE

Sir,—The article by Blackburn, Preston and Strickland (1975), entitled "A simple method for computing acid base state", is one of the most outrageous and fallacious pieces of work ever published in the anaesthetic literature. To call this "a simple method" and to conclude that their results are sufficiently accurate for clinical purposes shows that the authors must be living in some "plastic tower".

First, anyone who has read the original article will have to agree that the method is not simple. Using two aliquots