sidering patients requiring anesthesia during the first trimester with the same regard for the dangers of regurgitation as the patient in later pregnancy."[2] Authors of recent review articles recommend intubation for surgical procedures during pregnancy.[3],† However, Levinson and Schnider consider intubation "necessary," only during the third trimester or "any time during pregnancy if she has symptoms of esophagitis."[4]

A previous study[5] from White *et al.*'s institution reported on the number of patients undergoing midtrimester abortions at risk for aspiration. Thirty-seven per cent of these patients had a gastric *p*H less than 2.5 and a gastric volume of greater than 25 ml. In the control group of nonpregnant outpatients, 45% of the patients were at risk of developing aspiration pneumonia if aspiration occurred. In contrast, a study of nonpregnant outpatients by Ong *et al.*,[6] showed 85% of the patients had a *p*H less than 2.5 and a gastric volume greater than 25 ml.

Perhaps the authors did not mention preoperative measures taken to decrease gastric volume and increase *p*H. The literature does not mandate intubation in these patients. Rapid-sequence induction and intubation are the most conservative approach in conjunction with appropriate pharmacologic treatment to decrease the risk factors for aspiration.

† Blass NH: Non-obstetric surgery in pregnant patient, Annual refresher course lectures, American Society of Anesthesiologists Annual Meeting, Atlanta, 1983, lecture 135, pp 1–5.

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In reply:—Drs. Dehring and McDonald ask an extremely important question, are outpatients undergoing elective midtrimester abortions at increased risk for aspiration? Unfortunately no clear answer emerges from existing data. The study most relevant to that question was by Wyner and Cohen[1] who found no significant difference between pregnant and nonpregnant (control) outpatients in terms of their residual gastric volume at the time of induction. These investigators demonstrated that early pregnancy (<20 wk gestation) conferred "no additional anesthetic hazard due to a large gastric volume or low *p*H."

Other investigators[2] reported greater residual gastric volumes in nonpregnant outpatients than in a comparable group of inpatients. They recommended the use of oral antacids before outpatient anesthesia. Unfortunately, colloid antacid suspensions can produce serious pulmonary sequelae if aspirated, and the only widely studied nonsuspension antacid, sodium citrate, has been unreliable in neutralizing gastric acid. Furthermore, all antacids increase gastric fluid volume.

A recent study by Manchikanti and Roush[3] reported no increased risk of aspiration pneumonitis in outpatients undergoing elective surgery compared with a similar group of inpatients. However, these investigators recommended the "addition of cimetidine, 300 mg, po, to preanesthetic preparation of outpatients" because 48% of these patients (*vs.* 40% of their inpatients) were reportedly at risk for acid pneumonitis as a result of a high residual gastric volume (>20 ml) and low gastric *p*H (<2.5). Given the inherent unpredictability of aspiration, is it prudent to require that every outpatient (and inpatient) receive preoperative prophylaxis with an H_2-receptor antagonist? A recent editorial concluded that "patients receiving anesthesia by face mask without an endotracheal tube can and should be protected against the

acid component of pulmonary aspiration injury with preoperative cimetidine or ranitidine."[4]

Given data available from the anesthesia literature, I am not convinced that prophylactic antacid and/or antisecretory therapy is required in the fasted outpatient undergoing a midtrimester abortion.[5] If aspiration occurs, a low gastric *p*H and/or a high residual volume presumably would result in a higher incidence of acid pneumonitis. However, there are no data to support the belief that outpatients are at increased risk (*vs.* inpatients) to developing aspiration pneumonia. At what gestational age does pregnancy produce significant alterations in gastric fluid volume and *p*H? Although the answer to this question is not known, I routinely administer metoclopramide (Reglan®), 10–20 mg, iv, to outpatients undergoing late second trimester abortions (≥20 wk gestation). Metoclopramide is an antiemetic that accelerates gastric emptying, increases lower esophageal sphincter tone, and decreases gastric volume without prolonging recovery from anesthesia.[1,6] The combination of cimetidine (or ranitidine) and metoclopramide would seem to be a rational premedicant for these patients.[7] In outpatients with symptoms of esophagitis, I would consider the use of a rapid-sequence induction technique and placement of an endotracheal tube. However, the stimulation associated with laryngoscopy and intubation will increase the amount of anesthetic required and might contribute to a delayed recovery following outpatient anesthesia. Furthermore, postanesthetic morbidity (*e.g.*, sore throats, myalgias) is increased in outpatients requiring endotracheal intubation.[8]

Finally, the high incidence of preoperative nausea and vomiting in this surgical population presumably relates to the effects of early pregnancy, since we do not use prostaglandin abortifacients. However, this does not necessarily imply that they are at increased risk of aspiration. In over 10 years experience with outpatient gynecologic surgery (including many late midtrimester abortions) at Stanford, there have been no reported cases of aspiration pneumonia. Thus, I would question the routine use of H_2-receptor antagonists in this elective surgery population.

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In Defense of Restricting Oxygen in Bleomycin-treated Surgical Patients

To the Editor:—A recent article in ANESTHESIOLOGY entitled "Supplemental Oxygen Does Not Cause Respiratory Failure in Bleomycin-treated Surgical Patients"[1] challenges the results of our series,[2] which recommend the use of low concentrations of inspired oxygen during operation and in the immediate postoperative period on patients previously treated with bleomycin and careful monitoring of fluid replacement including restriction of crystalloids in favor of colloids. We believe the method of study and data presented do not support the conclusions of LaMantia *et al.*

The number of patients who received 30% O_2 or greater was 13, a very small series on which to base definitive conclusions. The authors do not state which patients or the number of patients who had pulmonary function tests (PFTs) and blood gas analysis. Terms such as "when available" or "most cases" are difficult to analyze. They state three patients had markedly abnormal preoperative PFTs. These data are not presented, nor is the group to which these three patients belong. The authors pass over these abnormal PFTs by stating "the importance of this observation is unknown." All the patients