

CLINICAL CONCEPTS AND COMMENTARY

Richard B. Weiskopf, M.D., Editor

The following correspondence refers to a previously published Clinical Concepts and Commentary article by Rosen (Rosen MA: Management of anesthesia for the pregnant surgical patient. ANESTHESIOLOGY 1999; 91:1159-63).

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Carbon Dioxide for Obstetric Pneumoperitoneum

To the Editor:—Dr. Rosen¹ provides a comprehensive review of anesthesia for the pregnant surgical patient, including some recommendations for the increasingly frequent procedure of laparoscopy during pregnancy. One of his recommendations is the use of nitrous oxide in place of carbon dioxide for establishing pneumoperitoneum.

This is a major departure from current clinical practice and deserves better supporting evidence than any provided in Dr. Rosen's review. His sole reference regarding obstetric laparoscopy is a study of the Swedish Health Registry from 1973-1993,² which compares complications of laparotomy with complications of laparoscopy. That article does not describe details of laparoscopic technique. However, one of the same authors³ published a 1997 survey of 16,329 laparoscopic surgeons that reported details of 413 laparoscopic cases during pregnancy, and 100% of those cases used carbon dioxide for pneumoperitoneum.

During pregnancy, special care should be taken to keep the intra-abdominal pressure low (less than 15 mmHg) and maintain maternal normocapnia. Using these precautions, for several important reasons, including noncombustibility and easy, rapid elimination, carbon dioxide is the gas of choice for creating pneumoperitoneum.

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In Reply:—I appreciate the thoughtful comments expressed by Drs. Pennington and Stein about the Clinical Concepts and Commentary article concerning management of surgery for the pregnant patient. Because of imposed limitations on the number of references, the only referenced article about laparoscopy and pregnancy was from the Swedish Health Registry;¹ however, mention was made in my article about "several case reports of success in the late second and early third trimesters" using laparoscopic techniques. Not mentioned were case reports of problems with the technique, including trocar injuries resulting from the limited operative space and respiratory acidosis resulting from carbon dioxide insufflation.² Currently, techniques of gasless laparoscopy during pregnancy are being used at some institutions.³

The precautions recommended were not from the Swedish Health Registry data, which did not address the use of low intraabdominal pressure, the use of pneumatic stockings, or the choice of gas for

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creating pneumoperitoneum. The precautions represented suggestions from case reports in the literature. I agree that carbon dioxide has become the gas of choice in creating pneumoperitoneum and has the benefit of noncombustibility. Nitrous oxide can be a useful alternative to avoid the respiratory acidosis reported with use of carbon dioxide. I use carbon dioxide when electrocautery is employed, with attention to end-tidal carbon dioxide (ET_{CO₂}) and arterial carbon dioxide tension (Pa_{CO₂}), maintaining the normally reduced values during pregnancy, to avoid acidosis.

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The following correspondence refers to a previously published Clinical Concepts and Commentary article by Mangano (Mangano DT: Assessment of the patient with cardiac disease: An anesthesiologist's paradigm. *ANESTHESIOLOGY* 1999; 91:1521-6).

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Preoperative Cardiac Assessment Has to Take into Account the Type of Surgery

To the Editor:—We read with interest the Clinical Concepts and Commentary article by Dr. Mangano entitled "Assessment of the Patient with Cardiac Disease."¹ It is a complete review of the subject by one of the preeminent authorities, and it discusses everything from preoperative workup to specialized testing. Dr. Mangano's view of the anesthesiologist as the primary medical caregiver fits with the new role of anesthesiologists as perioperative physicians. At our preadmission test center, the anesthesiologist examines the patient. Based on physical examination, history of cardiac disease, risk factors for cardiac disease, and functional status, the anesthesiologist makes a decision about whether the patient needs further workup by the primary care physician or a specialist. However, what Dr. Mangano fails to mention is the role that the type of surgery plays in this workup. The American College of Cardiology/American Heart Association guidelines for perioperative cardiovascular evaluation for noncardiac surgery state that other factors, including type of surgery, can help determine cardiac risks.² For example, major surgery, such as repair of an abdominal aortic aneurysm, is associated with more hemodynamic change than minor surgery, such as cataract surgery. A recent *New England Journal of Medicine* article showed that routine medical testing before cataract surgery did not cause a decrease in mortality or morbidity, even when stratified according to coexisting disease, regardless of severity.³ In an accompanying article, Roizen equates modern anesthesia for low-risk procedures in otherwise well-managed patients with getting a haircut.⁴

In summary, we believe that not only history, physical examination,

and functional capacity but also type of surgery should guide the anesthesiologist in ordering preoperative tests and consults.

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