

# Literature Briefs

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Literature briefs were submitted by Drs. R. B. Clark, P. J. Cohen, and J. Tinker. Briefs appearing elsewhere in this issue are part of this column.

## Circulation

**LEFT VENTRICULAR FUNCTION** So varied, numerous, and complex are the methods for "measuring" myocardial contractility (i.e., left ventricular function), that most clinical anesthesiologists tend to shy away from the mere mention of the terms. Actually, in man, the recording and analysis of left ventricular pressures and/or left ventriculography are the usual invasive means. This is a detailed study of 38 patients, looking specifically for documentable left ventricular dysfunction. Ejection fraction, ventriculographic contraction patterns, and left ventricular end-diastolic pressure represent the more easily comprehended techniques used. Others included contractile element velocity at 10 mm Hg ( $V_{CE,10}$ ) and maximal contractile element velocity ( $V_{max}$ ). Of the 38 patients studied with all these methods, 24 were found to have significant left ventricular dysfunction. Left ventricular end-diastolic pressure (LVEDP) identified 15 of these, as did ejection fraction. The other indices were less sensitive; however, the authors conclude that no single method of assessing left ventricular function is sufficiently sensitive to find all instances of dysfunction. It is reassuring to note that the old standby LVEDP was the most sensitive index. Anesthesiologists assessing catheterization data prior to open cardiac surgery have relied heavily upon LVEDP in the past and, according to this study, should continue to do so. (Kreulen TH, and others: *The Evaluation of Left Ventricular Function in Man: A Comparison of Methods. Circulation* 51: 677-688, 1975.)

**UTERINE BLOOD FLOW** Uterine blood flow and metabolism were estimated at cesarean section under general anesthesia in pregnant women at term with the use of the

Fick principle with nitrous oxide as the test material. Observations were made without superimposed maternal metabolic acidosis and during the infusion of ammonium chloride. Increasing maternal metabolic acidosis was accompanied by a decreasing rate of blood flow in the uterine circulation. There was no statistically significant difference in the metabolic rate of the uterus and its contents during maternal metabolic acidosis induced by the infusion of ammonium chloride. (Blechner JN, Stenger VG, Prystowsky H: *Blood Flow to the Human Uterus during Maternal Metabolic Acidosis. Am J Obstet Gynecol* 121: 789-794, 1975.)

## Tracheostomy

**TRACHEAL INTUBATION AND MUCOSAL INJURY** The authors use scanning electron microscopy to examine the tracheal mucosa of healthy mongrel dogs under the following conditions: 1) anesthesia alone; 2) tracheal intubation for two hours (cuff not inflated), followed by sacrifice; 3) tracheal intubation for two hours (cuff inflated to the lowest possible pressure), followed by sacrifice; 4) tracheal intubation for two hours with cuff inflated to the lowest possible pressure, with sacrifice after two or seven days. Intubation without inflation of the cuff resulted in the development of distinct linear areas nearly denuded of cilia along the tract followed by the tracheal tube. Inflation of the cuff was associated with similar but more widespread changes, especially over the tracheal rings. Regeneration of tracheal cilia was seen 48 hours after extubation, although considerable distortion remained. By seven days, restoration of normal architecture was nearly complete, yet scattered areas of denudation were still observed. The authors conclude that even with meticulous attention and the use of low cuff pressure cuffs, tracheal injury may still be an unfortunate complication of tracheostomy or tracheal intubation. (Klainer AS, and others: *Surface Alterations Due to Endotracheal Intubation. Am J Med* 58: 674-683, 1975.)