

ANESTHESIOLOGY

■ Intubating LMA Compared in Obese and Lean Patients. Combes *et al.* (page 1106)

Combes *et al.* enrolled 50 morbidly obese and 50 lean patients (mean body mass indices of 42 kg/m² and 27 kg/m², respectively) in their study to evaluate the efficiency of the modified laryngeal mask airway device in effecting airway management. Eight senior anesthesiologists with experience in laryngeal mask airway but without experience with the intubating laryngeal mask airway device participated in the study. During each procedure, a senior investigator with extensive tracheal intubation experience was present to assist airway management.

Study participants were scheduled for a variety of abdominal, orthopedic, or cardiac procedures. At the preoperative visit, investigators recorded patients' Mallampati classification (performed in the sitting position, tongue out with phonation), thyromental distance (measured with the patient in the sitting position, head extended), and the interincisor distance. Electrocardiography, pulse oximetry, noninvasive blood pressure, and end-tidal carbon dioxide tension were monitored in the operating room. An independent observer recorded characteristics of airway management, including number of patients requiring more than one insertion attempt, number of failed blind endotracheal tube insertion attempts, total duration of the airway management procedure, and overall difficulty of airway management (using a 100 mm visual analogue scale).

The intubating laryngeal mask airway was successfully inserted and adequate ventilation achieved in all 100 patients. Study anesthesiologists had a 94% success rate with lean patients and a 96% success rate with the obese patients. Only two of the obese patients had failed intubations, and four experienced transient hypoxia prior to placement of the intubating laryngeal mask airway. The numbers of failed blind tracheal access attempts and patients requiring airway-adjusting maneuvers were significantly reduced in obese as compared to lean patients. In this study, the intubating laryngeal mask airway was an efficient airway device, and actually proved simpler to use in the obese patients.

■ Positioning of Obese Patients May Influence Desaturation Safety Period. Dixon *et al.* (page 1110)

Severe obesity increases risk of hypoxia during the induction period, due to a variety of possible conditions. Dixon *et al.* hypothesized that posture may influence the

effectiveness of preoxygenation, performed to maximize intrapulmonary oxygen reserves without reducing oxygen saturation.

Accordingly, the team recruited 42 severely obese patients scheduled for laparoscopic adjustable gastric band surgery and randomized them to the supine or 25° head-up position for preoxygenation and induction of anesthesia. Those randomized to the 25° head-up position (achieved with operating tables hinged at patient's hip position) also had their surgeries performed in this position. Serial arterial blood gases were taken prior to and after the three-minute preoxygenation period, and 90 s postinduction. Ventilation was delayed until blood oxygen saturation reached 92%; investigators recorded this desaturation safety period for each patient.

Study participants randomized to the 25° head-up position achieved higher preinduction oxygen tensions and took longer to reach an oxygen saturation level of 92%. The 23% higher oxygen tensions observed in the 25° head-up position group allows more time for achieving intubation and airway control. Using this type of positioning in obese patients may provide anesthesiologists with a greater safety margin for airway control.

■ Outcomes in 15 Cases of Severe Pulmonary Hypertension during Pregnancy. Bonnin *et al.* (page 1133)

Improved management of patients with pulmonary hypertension has increased life expectancy and resulted in more women of childbearing age considering pregnancy. Have maternal and fetal outcomes improved for women with pulmonary hypertension who become pregnant? To add more clinical data to this question, Bonnin *et al.* reviewed charts from 15 cases of pregnant women with pulmonary hypertension managed at their institution between 1992 and 2002.

The mean age of the pregnant women was 32. One of the women had two pregnancies 6 yr apart. Six had congenital heart disease-associated pulmonary hypertension, four had idiopathic pulmonary hypertension, two had chronic thromboembolic pulmonary hypertension, and the remaining women had pulmonary hypertension due to other causes.

Only five of the 14 women remained stable throughout their pregnancies. Two of the women, hospitalized at 12 and 23 weeks, respectively, because of acute hemodynamic instability, died before therapeutic abortions

could be performed. Of the four women who delivered vaginally with regional anesthesia, one died 3 months postpartum, one worsened, and two remained stable. Four women had cesarean sections under general anesthesia, and one of those women also died 3 weeks postpartum. One woman of five who had cesarean sections under low-dose combined spinal-epidural anesthesia also died.

These case reviews show that despite the availability of modern medical management, the maternal mortality rate was 36%. Although scheduled cesarean section under combined spinal-epidural anesthesia appeared to be a promising approach, this was not borne out in the resulting outcomes. The authors advised monitoring at delivery with electrocardiogram, pulse oximetry, invasive arterial blood pressure, and slow infusion of oxytocin after placental extraction, among other measures. However, due to the high mortality rate in this series, the authors believe that women with known pulmonary hypertension should be counseled against pregnancy.

■ Analysis of Operating Room Turnover Times Conducted. Dexter *et al.* (page 1242)

In this report, Dexter *et al.* describe a statistical method they developed and validated to estimate the percentage of turnover times that are prolonged and occur at specified times of the day. They obtained operating room data from two academic tertiary surgical suites for a 1-yr period. For purposes of this analysis, a turnover time was considered “prolonged” if it was at least 15 min longer than the mean for the surgical suite. When estimating

the mean turnover time and correlations among successive turnovers, values longer than 90 min were excluded, because these typically included gaps in the operating room schedule due to nonsequential case scheduling, not just cleanup and setup times.

The research team used the Runs Test to assess serial correlation among turnovers sorted by the date and time at which each turnover began. The Lilliefors test was used for normal distributions. Tests were performed using StatXact-6. P values were calculated using exact methods. Sample mean turnover times from 29 other hospital surgical suites in the United States were used for comparison.

At Hospital A, the sample mean \pm SD of turnovers was 37 ± 16 min. There was a significant positive serial correlation from one turnover to the next turnover, as well as a significant correlation from one daily average to the next daily average. At the second hospital, the mean \pm SD of turnovers was 36 ± 16 min, but there was no correlation among daily averages. The confidence intervals achieved family-wise type I error rates accurate to within 0.5% when applied to between five and nineteen 4-week periods of data. The diurnal pattern in the proportions of all turnovers that were prolonged provided more managerially relevant information than the time course throughout the day in the percentage of turnovers at each hour that were prolonged. The authors suggest that, using such analyses, managers could target quality improvement efforts to times of day with the largest percentages of prolonged turnovers.

Gretchen Henkel