of gas exchanged but also on the patient's cardiac output and hemoglobin concentration. As detailed in our article,[1] the method used to determine oxygen and carbon dioxide transfer across the IVOX membrane makes special technologic demands. Schmidt *et al.*'s letter omits any details of this measurement. Particularly, the calculation of oxygen exchange is difficult because of both the small difference between the inlet and outlet oxygen mole fractions and the difference in total gas flow rate in and out of the IVOX caused by different rates of carbon dioxide and oxygen transfer.

We agree that earlier intervention in the course of ARDS with such modalities as IVOX may reduce the effects of mechanical ventilation, but we believe when and how to intervene with IVOX has not yet been determined. Because of the wide variation in clinical outcome with adult respiratory distress syndrome, a randomized, prospective study with rigorous entry criteria will be needed to demonstrate the efficacy of IVOX.

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(Accepted for publication March 22, 1993.)

Anesthesiology
78:1195–1196, 1993

A New Transparent Disposable Plastic Face Mask for Children and Adults

To the Editor:—Since the introduction of the anesthesia face mask in the last century, many significant improvements in face mask design and fit have been made, including removable head-strap hook-rings, malleable nasal bridges, and inflatable facial cushions with Luer-lock filling nipples. More recent design advancements have included low-dead-space masks, especially the pediatric Rendell-Baker/Soucek masks,[1] and transparent masks that permit close observation of color changes and secretions.

Foreign and domestic medical product companies have now flooded U.S. markets with a profusion of new plastic face masks in a variety of colors, shapes, sizes, and even scents. As the new products meet the current markets at higher costs, anatomy remains the same, and the perfect mask fit remains elusive.

There are only seven basic facial shapes—all of which change from flat to angular with age (fig. 1). Thus, there always will be a need for face masks in child and adult sizes. Rarely, uncommon conditions such as mucopolysaccharidoses and craniofacial deformities so distort facial anatomy that unusual face mask applications are needed to improve mask fit. I recently recommended the upside-down application of an air-cushioned pediatric face mask for children with Hurler syndrome.[2] With this application, the broad chin edge of the mask contours to frontal bossing, and the narrow nasal bridge covers a small mouth and contains a protruding tongue.[2]

Figure 2 depicts a new transparent plastic face mask, featuring a body of malleable plastic sheeting that can be hand-molded easily to fit the seven basic facial shapes shown in figure 1. The new face mask also has a removable head-strap hook-ring, a malleable nasal bridges, and an inflatable facial cushion with a Luer-lock filling nipple. Child sizes include premie, neonate, infant, preschool, and school-aged. Scents may be impregnated by manufacturers or selected by the child and applied by the anesthesiologist. Adult sizes include small, medium, and large.

Such a new face mask design would combine modern improvements, the latest plastics technology, and a unique capability to be hand-molded to the seven basic facial shapes by the anesthesiologist (fig. 1). If adopted by manufacturers, such a face mask may bring anesthesiologists closer to that elusive perfect mask fit.

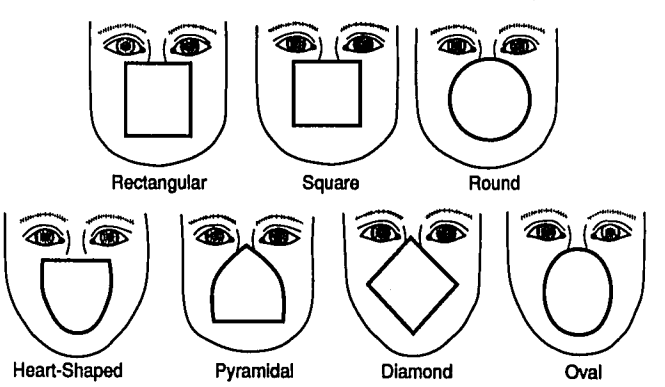

Fig. 1. The seven basic facial shapes with an overlay of transparent plastic sheeting that is malleable enough to be contoured to fit the underlying shape.

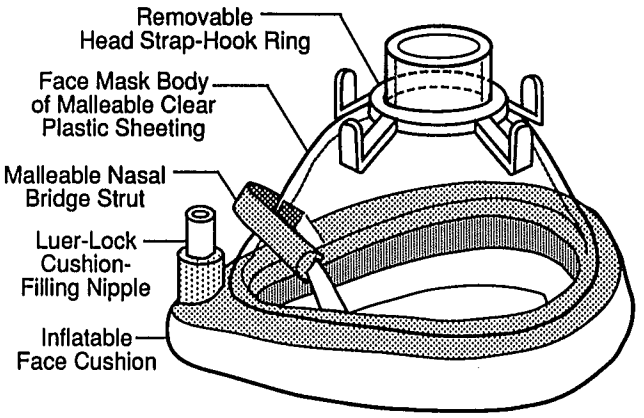

Fig. 2. A new transparent disposable plastic face mask for children and adults.

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(Accepted for publication March 22, 1993.)

Anesthesiology
78:1196–1197, 1993

An Unusual Cause of an Erroneous Noninvasive Blood Pressure Reading

To the Editor:—The Dinamap monitor uses the oscillometric principles in the measurement of blood pressure (BP). The accuracy of the measurement, however, depends on selection of the proper cuff size. Using a cuff that is too small results in erroneously high BP readings.[1] We would like to report a case in which erroneously low BP readings resulted from the use of a standard arm cuff for a moderately obese individual.

A 72-yr-old woman underwent right neck dissection for metastatic melanoma under general anesthesia. Her past medical history was significant for well controlled hypertension. She was 165 cm tall and weighed 83 kg. Her preoperative BP was 150/90 mmHg. A Dinamap monitor (model 8150, Critikon, Tampa, FL) was used for intraoperative BP measurement. A standard adult cuff was positioned so that the center of its bladder was on the medial side of the patient's right arm over the brachial artery. The cuff did not evenly encircle the arm, which was conical in shape. A large adult cuff was not used because it was found to be too wide for her relatively short arm. The patient's right arm was then securely tucked by her side to facilitate the surgeons' access to the right neck.

The patient remained hemodynamically stable during induction of general anesthesia and through the 1st h of surgery. Unexpectedly, the Dinamap indicated that the patient's BP had decreased to 70/40 mmHg with minimal change in the pulse rate of 70 beats/min. Repeated measurement yielded similar readings with no indication of difficulty in obtaining a signal. The blood loss at that time was minimal, and there was no change in the intensity of the surgical stimulus, nor was the surgical manipulation close to areas of the neck with rich autonomic innervation. Bolus injections of neosynephrine and ephedrine produced a temporary increase in the systolic blood pressure of only 10–15 mmHg. It was noted, in the meantime, that the patient had a strong left radial artery pulse, the pulse oximeter had a good signal, and the surgical field appeared well perfused. A left radial artery catheter was placed, which showed that the patient's BP was 180/100 mmHg, whereas the Dinamap readings were still low.

The source of the discrepancy became obvious when the Dinamap cuff was inspected. The cuff's velcro had become unfastened and the cuff was hanging open. The cuff's inflatable bladder, however, remained trapped between the patient's body and her arm and, therefore, continued to detect the arterial oscillations.

The upper arm of this patient, being large, short, and conical, was not the ideal site for placement of the BP cuff. It is recommended that, in this situation, another site, such as the forearm or the ankle, be used.[1]

In conclusion, if an imperfectly fitting Dinamap BP cuff becomes loose, it may continue to display erroneously low BP readings instead of displaying a faulty signal alarm if the inflatable bladder remains trapped between the patient's chest and the medial side of a tightly tucked arm. If not recognized, this could lead to unnecessary and potentially harmful intervention.

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