

## CORRESPONDENCE

Anesthesiology  
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### Primary Closure of Omphalocele/Gastroschisis in Newborns

*To the Editor:*—We read with interest and concern the article "Hemodynamic effect of primary closure of omphalocele/gastroschisis in human newborns."<sup>1</sup> The study hypothesized that development of increased intragastric pressure (IGP) during primary surgical repair would be associated with postoperative organ system failure in infants with ventral wall defects, and sought to determine other physiological parameters that might provide objective, predictive criteria for safe primary closure. Yaster's finding of a critical IGP of 20 cm water confirms the earlier report of Wesley *et al.* that IGP should not exceed 20 cm of water with or without a silastic silo in repair of omphalocele/gastroschisis.<sup>2</sup> Wesley also established experimentally in a series of five puppies that cardiac output and mean blood pressure were compromised most notably between IGP of 22 and 28 cm of water. He found IGP to be an objective and reliable parameter, as opposed to the previous practice of observation of color, respiratory rate, and lower-extremity skin turgor.

The current report does not differentiate between omphalocele and gastroschisis. Recent literature, especially as regards *in utero* assessment of ventral wall defects, indicates that while the bowel in omphalocele is normal, that in gastroschisis is often edematous and inflamed.<sup>3</sup> If the bowel in gastroschisis is not forced into the abdomen, nor into a tight silastic chimney under pressure, the edema subsides in 24 to 48 h, allowing replacement into the abdominal cavity with ease and safety.<sup>4,5</sup> Of the other physiologic parameters which Yaster *et al.* measured, only CVP and cardiac index (CI) also predicted which infants could be safely closed primarily. Both CI and CVP are more difficult to measure, require invasive technology, and proved to be no more accurate than simple measurement of IGP in predicting safety of closure.

In this series, 50% of infants in whom the abdomen was closed primarily required re-exploration for oliguria, anuria, and/or compromised cardiac output postoperatively. In light of the established safety of silastic pouch technique and previous reported series, this morbidity should be considered excessive.<sup>2,4,5</sup> Since this was neither a blinded nor random study; we question the wisdom of continuing the experimental protocol after the first unsuccessful forced primary closure, and certainly after the second.

In the interests of expanding knowledge for the eventual betterment of medical practice and patient care, research on human subjects must continue, but we must remain constantly vigilant that individual patient welfare not be jeopardized.

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*In Reply:*—The treatment of choice for abdominal wall defects (either omphalocele or gastroschisis) in newborn infants is primary repair whenever possible.<sup>1,2</sup> In our institution, the alternative therapy, a staged repair utilizing a silastic pouch, is used only when, in the surgeon's clinical judgement, the herniated viscera can not be reduced because of the size of the defect or if reduction compromises respiratory and cardiovascular function. Unfortunately, clinical observation of the infant's respiratory rate, blood pressure, skin color, and tissue turgor are not reliable in (fentanyl) anesthetized, paralyzed patients.<sup>3</sup> Because our anesthetic practice changed from spontaneous ventilation of an-

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esthetic vapors to balanced anesthesia with controlled ventilation, we sought to determine if specific, physiologic, intraoperative measures could provide our surgeons with objective, predictive criteria for safe primary closure of either omphalocele or gastroschisis.

In our study, published in *ANESTHESIOLOGY*,<sup>4</sup> we found that intraoperative changes in intragastric pressure, central venous pressure, and cardiac index could successfully distinguish infants who successfully or unsuccessfully underwent primary surgical closure. These were retrospectively determined data. Based on our results, we set up a treatment algorithm to determine prospectively if measurement of either