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Commentary: Relax and breathe

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The multicenter randomized clinical trial reported by Liu and colleagues¹ challenges the operative comfort zones of thoracic surgeons accustomed to selective positive pressure ventilation. For thoracic surgeons and anesthesiologists to relax enough to let their patients breathe spontaneously during minimally invasive surgery, sufficient equipoise and potential benefits are needed to stoke the desires for disruptive technologies.

First, we should suppress our natural tendency dismiss this trial's results because its study population was different from our own. Notably, body mass index was relatively low and patient health (including pulmonary function) was relatively high. Yet, this was the case preference by thoracic surgeons during the early experiences of modern thoracoscopic surgery. Another issue was that mechanical pleurodesis did not accompany these operations. Yet, there are data suggesting that, although popular, scarification may not be necessary.²

So what theoretical advantages exist to warrant disrupting reasonably safe surgical anesthesia systems that provide quiet operative fields for challenging procedures? Fundamentally, natural physiologic mechanisms are innately biocompatible and likely to clear secretions, balance ventilation/perfusion, and signal warning if not overly suppressed. Mechanical ventilation of any duration is associated with nosocomial infection, especially with the uncertainty of bronchial toilet during selective intubation. Selective intubation requires deeper anesthesia that reduces the need for local anesthetic or regional blocks required by sedated patients. However, these blocks also reduce the downregulation of spinal inhibitory neurons which can cause acute and prolonged pain.³ Prolonged video-assisted thoracoscopic surgery operations may have more

CT image of a bronchial injury caused by double lumen tube placement.

CENTRAL MESSAGE

Spontaneous, nonintubated patient ventilation is another step toward less-invasive thoracic surgery and is comparable to previous challenges that have been overcome.

associated complications because of synergistic mechanisms like amplified pain and other pneumonia-promoting etiologies.⁴

What if? failure scenarios are major psychologic barriers for experienced professionals. Fortunately, low-risk airway patients can be intubated safely in lateral decubitus positions using standard, laryngeal mask, or various endoscopic techniques.^{5,6} An advanced bronchial blocker or exchange catheter for double-lumen intubation then follows. Temporary wound closure with adhesive barrier dressing allows rapid repositioning, if necessary. Severe complications of airway conversions are possible, but are they really more intimidating than thoracotomies for video-assisted thoracoscopic surgery bleeding? On balance, are such bad scenarios going to be more common than double-lumen tube complications caused by immediate perforations (Figure 1) or glottic dysfunctions leading to aspiration in older adults.^{7,8}

Programmatically, this effort requires anesthesiologists who are willing to extend their efforts toward the above interests. Such work promotes dedicated thoracic anesthesiology teams, which are also desirable. Also, these services parallel or expand medical thoracoscopic programs often driven by interventional pulmonologists. Once established, frail patients could benefit even more by extending these less-invasive programs. Successful, nonintubated thoracic surgery programs have been established for a long time in the United States at innovative centers like the Geisinger Health System.⁹

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FIGURE 1. Computed tomography image of a bronchus intermedius injury caused by double lumen intubation that, while contained, required cancellation of the planned left-sided video-assisted thoracoscopic surgery procedure (arrow indicates site of perforation on axial image and contained pneumothorax on coronal view).

Now that our anesthesia and surgeon colleagues have produced level-one evidence for us to ponder, it is reasonable to consider adopting the skill of operating on anesthetized, spontaneously breathing patients. We should see if avoiding selective ventilation could benefit specific individuals or our practice as a whole.

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