

Editorial Views

Anesthesia for Thoracic Surgery

IMPORTANT progress in anesthesia played a vital role in making possible the transition of open-chest surgery, from the phase of the sporadic and heroic event, to one of routine clinical practice.^{1,2} The pioneer work between 1900 and 1940 of O'Dwyer, Matas, Rowbotham, Magill, Guedel and Waters, among others, set the stage for the subsequent emergence of a group of surgical pioneers, who shared in the reporting of large series of operations with a satisfactory patient survival. Rarely were they the first to do a given operation; their merit lay in making an operation a clinical reality.

Between 1930 and 1950, Craham, Crafoord, Semb, Churchill, Blalock, Bailey, Brock, Gross and Gibbon, and others, reported the major advances in pulmonary and cardiac surgery. One example of progress was the reduction of mortality of operation for bronchiectasis from more than 25 per cent to less than 5 per cent, within a decade. Improved surgical technique accounted for part of the improvement, but better anesthetic management, as well as the availability of blood transfusion and chemotherapeutics, played an important role.

The period before World War II had been one of innovation and improvement in anesthetic technique and of the introduction of new anesthetics and adjuvants. Following World War II came the period of refinement and physiologic concern. The dramatic reductions in mortality, pre-World War II, may appear far more impressive than subsequent progress. However, we do not know factually,

how small the risk must be, before a surgical procedure is widely applied. A further reduction of an already moderate mortality rate may be particularly worthwhile, because of the consequent acceptance of the procedure in question for wider application.

The first important biological concern was with acidosis. Quite possibly, had the techniques of measurement permitted, oxygenation would have received first priority. Severe degrees of acidosis were shown to occur during and following thoracotomy, and for years the debate raged over the relation of acidosis to the possible metabolic effect of anesthetic agents. This was finally resolved by the demonstration of the acidosis as being of purely respiratory origin, and the need for assisted or controlled ventilation was documented.³ These findings led, perhaps, to an over-emphasis on control of P_{aCO_2} during anesthesia, but this was a small price to pay for the elimination of severe acidosis.

The biological concern of the last decade has been with oxygenation. Mostly, this was with the pattern of ventilation, as well as with minute volume, and with the general problem of increased physiologic shunting.^{4,5} Haldane had defined this problem in 1918,⁶ but Gordh (1958) deserves credit for the clinical demonstration of "unexpectedly" low values for $P_{a_{12}}$ during anesthesia, despite adequate alveolar ventilation.⁷ Obviously, the presence of an increased physiologic shunt necessitates a high inspired oxygen concentration, and the implication was made by Nilsson,⁸ Slater⁹ and