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Preventing Barotrauma

To the Editor:—Drs. Rendell-Baker and Meyer have made an excellent proposal regarding an alarm-safety mechanism to prevent barotrauma and warn of accidental disconnection from the ventilator.¹ We agree about the need for incorporation of further protective equipment on the gas machine. We endorse completely the concept that any device designed to protect the patient must be activated automatically with the machine if it is to be effective. Frequently this increases complexity and limits versatility. In this light we would like to comment on an alternative approach to circuit pressure safety.

Analysis of cases of barotrauma under anesthesia shows the pressure source that usually causes the damage is not a ventilator but the anesthesia machine. All current machines will deliver pressures capable of rupturing lungs. Ventilators or their connections, where involved, are usually implicated as a source of outflow obstruction not as the source of pressure.

Several authors^{2,3} have pointed out that the inclusion of a fixed pressure relief valve set for some value between 40-60 cm H₂O would effectively prevent barotrauma in current breathing systems. At least two such valves are available currently.^{2,3} Inclusion into the system is easy, requiring nothing more than an appropriate T-connector. They are inexpensive. One of us (BL) is familiar with several English hospitals that use such valves routinely without difficulties.

Limiting the pressure in the system should be adequate to prevent most causes of alveolar rupture. It will not, however, prevent the effects of prolonged pressure application without ventilation. Such a situation would occur if the pop-off valve in a circle were closed and no heed

paid to the ever-increasing size of the reservoir bag. The simple expedient of incorporating an alarm in the relief valve to signal a high pressure should bring rapid correction of this oversight.

The system proposed by Drs. Rendell-Baker and Meyer goes further than the simple relief valve-alarm. It reduces the pressure as well as provides ventilation. We agree that it is more advanced, albeit more complex. It is difficult to imagine such a system as a retrofit item easily attachable to the wide variety of current machines. We feel that, while the proposed design is excellent for the future, a circuit safety valve with alarm represents a more practical solution for present machines. At this time, manufacturers' attention might best be directed toward this simple solution.

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Ventilator Malfunction—Another Cause

To the Editor:—Equipment failure in the anesthetic setting is a constant concern for the anesthesiologist. Numerous reports of such failures have appeared in the literature, often with tragic consequences for the pa-

tient.^{1,2} Although causes of ventilator malfunction are diverse, a previously unreported cause is that of a ventilator malfunction in association with a Drager Volumeter.