

rupture of the right main bronchus with lung contusions and aspiration of blood. Preoperative ventilation during resuscitation was difficult because of the large (unmeasured) fistula flow, and satisfactory gas exchange was never achieved. The bronchial rupture was repaired at thoracotomy, but postoperatively he continued to have loss of ventilation through the fistula in excess of 2.5 l/min with conventional ventilation with a Bennett 7200® ventilator.

Table 1 shows the effect of sequential changes in ventilator settings to reduce mean airway pressure and the resulting effect on fistula flow (derived simply by subtracting expired from inspired gas volumes). With a tidal volume of 250 ml and rate of 60/min, it was possible to achieve a four-fold reduction in fistula flow with consequent improvement in gas exchange, allowing a reduction of inspired oxygen fraction from 0.65 to 0.3. This ventilation was continued for 72 h, after which it was possible to discontinue mechanical ventilation.

Many institutions do not have high-frequency jet ventilators, and there may be concerns about the safety of some of the earlier models that may not have alarm systems and fail-safe circuitry to protect the patient from inadvertent high pressures. It also may not be easy to measure fistula flow directly because of suction and steril-

ity. The purpose of this letter is to illustrate that it is possible to apply the principles recommended by Albelda *et al.*¹ with conventional ventilators. Equipment such as the Siemens Servo 900B®, Bennett MA 2 + 2®, Bennett 7200®, *etc.* will cycle up to 60/min and usually have built-in expiratory spirometers.

This allows for "slow" high-frequency, positive-pressure ventilation with easy documentation of fistula flow by subtraction of expiratory flow from inspiratory volume. (This, of course, measures total leak from all sources, but is sufficiently accurate for practical purposes).

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A Complication of External Jugular Cannulation

To the Editor:—We encountered an unusual complication of external jugular cannulation, a technique favored by many anesthesiologists for central venous access.

A 12-yr-old girl presented for surgical correction of idiopathic thoracolumbar scoliosis with the use of Harrington rod fixation. The patient was anesthetized and a radial arterial catheter was placed percutaneously. Her right external jugular vein was easily cannulated with a Cook 18-g J-wire set (Cook PMS-400J®, Cook, Inc., Bloomington, IN). The flexible J-wire was advanced through the needle easily, and the J-tip could be seen distending the vein along its course to the clavicle. Resistance to advancement was felt at this point, and the wire was withdrawn slightly and rotated and readvanced several times without success in passing into the subclavian vein. At the fourth attempt, the wire was withdrawn slightly and then stuck, and neither it nor the introducing needle could be advanced or withdrawn. An AP film of

the neck and upper chest showed no apparent mechanical problem. It was noted that with gentle traction, the skin puckered at what appeared to be the site of venipuncture. A 0.5 cm incision was made at the entry site, and the vein, needle, and wire were grasped with a small hemostat. The vein wall distal to the tip of the needle was seen to be pinched into the end of the needle and wedged there by the wire guide. Gentle traction on the distal vein and advancement of the wire freed the entrapped vein wall, and the wire and needle were withdrawn together. No abnormalities were apparent in either, and there was no obvious damage to the vein wall. Successful central venous cannulation was carried out with the use of a similar Cook J-wire set in the left external jugular vein.

Vein wall entrapment during central venous cannulation with the use of a Seldinger technique must be very uncommon. Perhaps motion of the needle tip during repeated manipulation of the guide wire raised an intimal

flap that wedged between the wire and the needle wall. This complication may also occur during subclavian or internal jugular cannulation. There, it may require more drastic intervention to remove the entrapped set or lead to significant damage to the vessel wall. Perhaps a safer technique could use a 3.5 inch catheter-over-needle to establish intravenous access, followed by passage of the guide wire, lessening potential damage to the intimal vein wall.

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"Fruit-flavored" Mask Induction for Children

To the Editor:—Mask induction in children could be more acceptable with small modifications, as Smith¹ suggested in his textbook. "Masks can be decorated with designs and colors, and the smell of rubber (and anesthetics) can be disguised by a drop of perfume or fruit extract placed either on the mask or under the children's nose." Several other pediatric anesthesiologists^{2,3,*} like to employ candy or fruit flavoring for most mask inductions so that the mask is made more acceptable.

A small device was designed for adding fruit flavor to anesthetic gases. A hose between the gas outlet of an anesthesia machine and an anesthesia circuit is replaced with a hose with a small chamber filled with urethane mesh (fig. 1). A small amount of fruit extract is injected into the chamber, and when the mixture of gases passes through the chamber, fruit flavor is added to the gases. (The device may be obtained from Termo Co., 2-44-1 Hatagaya, Shibuya-ku, Tokyo, Japan.)

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FIG. 1. A hose with a small chamber for addition of fruit flavor to anesthetic gases. Fruit extract is injected into the chamber by a syringe.

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