strict sterile technique. It is then secured with adhesive and Steri-strips® according to the manner described by Raj and Denson.[3] The length of the Steri-strips® on the skin is kept within a 7-cm-diameter circle around the catheter site. This is less than the diameter of the ostomy baseplate we use. Next, a transparent sterile dressing (again about a 7-cm diameter) is applied over the catheter and Steri-strips®.[4] The baseplate center orifice maybe widened as desired to allow adequate visualization of the catheter entry site. Then the catheter is threaded through the center of the baseplate, and the baseplate is secured to the skin. Finally, the catheter is either shortened or coiled and fed into the ostomy bag, which is then secured to the baseplate (figs. 1 and 2).

By improving patient comfort and by avoiding invasive methods, we have found improved patient compliance with the use of this technique. The catheter must be checked for signs of infection or malfunction as with other methods. Moisture may condense in the plastic bag due to the patient's perspiration. To avoid this, we allow the distal end of the ostomy bag to remain open periodically to air. One may also obtain separate sterile ostomy bags and change these bags as necessary without disturbing the catheter site or baseplate.

Our experience has been with temporary catheters (7–10 days), although this same technique could be used for longer periods of time. Potential applications for this technique include epidural, subarachnoid, infraclavicular brachial plexus, intrapleural, continuous lumbar sympathetic, or other temporary catheters. This technique could also be used for a newly tunneled catheter exit site to provide protection while the site heals.

We have found that this dressing technique provides an excellent method for securing and protecting continuous catheters, while allowing the patient to shower.

The opinions or assertions contained herein are the private views of the authors and are not to be construed as reflecting the views of the Department of the Army or the Department of Defense.

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To Disconnect Is Better Than To Extubate

To the Editor:—In an attempt to reduce the risks associated with a disconnection at some point within the breathing system, manufacturers of anesthesia machines and breathing systems are focusing on the design of suitable "anti-disconnect fittings" (latching connectors, addendum to part 1 of ISO 5356/EN 205356; ISO = International Standardization Organization, EN = European Norm). Unintentional traction applied to the breathing system may lead to disconnection of the tubing apparatus or extubation of the trachea. Of these outcomes the disconnection is remedied much more easily by reconnecting the tubes. Based upon that assumption, we have designed an "anti-anti-disconnect device" to facilitate disconnection between the tracheal tube and Y-piece in the case that traction accidentally applied to the breathing system would otherwise dislodge the tracheal tube.

The "disconnector" is a custom-made, autoclavable prototype, composed of and cut from polyvinylchloride, and not yet commercially available. On the inside, a rubber ring, held in place by silicone glue, seals the connection and makes the device leak-tight. Bench testing for air-tightness was performed in accordance with EN 205356/1, annex C and D (20 and 37° C at 15, 30, and 60 mmHg with flows of 3.5, 4.5, and 7.5 $l \cdot min^{-1}$, respectively). Leakage was $\ll 150$ $ml \cdot min^{-1}$, with 150 $ml \cdot min^{-1}$ being the minimum leakage detectable by our test apparatus; true leakage, however, appears to be close to zero and hence likely to fulfill the requirements of EN 205356/§ 8.2. This "disconnector" fits standard ISO equipment (Y-piece and endotracheal tube; fig. 1); it is comprised of two parts (the male end of one fitting into the Y-piece, the male end of the other fitting into the endotracheal tube) connected by a kinking-sensitive interlock (fig. 2).

We have tested the device in pigs,[1] using a cuffed 7.0-mm-ID endotracheal tube (polyvinylchloride, Portex) that was secured by adhesive tape, resembling clinical practice: two strips of white adhesive tape ("non-allergic"; Fixomull stretch™, Beiersdorf, Hamburg), 1.5 cm in width and 25 cm in length, were used. The tracheal tube was encircled

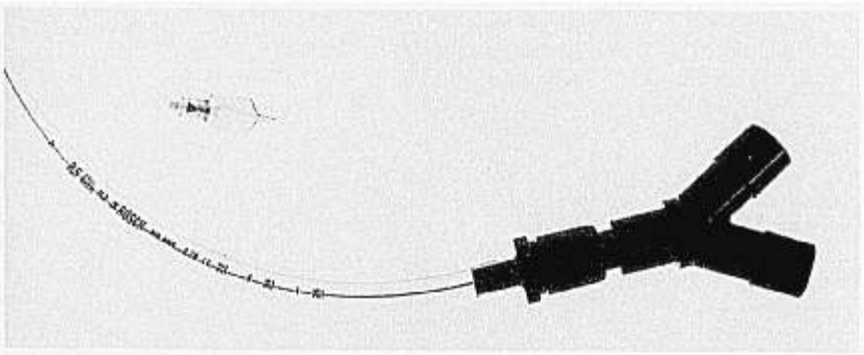

FIG. 1. Facilitated-disconnect device, mounted between Y-piece and endotracheal tube.

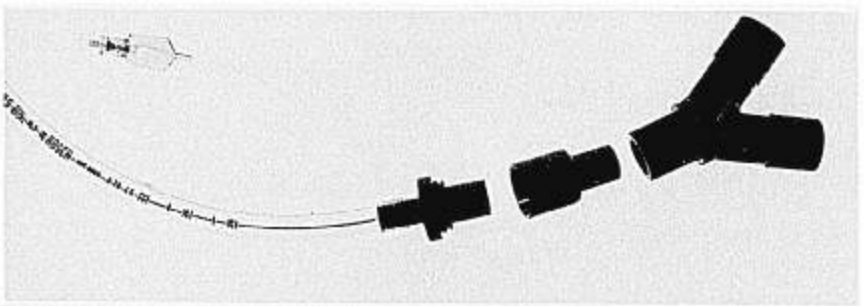

FIG. 2. Disconnector, disconnected.

once with each strip, and the free ends were applied to the pig's snout. This resulted in contact areas of approximately 7.5 cm^2 (adhesive tape–tracheal tube) and 60 cm^2 (adhesive tape–skin).

Using standard equipment, mean axial traction forces resulting in extubation were ⩾20 N. With the disconnector in place, extubation by traction was impossible. Disconnection took place at a mean force of 15, 5, and 3 N with traction applied axially (180°), and at angles of 45° and 90°, respectively.

We conclude that the "disconnector" reliably prevents unintentional extubation, resulting from traction, accidentally applied to the breathing system. In contrast to accidental extubation, *facilitated disconnection* is unlikely to result in a serious hazard, because specific alarm features that are part of standard anesthesia machines (ISO 5358) will alert the anesthesiologist to take appropriate action.

A device such as described here may contribute to patient safety during procedures that are associated with an increased risk of accidental traction application to the breathing system, such as frequent repositioning of the patient, neuroradiology (angiography, computed axial tomography, or nuclear magnetic resonance imaging), or immersion lithotripsy.

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Beyond Transesophageal Echocardiography: Ultrasound Imaging in the Operating Room

To the Editor:—The availability of ultrasound in the operating room has been increasing rapidly because of the demand for transesophageal echocardiography (TEE). With the TEE probe, anesthesiologists have the opportunity to assess not only cardiac function but also the thoracic aorta, pleural effusions,[1] intraaortic balloon pump placement, mediastinal masses, and upper abdominal structures. The natural extension of this experience has been the use of high-frequency external probes to localize vascular structures for cannulation.[2] At our institution, we use the external probes occasionally for assistance with catheter insertion and for imaging the heart preinduction. Recently we had the opportunity to put the technology to a new intraoperative use.

Case: A 66-yr-old man underwent coronary artery bypass grafting