

possible problem exists and should be corrected.

Because of the humidity added to the inspired air, it is necessary to drain the condensed moisture from the tubing from time to time. This is done by disconnecting the plastic section at point A of figure 1 and allowing the water to drain by gravity flow. Ends A, B and C are identical in size and appearance, except that A is open and B and C are solid. In addition to disconnecting for drainage, the joints can become disconnected accidentally.

Since this ventilator may be used when spontaneous respiration is inadequate or absent, nursing personnel frequently reassemble

the connection hurriedly once it is apart. If it is assembled backwards, which is easily done, no flow can pass through the circle (fig. 2). The sound of the respirator may not change when this obstruction occurs, and it can go undetected, with disastrous results.

So that the apparatus cannot be connected incorrectly under any circumstances, we suggest two modifications (fig. 3). (1) A plastic cap or disc is glued to the blind end of the circle C making this end larger than section A. (2) Joint B is glued, so that this connection cannot be reversed. Figure 3 illustrates that only the proper connection is possible.

Modified Endotracheal Tubes for Bronchography in Children

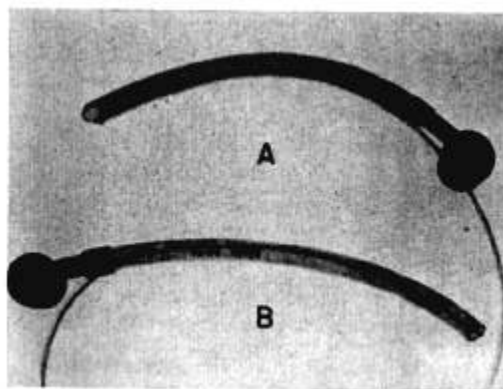
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By obviating the necessity of introducing radiopaque material via the endotracheal tube, the modified endotracheal tube allows uninterrupted control of the airway at all times and permits complete bronchograms to be obtained with the injection of minimal amounts of dye directly into the trachea. We consider these factors to be of utmost importance. This apparatus has been used with excellent results in this hospital.

A suitable length of polyethylene tubing † allowing the insertion of a no. 20 needle is used for injection. Dionosil, when heated per the manufacturer's instructions, can be injected with ease through this size tubing. For endotracheal tubes up to size 20 F the polyethylene tubing is fixed to the concave exterior of the endotracheal tube with liquid plastic cement (figure A). This method is used for the smaller tubes because we feel that the inner diameter of tubes of this size should not be compromised. However, for larger tubes the small polyethylene catheter within the lumen causes no significant ventilatory prob-

lems. Therefore a simpler preparation suffices when a 20 F or larger tube can be used.‡ The polyethylene tubing is inserted via a small hole in the proximal end of the tube (figure B) and advanced until its tip is flush with the end of the endotracheal tube. A small amount of liquid plastic cement around the insertion will prevent leakage and will secure the injection tubing. Similarly, liquid cement will secure the tubing at the distal end.

‡ Davol plastic endotracheal tubes.



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† Intramedic polyethylene tubing PE-90/S36.