

a rolled sheet. Air leakage is minimized by closing the patient's mouth and nose with one hand. If air leakage around the cannula is excessive, the skin is approximated about the outer cannula with the other hand and the force and volume of blowing is increased.

With this method the lungs of obese patients and of patients with pulmonary disease (reduced lung distensibility) could be ventilated adequately with intermittent forceful blowing into the cannula. The efficacy of ventilation is judged by observing the movements of the patient's chest, as during the performance of mouth-to-mouth breathing. (Safar, P.: J. A. M. A. 166: 335, 1958.)

### Topical Tracheal Analgesia with Lidocaine

Dr. John B. Stetson, Johnson City, Tennessee, remarks that little has been written about the use of lidocaine 4 per cent for topical tracheal analgesia. He is not familiar with any material available in English other than that of Power (Power, D. J.: *Canad. Anaesth. Soc. J.* 4: 89, 1957).

When it is deemed wise to intubate a patient's trachea while he is awake (as with full stomach, anatomical abnormalities of the mouth or neck, trauma to the face, etc.), lidocaine 4 per cent can be used with excellent results. The analgesia obtained is almost instantaneous in onset and marked in degree as judged in observation of the patient. Only a small volume is necessary. For tracheal intubation by the oral route using a MacIntosh blade for exposure, generally 4 cc. of 4 per cent lidocaine is necessary. If the transtracheal route is to be used, 4 cc. of 4 per cent lidocaine should be injected rapidly. The ensuing cough distributes enough lidocaine throughout the mouth so that little or no additional spray of the oral cavity is needed to augment the transtracheal block. If the trans-nasal route is used, lidocaine affords good analgesia, but will not shrink the nasal mucosa. In patients being prepared for bronchoscopy, 6 cc. of 4 per cent lidocaine is generally sufficient to allow insertion of the bronchoscope. In an attempt to see how quickly analgesia develops, the bronchoscope was inserted into the trachea less than two and one half minutes after the application of lidocaine 4 per cent in several patients. Occasionally it is necessary to administer additional spray through the bronchoscope into the right and left main stem bronchi. All of the lidocaine sprayed into the trachea is evidently absorbed rapidly.

Dr. Stetson has placed an arbitrary limit of 8 cc. upon the amount of 4 per cent lidocaine that can be used. No evidences of toxicity have been seen in a limited series, but many of the patients do show signs of sedation. A virtue of lidocaine over cocaine for trans-tracheal injection is that tissue necrosis or slough will not follow its inadvertent injection into tissue.

Dr. Stetson has not carried out double blind or controlled studies, but believes that lidocaine is worthwhile when administered with a good atomizer or by transtracheal block.

### GADGETS

#### Adaptor for Connecting Tracheostomy Tubes

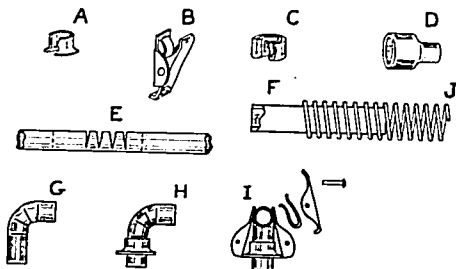
Capt. Stuart Steinberg, MC, and Mr. Louis Stilwell of Fort Carson, Colorado, remark that there occasionally arises a need to connect a tracheostomy cannula to an anesthetic machine or a resuscitation apparatus. They describe a simple, effective and easily constructed connecting adaptor. They believe that commercially made tracheostomy adaptors for this purpose are satisfactory, but such adaptors are not often found in hospitals because of the expense. Shortened endotracheal catheters also can be effectively used in establishing a connection between tracheostomy tube and resuscitation equipment. The disadvantages, however, of catheter connection are poor fitting, clumsiness of manipulation, and reduction of the lumen of the airway connector by the catheter. The two occasions when an adaptor for a tracheostomy is needed are: when it is necessary



Adaptor for connecting cannula of tracheostomy tubes to anesthetic machines or resuscitation equipment.

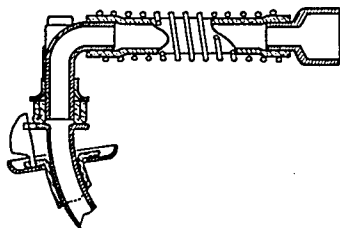
to administer an anesthetic and when it is necessary to give artificial respiration through a tracheostomy. In the latter situation it is important to have a connector which can be quickly placed into operation.

This adaptor (see illustration) is inexpensive and can be made from spare parts found in any hospital. It will provide an airtight connection from any size inner cannula of the standard Jackson tracheostomy tubes to anesthetic machines or resuscitation equipment. The component parts are a copper grommet and two X-ray clips soldered to a curved piece of copper tubing. A rubber gasket is added at the end to make an airtight connection with the tracheostomy cannula. The cross sectional diameter



Component parts of adaptor. (A) Metal gasket; (B) x-ray clip; (C) rubber gasket; (D) adaptor to connect to anesthesia machine; (E) copper tubing, notched to be curved; (F) rubber tube; (G) copper tube, curved; (H) copper tube and gasket; (I) copper tube and gasket with x-ray clip, disassembled, and (J) copper wire to prevent kinkage of rubber tube.

of the connection is not reduced and is larger than the diameter of the largest size inner tracheostomy cannula. The rubber gasket fits snugly to the outside of the inner tracheostomy cannula. The x-ray clips hold firmly to the sides of the inner cannula. When connection to an anesthetic or resuscitative machine is needed, the inner cannula is



Cross sectional diagram of adaptor. The rubber gasket fits outside of tracheostomy cannula. There is no reduction in cross sectional area from that of largest size inner tracheostomy cannula.

removed, attached to the adaptor, then reinserted into the outer cannula. The tracheo-bronchial tree can be suctioned through the adaptor, or the inner cannula can be changed without having to remove the outer cannula. A short wired rubber tube is used to connect the adaptor to the resuscitation equipment. This latter tube adds mobility,



The inner cannula can be changed without having to remove outer cannula.

allowing the resuscitation equipment to be connected at any angle or direction. The adaptor is well balanced and light in weight causing only minimal pull on the trachea. It can be autoclaved repeatedly, with only occasional changes of the rubber gasket. The adaptor shown was assembled in our orthopedic brace shop at a cost of less than one dollar for parts.