this type of connector, gas current to the operated lung must be somewhat different from the opposite side, but this difference presumably is not of a significant degree and increase of dead space is very slight.

This simple appliance is light and its use in the various operative positions does not require more care than the usual adapters for single lumen catheters.

REFERENCE


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A NEW INDICATOR FOR SPINAL EPIDURAL ANALGESIA

Spinal epidural analgesia is gaining ever-increasing application in modern surgery, especially in gynaecology and urology, but the technical difficulty of locating the epidural space still remains the greatest deterrent to using this method.

Many techniques and appliances have been devised to assist in finding the epidural space. One group of techniques is based on the observation that there is a moderate negative pressure in the epidural space. The hanging-drop method of Gutierrez and Odom's indicator fall in this group, but they are reliable guides in only about 85 per cent of cases (1). A second group is based on the loss-of-resistance test (the "Mandrin liquide") of Sicard and Dogliotti, puncture being made while constant pressure (by manual or mechanical means) is applied to the plunger of a charged syringe. Macintosh's balloon-indicator is based on this
loss-of-resistance principle, but uses air instead of liquid.

It appeared to me that the technique of epidural puncture could be made easier and safer by combining the advantages of both of these methods in a single indicator.

The indicator is constructed from a short curved length of calibrated glass tubing (fig. 1) with a small rubber balloon fitted over one end. The tent of a baby-soother can be used for this purpose. The other end is connected to a small tap and male needle mount.

Before use the sterilised indicator is filled with a mixture of air and water with the help of a syringe and a special double-ended syringe mount (made by soldering the hubs of two wide-bore needles end-to-end). Depending on the elasticity of the rubber tent, 1 to 2 milliliters of air and a minimal amount of sterile water (or analgesic solution) are injected into the glass tube and the tap is turned off. There is no need to employ a great deal of pressure inside the indicator—a little “push from behind” is all that is required. The glass tube is thus filled with a broken column of fluid and bubbles which is clearly visible. The syringe and special adaptor are disconnected, and the indicator is now ready for use.

To carry out epidural puncture, a spinal needle is introduced in the appropriate intervertebral space and the stilet removed. The charged indicator is now attached to the hub of the spinal needle, taking care to ensure an airtight connection, and the tap is turned on. The needle, with the indicator attached, is advanced in the usual way; with a little practice one can recognise the resistance of the ligamentum flavum and then the sense of “give” as the needle pierces through it. At this precise moment the indicator discharges itself and the froth in the glass tube moves rapidly towards the needle. Now the point of the needle lies correctly in the epidural space, and the indicator can be detached from the needle. After carefully confirming the correct position of the needle (no cerebrospinal fluid should flow spontaneously or on aspiration with a 2 ml. syringe), injection of analgesic solution can be started.

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REFERENCE


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