

Letters to the Editor of Clinical Workshop

Valve for Cuff Inflation

To the Editor: There are many devices designed to simplify the inflation of a tracheal tube cuff. Most fail to satisfy the criteria of an ideal valve, which should be small, simple, cheap and dependable.

The valve described here is not new. The principle on which it works has been recognized for many years, and it was suggested for cuff inflation by Weiss.¹ However, it attracted little attention, and today few anesthesiologists know of it. It has the virtue of being more than a simple nonreturn valve. For the meticulous anesthetist who wants enough air in his cuff *but no more*, it allows easy, controlled deflation. At the American University of Beirut it has been used in thousands of cases, and we find it hard to fault. The following comments may help to bring it the wider popularity it deserves.

The valve consists of a short length of soft rubber tubing in which is a small ball a little larger than the lumen of the tubing. At each end is a plastic adaptor by which it can be connected to the cuff and to the inflating syringe. The ball effectively seals the tube against the passage of air, except when the rubber over it is deformed by pressure with finger and thumb. While this pressure is applied a cuff can be inflated and deflated with ease; release of the pressure immediately seals the valve securely.

Some points about construction deserve emphasis. Suitable plastic adaptors can be obtained from a discarded plastic intravenous set. The dimensions of the rubber tubing are not critical, but the ball must be carefully matched for size. If it is too small the valve will leak; if it is large excessive pressure will be needed to open the valve. Ball bearings, lead shot, or glass beads from a biochemistry laboratory, have all been used with success. If the inflating tube on a cuff is large enough, a small ball can be inserted into it, making the valve an integral part of the cuff. As a valve

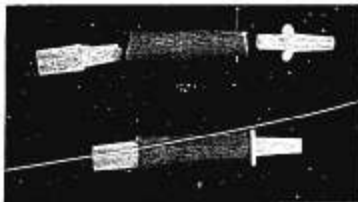


FIG. 1. Valve for cuff inflation. The glass bead used in making this valve is $3\frac{1}{2}$ mm in diameter.

it will serve well, but the cuff remains always sealed and may be overinflated during the vacuum phase if the tube is autoclaved.

Weiss suggested that plastic tubing from an intravenous set could be used for making this valve. In repeated trials we have not been satisfied with plastic tubing, and this perhaps explains why others who may have tried the valve have not shared our enthusiasm for it. Thin-walled polyvinyl tubing lacks the resilience necessary for this application.

This inflation valve costs almost nothing, and can be made in minutes from bits and pieces available in any department of anesthesia. It is light, easy to use, and completely reliable. It is virtually indestructible. Ours never wear out, but are frequently stolen by visiting anesthetists. It is not made commercially, but amply repays the small effort required to assemble it.

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REFERENCE

1. Weiss, S. Z.: Cuff inflating valve, *ANESTHESIOLOGY* 17: 367, 1956.