CORRESPONDENCE

Anesthesiology
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Bag Mount Detachment: A Function of Age?

To the Editor:—A recent letter reported an "unusual" anesthesia machine failure in which the reservoir bag mount became detached from the bottom of the unidirectional valve housing.[1] In that case, an Ohio® Model 21 circle absorber was involved. Recently, we experienced two similar mishaps involving Dupaco® absorbers. In both cases the bag mount originates from the side of the expiratory unidirectional valve (part #70670). The bag mount is a chrome-plated metal tube that is bent into an arc and soldered to the valve housing at an orifice in the side of the valve.

A review of the evolution of the expiratory valve/bag mount construction revealed that in 1967 (approximately one year after our machines were produced) the wall thickness of the valve housing was increased from 1/16 inch to 1/8 inch. Additionally, the angle between the valve housing and the bag mount tube was decreased. Both modifications, greater wall thickness and decreased angulation, allowed Dupaco® to replace the original butt joint by a press fit or interference mate joint. The press fit joint allows for both internal and external soldering rather than the limited external soldering of our units and results in a joint four to ten times stronger.

In our first episode a sustained pressure leak test of the patient circuit demonstrated the fault. The second episode occurred during anesthesia administration, representing a potential hazard because of a limited ability to ventilate the patient. The occurrences probably represented the cumulative effects of innumerable episodes of high torque wrenching off and on of bags and ventilator hoses, as well as impact of the protruding bag mount as equipment was moved about. The manufacturer long ago redesigned the "at risk" part, but only after our machines were produced.

Care and vigilence in the preparation of a machine for patient use is required. Anesthesiologists and hospital administrators should recognize the nature of equipment failures. Early failures usually consist of components made with inadequate quality control and design faults (especially in first production models). Late equipment failures are usually the result of aging of satisfactorily designed and constructed components, which have a finite life span. Risk avoidance recommends that machines be retired before fifteen years of use.

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REFERENCE

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A New Device for Topical Anesthesia

To the Editor:—We have developed a new and inexpensive device for topically delivering a local anesthetic to the upper airway. It is composed of a plant sprayer purchasable in any hardware store, and is adjustable to provide a jet or a spray (fig. 1). It is necessary to shorten the plastic device that is submersed in the Xylocaine® solution. We had difficulty in finding an appropriate size bottle, but found one from Scientific Products Company (17111 Radial Avenue, Irvine, California 92714). This is a 2-ounce, clear glass bottle, number B 725-2, with a number 28 cap size.

We have tested this device and found it to be acceptable to a large number of anesthesiologists. It has the advantages that the tip can be cleaned, it fits on the anesthesia machine top fairly well, it is quite reasonable in cost, and it operates well for long periods of time. We have measured the volume delivered each time and find it to be approximately 0.5 ml, which would be approximately 20 mg Xylocaine® if a 4 per cent solution is used. We feel that this is an acceptable, safe, simple, efficient, and economical device that could be utilized widely.

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FIG. 1. A new and inexpensive device for delivering a topical local anesthetic.

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Hazard of Separate Low and High Flow O_2 Flowmeters: An Interim Solution

To the Editor:—The publication of the American National Standard on Minimum Performance and Safety Requirements for Components and Systems of Continuous Flow Anesthesia Machines for Human Use Z79.8.1979* drew attention once again to the hazards in present day anesthesia apparatus. The successful legal suits against hospitals for failing to remove from use apparatus incorporating documented hazards led to the recommendation that hospitals update their apparatus without delay.[1]

Mazze[2] reported the anoxic death of a healthy 45-year-old man scheduled for hemorrhoidectomy. The anesthesia machine was equipped with two separate O_2 flowmeters, one calibrated in milliliters, the other in liters. The wrong O_2 flowmeter was used, resulting in 4 l of N_2O being delivered with 200 ml of O_2, rather than 2 l of O_2.

Unfortunately many hospitals have many apparatus incorporating this hazard. Even though one large self-insured hospital organization estimated it would be less expensive to replace 200–300 obsolete gas machines than to settle another suit for anoxic brain damage, the individual hospital may have budget difficulty in replacing all such apparatus immediately.

As a temporary measure pending their phased replacement we have fitted guards to the low flow O_2 and N_2O controls on our Ohio® 2000 model apparatus. The

* American National Standards Institute, 1430 Broadway, New York, New York 10018.