

CORRESPONDENCE

Anesthesiology
59:480, 1983

Failed Release of an Activated Oxygen Flush Valve

To the Editor:—A recent experience illustrates how a simple and frequently used component of an anesthesia machine can fail and suddenly create a potentially life-threatening situation.

During a preanesthetic check of a Narkomed 2 anesthesia machine (North American Drager), an activated oxygen flush valve failed to release. Only by disconnecting the machine from the wall oxygen source could we terminate the high flows. However, the valve remained stuck in the activated position.

The oxygen-flush valve is manufactured by Clippard Instrument Laboratory, Inc. The valve is a piston that is spring-loaded against a valve seat. Pushing the oxygen flush button moves the piston away from the valve seat, allowing oxygen to flow through the valve. Releasing the pushbutton allows the spring to move the piston back onto the valve seat, shutting off the oxygen flow.¹ Examination of the oxygen-flush valve (MJV-2 valve) revealed that the cause of the problem was the last coil of the spring. This had enlarged in diameter and snapped over the stem spring shoulder, holding it in an activated position.

Clippard Instrument Laboratory reports that they have not experienced this failure before. North American Drager knows of only one other similar failure and assures me that 20,000 valves of this type have been used since

the 1960s for several applications by several manufacturers of anesthesia machines.

The only complication we experienced was a delay in time. However, a similar intraoperative occurrence could have led to more serious sequelae. Use of the oxygen-flush valve produces a direct connection with central supply oxygen (50–55 psi) and a flow of 35 to 75 l/min.¹ Failure of the oxygen flush valve to release renders the entire anesthetic machine ineffective and dangerous to use. Even the shortest of patient exposures could cause significant pulmonary barotrauma and other complications.²

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(Accepted for publication April 7, 1983.)

Anesthesiology
59:480–481, 1983

Endotracheal Tube Obstruction Possibly due to Structural Fault

To the Editor:—Recently we have observed three cases of endotracheal tube kinking during neurosurgical anesthesia in which flexion of the neck was negligible. The kinking appeared to be partly due to a structural fault of the tube.

All the tubes were Portex blue-line disposable type and all the kinkings occurred at the notch in the tube wall (fig. 1), where the cuff-inflation tube is attached. The notch makes the tube wall thinner, to about half of the original thickness, so it becomes easier to kink when it is bent. Another factor that has caused tube kinking is the location of the notch in the wall. The notch is located at a distance of 17 cm from the tip of the tube, so that

it stays in the oral cavity in contact with the tongue. This is where the tube bends most, following the anatomic curvature of the airway. That is, the notched part is located at the bottom of the "U" when the tube is bent into a U shape. Bending the tube into a U shape is normal practice during neurosurgical anesthesia without any neck flexion, because the anesthesiologist sits beside the patient. Because the tube is made from polyvinylchloride, which becomes softer¹ in the mouth cavity at body temperature, there is some danger that the gentle U-shaped bend gradually can be changed into a sharp V-shaped kink (fig. 1), which then can obstruct the ventilation passage in a dramatic way.