SUDDEN FAILURE OF CEILING OXYGEN CONNECTOR

KENNETH M. JANIS

EVEN WITH CONTROL of construction and careful documented installation of oxygen pipelines, accidental interruption of oxygen supply during anaesthesia is a disaster feared by all anaesthetists.^{1,2} Most catastrophes in the operating room are traceable to human error.³ This report describes how a ceiling oxygen delivery system failed in the course of routine pre-operative testing and led to the discovery of a mechanical defect in the structural system, despite hundreds of successful anaesthetics.

A standard Dupaco anaesthetic machine (Model 7500-Ventura) was attached to standard ceiling oxygen (Ohio Model 10) and nitrous oxide connectors. The immediate familiar sound of system pressurization upon contact was noted and the gauge on the front panel of the machine showed a normal wall pressure of 55 psi. When the oxygen flow meter was turned to 6 litres per minute and the flush valve activated to test the system for leaks, the oxygen rotameter rapidly fell to zero as did the front panel pressure gauge. The fail-safe alarm sounded immediately. The connection was checked and found to be properly seated. The machine was then checked using tank gas sources and found to function properly. Several minutes later, the wall connector was engaged again and there was no sound upon engagement, no flow when the flow meter was turned on and no movement of the pressure gauge on the machine. Another machine of the same model was attached to the same ceiling connector and tested, showing the same abnormal results.

Kenneth M. Janis, M.D., Staff Anesthesiologist, Saddleback Community Hospital, Laguna Hills, California. Associate Clinical Professor of Anesthesiology, Department of Anesthesiology, University of California San Diego Medical School.

The original machine when tested in another operating room functioned perfectly. All other ceiling oxygen lines in the operating room suite were found to function to specification with all anaesthetic machines including the original machine. There was no other evidence of fall in line oxygen pressure at any other place in the hospital.

A hospital engineer examined the system and confirmed that oxygen was entering the hose leading from the ceiling to the machine connector. The hose and connector were removed from the machine and when replaced by a new connector, functioned perfectly when attached to the original machine tested. Careful examination of the original ceiling connector revealed that a fine wire screen in the base of the connector had become plugged by debris of unknown origin which had blocked the gas flow. The connector was cleaned, reassembled and when replaced in the operating room, functioned properly.

A critical life support system which had previously been used without malfunction for three years suddenly and unpredictably failed in the course of routine pre-operative testing. The importance of constant checking of such systems is emphasized to prevent potentially disastrous anaesthetic accidents.

REFERENCES

1. DORSCH, J.A. & DORSCH, S.E. Understanding anesthesia equipment. Williams and Wilkins, Baltimore, Maryland (1975).
2. FEELEY, T.W. & HEDLEY-WHYTE, J. Bulk oxygen and nitrous oxide delivery systems: Design and Dangers. *Anesthesiology* 44: 301-305.
3. COOPER, J.B., NEWBOWER, R.S., & LONG, C.B. *et al.* Preventable anesthesia mishaps: a human factor study. Abstracts of scientific papers, A.S.A. Meeting (1976).