Leak in anesthesia workstation: An unusual cause

We would like to report an unusual cause of leak in the anesthesia workstation. Dräger Fabius® GS anesthesia workstation was checked according to manufacturer’s recommendations.[1] A 50-year-old female was administered general anesthesia for laparoscopic cholecystectomy using standard protocol. Her trachea was intubated (size 7 cuffed oro-tracheal tube) and lungs were manually ventilated with oxygen and nitrous oxide in halothane using a closed circuit. Sevoflurane vaporizer (Dräger Vapor® 2000) was arranged and installed on the workstation; we switched to using sevoflurane. Immediately, there was under-filling of the reservoir bag. We increased the fresh gas flows and closed the adjustable pressure limiting valve completely. 100% oxygen in sevoflurane was administered. All connections in the breathing system and tracheal tube cuff were checked for leak. The sevoflurane vaporizer was turned off; but there was no improvement. The breathing system was changed to Bain’s circuit. This increased the difficulty in ventilation, requiring the use of oxygen flush intermittently. We switched back to closed circuit; with it, we could ventilate using increased flows. Patient did not desaturate anytime and her vitals remained stable. Alternative anesthesia workstation was arranged and used for the rest of surgery which was uneventful.

The “leaking workstation” was put on leak and compliance self-test. It showed leak >350 ml. On starting oxygen flow there was under filling of the test lung. Workstation had no sign of external damage. Both halothane and sevoflurane vaporizers were stable on the manifold, at same level, with no tilting. Savlon-soaked gauze was dabbed on the backbar. Continuous bubbling was seen at the site of attachment of sevoflurane vaporizer to the backbar, implying leak [Figure 1]. Upon turning-on the vaporizer, odor of sevoflurane could be appreciated. The sevoflurane vaporizer was removed from the backbar. Glass pieces were seen between the vaporizer and the mounting system [Figure 2]. These were removed, vaporizer was re-mounted and the workstation rechecked; there was no leak.

The vaporizer is fitted onto the port valves on the backbar. The weight of the vaporizer and the O-ring around each port valve create a seal between the mounting system and the vaporizer.[2] Fresh gas flow leak due to malpositioning of the vaporizer has been reported.[3,4] In this case, broken pieces of glass prevented a tight seal around the port valves of the vaporizer causing leak in fresh gas flow even when vaporizer was not turned on. Perhaps, a glass ampoule kept on top of the vaporizer or else the roof of anesthesia workstation had fallen and got caught between the sevoflurane vaporizer and the mounting system during its installation.

Resting half-filled, empty or spare ampoules on the vaporizer top or workstation roof is not an uncommon practice; this should be discouraged. Spare ampoules should be neatly placed in their racks and used ampoules should either be discarded or kept in dedicated racks. Vaporizer should be installed on the backbar with utmost care, followed by workstation safety check. Practice of replacing or mounting a vaporizer while the workstation is in use should be deterred. It is not possible to recheck the anesthesia workstation at this stage and safety norms are flouted in doing so.

Ritu Aggarwal, Ajay Kumar
Department of Anesthesiology and Critical Care, Deen Dayal Upadhyay Hospital, New Delhi, India

Address for correspondence: Dr. Ajay Kumar, BB/49-C, Janakpuri, New Delhi - 110 058, India. E-mail: ajayannu@gmail.com
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How to cite this article: Aggarwal R, Kumar A. Leak in anesthesia workstation: An unusual cause. J Anaesthesiol Clin Pharmacol 2018;34:135-6.

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