

Leaks in the vaporizer unit: Still a possibility

Sir,

Modern day vaporizers are reliable and come with many safety features. We report a case of an unusual leak from the vaporizer unit. The incident occurred while conducting anesthesia in a patient with mandibular fracture, posted for open reduction and internal fixation, on replacement of the halothane vaporizer with isoflurane vaporizer. After replacement, there was sudden under-filling of the reservoir bag after turning the control dial on. The flow meters showed no change in the flow, which meant there was a leak. The connections within the circuit, between the circuit, and the common gas outlet and filler cap of the vaporizer were checked out for leaks, but no leaks were detected. On checking the vaporizer mount, a needle was found between mounting system and the vaporizer unit, which was causing the leak. The leak was then rectified.

Detachable mounting systems, like Selectatec, permit movement and change of the vaporizer unit. These consist of a pair of port valves for the vaporizer. Each vaporizer has a special mounting bracket that fits over the nipples. The weight of the vaporizer and an O-ring around each port valve create a seal between the mounting system and the vaporizer.^[1]

In case of a leak in the vaporizer, the anesthesia delivery machine can function normally if the vaporizer remains switched off. On switching on the vaporizer, the fresh gas flow is reduced with little or no vapor. A common cause of leak is failure to replace the filler cap or tighten it.^[2] If an incorrect cap is used on a filler device, leak may occur.^[3] Another common cause of the leak is the absent or damaged O-ring.^[1,4] Other locations for leaks include the selector valve, mounting mechanism, interlock device, vaporizer inlet, or outlet connections.



Figure 1: Needle causing the leak

In our case, though a needle was present between the mounting system and vaporizer [Figure 1], it was possible to lock the locking lever and the control dial could be turned on. This led to leakage of fresh gas flow and under-filling of the reservoir bag. Consequences of leaks include alteration in the flow and composition of inspiratory gas and pollution of the operating room air. The former can cause hypoxia, re-breathing or awareness in a patient if not identified and rectified.

In conclusion, detachable mounts are convenient but are a potential source of leak. We recommend that utmost care be taken during dismounting and remounting of vaporizers to avoid damage to them and prevent leaks.

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