Introduction

- Standardized pre-anesthesia machine check-out procedures are meant to identify leaks in the anesthesia machine breathing system.
- We present a case where we had an uncommon source for a leak, which escaped primary detection during the machine check that resulted in a difficult-to-ventilate scenario during intraoperative care.

Intraoperative Course

- A three-month old, former 24 week premature infant was scheduled for an elective ventriculoperitoneal shunt placement.
- Past medical history was significant for bronchopulmonary dysplasia, retinopathy of prematurity, intraventricular hemorrhage, and obstructive hydrocephalus.
- Following intravenous induction of general anesthesia, the trachea was intubated with a 3.5 Micruff® endotracheal tube (ETT).
- Initially there was inadequate chest rise, poor air entry on chest auscultation, and lack of consistent end-tidal capnography.
- The ETT was removed and face mask ventilation commenced.
- At this time, there appeared to be a large breathing system leak, making mask ventilation impossible.
- The source of the air leak was identified by visual examination of the breathing circuit to be due to dislodgement of the plastic cover of the APL valve from its housing.
- A crack was noted on the dislodged plastic cover.
- The plastic portion that held the dislodged plastic cover of the APL valve was manually pushed down until resistance was met.
- We concurrently used a separate bag and mask system and were able to manually and adequately ventilate the patient.
- A quick pressure check after resituation of the plastic cover revealed that the circuit could be pressurized.
- This was followed by re-intubating the patient and confirmation of ETT placement with visual evidence of chest rise, end tidal CO2 capnography, and chest auscultation.

Discussion

- Anesthesia machine equipment problems, though infrequent, have been reported as a common cause of critical incidents during anesthetic care (1, 2).
- A crack on the plastic cover of an APL valve may result in the dislodgement of the cover from its housing during anesthetic care. Hence, a potential site of a large circuit leak may not be identified by standardized pre-anesthesia machine check-out procedures (3).
- We suggest a visual examination of the APL valve and other components of the anesthesia breathing system for cracks or damage as part of the recommended essential steps in a pre-anesthesia checkout procedure or when a significant leak is noted during care.

References