



## Shared Learning

from the Dental Patient Safety Foundation Reporting Tool

“What gets measured gets managed” is the DPSF philosophy to encourage reporting. All received information about patient safety events (unsafe conditions, near misses or adverse events) are de-identified contextually (confidentiality is fully protected under federal law), aggregated, analyzed and abstracted by selected experts from our DPSF committees. Reports are generated and disseminated as the only means to learn from our errors. The information in these peer-reviewed reports is provided for its educational value only, and does not purport to establish any legally binding standard of care. Feedback is encouraged.

### Case 2022.10A: Pediatric Ventilatory Trouble: Hypoventilation or Obstruction?

#### SITUATION:

An otherwise healthy 5 y/o, 46# child presented for operative dentistry under deep sedation in an office setting. Anesthesia administered by nurse anesthetist; pediatric dentist performed operative care. No positive findings on current history and physical examination; Airway assessed as Mallampati II, Brodsky 3 classifications.

11:12AM: Full face mask sevoflurane induction, IV started, sevoflurane discontinued, propofol and ketamine titrated to effect. Supplemental O<sub>2</sub> via nasal cannula 2 lpm. Dentist placed Dryshield™ device, started procedure.

11:25AM: Irregular breathing pattern with intermittent apnea noted. Jaw thrust (Larson’s maneuver) did not resolve, Dryshield™ removed, oropharynx suctioned, no fluids noted. SpO<sub>2</sub> dropped to 60% for 10 seconds. O<sub>2</sub> flow increased to 10 lpm, second jaw thrust did not help, positive pressure ventilation (PPV) with full face mask improved SpO<sub>2</sub> to 95%.

11:28AM: Airway pressure increases, PPV more difficult. 50mg Propofol IV to break possible laryngospasm improved SpO<sub>2</sub> to 98%. Decision made to abort case.

11:38AM: SpO<sub>2</sub> again decreased, breathing became labored, SpO<sub>2</sub> back down to 94%. Direct visualization of hypopharynx revealed edematous tissue. 12.5 mg diphenhydramine administered; improved breathing pattern followed. Parents were informed of a possible allergic reaction, paramedics summoned

12:10PM: Ambulance on scene, anesthesia provider rode in ambulance to ER, patient crying during the ride. Observed for 6 hours and discharged home.



#### WHAT WE LEARNED:

The care of pediatric patients requires vigilance and rapid assessment/management of any signs of respiratory depression, as the time from apnea to desaturation is diminished in these patients. **In this case, as often happens, the specific cause of the respiratory depression is not always clear.** The differential diagnosis included drug-induced respiratory depression, allergy, asthma, laryngospasm, foreign body and traumatic mucosal edema from instrumentation (such as Weider retractors, throat packs, etc.). Rapid observation of the irregular, labored breathing triggered immediate escalation of airway maneuvers: jaw thrust and positive pressure full face mask ventilation with a self-inflating bag-valve device by the anesthesia team. It was noted that all possibly needed equipment and medications were immediately available, dose-ready and functioning. The team’s decision to abort the case early and transport the child to the emergency department is commendable. Too often “situational paralysis” occurs and delays in management and transportation are associated with adverse outcomes. In this case the specific inciting event that triggered the respiratory insufficiency may not be able to be determined. However, a prompt, coordinated and effective airway management led to a positive outcome.

The DPSF encourages frequent reporting of unsafe conditions, near misses and adverse events as the only means to close the gap between knowing how to prevent these occurrences and taking the necessary action to do so. Please visit our website.

#### Additional Reading

- Rollert, M., et. al. Anesthetic considerations for pediatric patients. In: Bosack, RC and Lieblich, S. Anesthesia Complications in the Dental Office. Ames: Wiley Blackwell, 2015.
- Benumof, JL, et. al. Critical Hemoglobin Desaturation Will Occur Before Return to an Unparalyzed State Following 1mg.kg Intravenous Succinylcholine. Anesthesiol 87: 979, 82, 1997.
- Leverett, B., et. al. Pediatric Sedation. A Comprehensive Review. In: Relias Media Trauma Reports 21:1-11, 2020.