CORRESPONDENCE

Optiflow™ high-flow humidified oxygen delivery during spinal anesthesia

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To the Editor,

We report the novel use of Optiflow™ (Fisher & Paykel Healthcare, Auckland, New Zealand) for airway humidification in a patient with Sjögren's syndrome (SS) undergoing total hip arthroplasty surgery during spinal anesthesia. Written informed consent to publish this report was provided by the patient. Sjögren's syndrome, a chronic autoimmune disease affecting the function of exocrine glands, is characterized by dryness of the eyes and mouth. Patients with SS require perpetual hydration management to avoid unpleasant symptoms associated with mucosal dryness such as dry coughs, sore throat, fissures, and ulcers.¹ Common therapies include application of artificial tears and saliva, frequent water intake, secretagogues, and avoidance of environmental irritants and medication with drying side-effects.² Supplemental oxygen via nasal prongs or face mask can be highly problematic in SS patients because the constant flow of cold, non-humidified oxygen into the nasopharynx may exacerbate mucosal dryness. Currently, there is little information in the literature on airway humidification strategies in awake, spontaneously breathing SS patients who require supplemental oxygen during major conduction anesthesia and/or monitored anesthesia care (intravenous sedation).

We report the case of a 72-yr-old female, American Society of Anesthesiologists physical status III, scheduled for total (left) hip arthroplasty for osteoarthritis under spinal anesthesia. Relevant co-morbidities included secondary SS—accompanying rheumatoid arthritis and systemic lupus erythematosus. Her xerostomia was

managed by hydroxychloroquine, hydration with six glasses of water daily, xylitol gum and candy 120 g·day⁻¹. During the preoperative interview, the patient identified mucosal dryness as her primary concern. She was experiencing difficulties talking and swallowing due to dry mucous membranes exacerbated by her preoperative fasting state. She was particularly concerned about the administration of dry oxygen during her operation. To help address these concerns, we used the Optiflow high-flow nasal cannula that provided warmed and humidified air into her nasopharynx during the procedure.³

We fitted the patient with an Optiflow nasal cannula (large) and adjusted the oxygen flow rate to 40 L·min⁻¹ with a pre-set temperature of 37°C, 44 mg·L⁻¹ H₂O delivered by an Optiflow™ MR850™ heated humidifier integrated system (Figure, right panel). To circumvent the challenges with nasal capnography imposed by the Optiflow nasal cannula, a simple face mask was applied and end-tidal CO₂ was monitored from one of the face mask exhaust ports (Figure, left panel). The patient was placed in a sitting position for spinal anesthesia and standard monitors (electrocardiogram, non-invasive blood pressure cuff, pulse oximetry) were attached. Spinal anesthesia was achieved with ropivacaine 12.5 mg administered into the L3/4 intervertebral space via a 25G Whitaker needle. Sedation was achieved using 1 mg·kg⁻¹ of fentanyl and 50–90 µg·kg⁻¹·min⁻¹ of propofol infusion titrated to effect. She also received 25 mg of dimenhydrinate and 1 g of tranexamic acid. The patient tolerated the surgery well and reported a very positive experience with the Optiflow set-up we employed.

Attention to upper airway humidity is particularly important for SS patients.¹ Although application of a water-based lubricant in the nasopharynx may help, the delivery of warmed and humidified high-flow oxygen by

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Figure Patient using Optiflow™ high-flow nasal cannula during hip replacement surgery under spinal anesthesia (right panel). End-tidal CO₂ was monitored from the face mask (left panel)

the Optiflow system has the added benefits of improving mucociliary clearance, eliminating carbon dioxide from anatomical dead space, providing continuous and dynamic positive airway pressure, and allowing more precise oxygen delivery.³ Our case illustrates that a heated and humidified high-flow nasal cannula system can address

moisture maintenance of the nasopharynx and airway in patients with SS. Further study on the benefits of Optiflow technology in critical care environments seems warranted.

Competing interests None.

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