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The use of capnography for apnea monitoring during non-invasive positive pressure ventilation during spinal anesthesia

To the Editor:

Non-invasive positive pressure ventilation (NPPV) has become increasingly common,¹ and we recognize that patients requiring NPPV devices present several unique challenges when they require anesthesia and surgery.² One particular challenge is respiratory monitoring. We share our positive experience using capnography as an apnea monitor during NPPV in a sedated patient with chronic obstructive pulmonary disease undergoing spinal anesthesia. The patient was a 69-yr-old female who was scheduled for replacement of her right femoral head for a fracture sustained during hospital admission prompted by an exacerbation of her chronic obstructive pulmonary disease. During this admission, her attending physician prescribed a portable NPPV ventilator (NIP Nasal III™, Teijin Inc., Tokyo, Japan) and she was successfully treated using bi-level positive pressure ventilation (O_2 at 5 L·min⁻¹, inspiratory positive airway pressure 14.5 cm H₂O, expiratory positive airway pressure 4.0 cm H₂O, backup respiratory rate 11 min⁻¹) immediately before surgery. During spinal anesthesia, she was lightly sedated (bispectral index = 70 to 80) using a continuous intravenous infusion of propofol. To monitor for apnea during sedation, we attached a sampling tube of the capnograph to the nasal mask used for NPPV (Figure, panel A) and successfully obtained a reliable capnograph trace throughout anesthesia (Figure, panel B). We advocate this simple approach for capnography to detect apneic events during NPPV.

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The nasal mask used for non-invasive positive pressure ventilation in this case

Fig. 1a

Capnogram during non-invasive positive pressure ventilation in this case

Fig. 1b

FIGURE Panel A) The non-invasive positive pressure ventilation system showing the capnograph sampling tube attached to the nasal mask via a pressure monitoring port. Panel B) Representative capnograph tracing demonstrates good signal quality.

References

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