Biphasic Intermittent Positive Airway Pressure (BIPAP) Ventilation Support In The Postoperative Period For Patients With Myotonic Dystrophy
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Abstract
Patients with myotonic dystrophy (MD), a neuromuscular disorder, are significantly affected by general anesthesia. The most common post-operative complications seen in MD patients are respiratory complications; thus they are often in need of temporary post-operative ventilatory support. We present a case of a 65-year-old female who developed CO2 narcosis due to hypoventilation, after undergoing breast lumpectomy under general anesthesia. The ventilatory complication was treated with BIPAP using a full face mask. The patient recovered within 24 hours. This case proposes the option of the non-invasive method of BIPAP for MD patients with hypoventilation after general anesthesia.

INTRODUCTION
Myotonic dystrophy (MD) is a multisystem disorder, manifested mainly by myotonia and accompanying muscle weakness. As the respiratory muscles are affected, ventilatory compromise is common, especially in the setting of surgery with general anesthesia. Aside from the preoperative investigation and intraoperative management, the correct plan for postoperative care is of prime importance for patients with MD. The most common and serious problem these patients encounter is postoperative hypoventilation resulting from the influence of hypnotic drugs, opioids and myorelaxants, thus exacerbating the underlying myotonic disease. Occasionally, even after minor surgical intervention under light general anesthesia MD patients require a prolonged recovery period with mechanical ventilation. While the issue of ventilation for MD patients post-operatively has been discussed in the literature, the case presented below is a first report describing the use of bi-level positive airway pressure (BIPAP) as temporary ventilatory support for a hypoventilating patient with myotonic dystrophy in the postoperative period.

CASE PRESENTATION
A 65 year-old female patient was admitted for breast lumpectomy and axillary lymph node dissection due to breast carcinoma. She was known to suffer from MD, with clinical symptoms for the preceding 10 years. She presented with kyphoscoliosis, gastro-esophageal reflux and mild asthma as well. Regular medications included famotidine, aluminium hydroxide and tamoxifen. She had no known drug allergies. According to pre-operative anamnesis, she did not require assistance in daily activities of living, and preoperative examination did not show pathological findings aside from mild symmetric weakness in arms and legs. Her chest X-ray and blood tests were normal, and there were signs of left ventricular hypertrophy in her 12-lead electrocardiogram.

Premedication with diazepam 10 mg was administrated prior to surgery. General anesthesia was induced with Propofol 100 mg and Rocuronium 30 mg. Intubation was performed for ventilation and aspiration prevention. Morphine 10 mg was given intravenous for perioperative analgesia. Anesthesia was maintained with Isoflurane 0.2% and N2O 70%. The operation was completed after one hour and 20 minutes. Atropine 1 mg and Neostigmine 2.5 mg were given for reversal of muscle relaxation, and extubation was executed after verifying that the patient was able to breathe adequately without assistance. The patient was transferred to the PACU in full consciousness; she responded to her name and raised her limbs as commanded. The first measurement of patient's oxygen saturation in the PACU was 85% in room
hypothyroidism, primary hypogonadism, infertility and gastric emptying; and endocrine abnormalities such as obstructive sleep apnea syndrome; dysphagia; delayed abnormalities; restrictive lung disease; central and cataracts; cardiomyopathy; cardiac conduction multisystem involvement. Extramuscular features include distal limbs; ptosis; frontal baldness; mental impairment and wasting of the muscles of mastication, neck, pharynx and may be accompanied by symptoms including, marked characterized by myotonia (muscle stiffness). The disorder life. Weakness is most common complaint in MD, most commonly between the second and fourth decades of 0.003-0.005% common of the myotonic syndromes with a prevalence of 1 in 18,000-20,000 First described by Steinert in 1909, MD is the most common occurrence in obese patients; the use of BIPAP has been recommended as part of postoperative care after gastric bypass surgery. In cases of such a complication, mechanical ventilation with intubation has been used as ventilatory support. It must be acknowledged that endotracheal intubation is not without complications of its own. Mechanical ventilation with intubation, even for a short period of time, can increase the risk of nosocomial infection. Moreover, intubated patients require sedation to prevent discomfort from the endotracheal tube. The use of sedative medications does not shorten time of recovery, and can yet increase it beyond the time required for recovery from the respiratory problem per se. BIPAP is effective in improving oxygenation and decreasing hypercarbia, and has been found to be beneficial to patients after lung resection surgery and after coronary artery bypass graft (CABG) surgery. Postoperative hypoventilation is a common occurrence in obese patients; the use of BIPAP has been recommended as part of postoperative care after gastric bypass surgery. Patients with MD may be a suitable group for similar management in the postoperative period after general anesthesia and deep sedation. The use of (BIPAP) in the post-operative setting has been described in conjunction with use of a laryngeal airway mask (LMA). The LMA itself is accompanied with potential complications, such as hypopharyngeal trauma and aspiration. Thus, in the case presented here, we emphasize that the patient required a full face-mask only, which is less uncomfortable and entails fewer potential complications than the LMA, and demonstrated a satisfactory ventilatory response to BIPAP. SUMMARY MD patients are at risk for developing respiratory failure after general anesthesia. The use of BIPAP for MD patients.
with ventilatory insufficiency in the postoperative period should be considered, as it can avoid hypoventilation, requires no invasive airway management, and may be an equally effective and safer alternative to invasive methods of ventilation.

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