

HIGH FLOW OXYGEN VIA NASAL CANNULA DURING RESPIRATORY INSUFFICIENCY FOLLOWING PNEUMONECTOMY

Lesley Manning, RRT, Linda Dominy, RRT, MHA, Van Nguyen, RRT, M. Douglas Mullins, MD, FCCP, Memorial Health University Medical Center, Savannah, Georgia

Introduction: High flow supplemental breathing gases are traditionally associated with mask delivery systems. During severe conditions, prior to noninvasive positive pressure ventilation or invasive mechanical ventilation, high flow gas systems may incorporate masks and cannulas used in tandem. Such combinations are integrated during attempts to improve oxygenation and meet respiratory demands in acute situations. Here we present a case whereby high flow breathing gas is delivered by nasal cannula (NC), traditionally a low flow system, during high demand respiratory insufficiency. This intervention was made subsequent to patient's poor response following attempts to improve his respiratory compromise using traditional systems.

Case Presentation: A 64-year-old male with a history of COPD and stage III large cell carcinoma underwent a left pneumonectomy. On post-op day 3, he developed pulmonary edema, decreased SaO₂%, high respiratory rate, and dyspnea. In an effort to improve his respiratory decompensation, he was placed on a double-flow aerosol mask. This did not improve his worsening condition. We then advanced him to NRB mask with NC in series at 6 LPM. He remained dyspneic, with a respiratory rate of 28 bpm, and then became diaphoretic, with elevated heart rate and 83% SaO₂. In an attempt to avoid intubation, he was placed on the Vapotherm™ (Vapotherm 2000i) high flow system via nasal cannula at 20 LPM, temperature at 37°C, and 100% FI_O₂. Within 15 minutes his oxygen concentration had decreased to 40%, followed by traditional NC at 3 LPM within 48 hours.

Discussion: New high flow technology permits oxygen therapy via nasal cannula at non-traditional flow rates. In this case of respiratory insufficiency, the high flow NC system, Vapotherm™, was associated with rapid improvement in SaO₂%, normalized respiratory rate, and relief from dyspnea. In patients with respiratory insufficiency, high flow NC may be considered over traditional mask systems.

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