

FACTORS AFFECTING THE DEVELOPMENT OF MUCUS PLUGS  
IN PATIENTS WITH TRANSTRACHEAL OXYGEN

AN ABSTRACT OF

A THESIS

PRESENTED TO THE GRADUATE FACULTY  
OF WESTERN CONNECTICUT STATE UNIVERSITY

by

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IN PARTIAL FULFILLMENT  
OF THE REQUIREMENTS FOR THE DEGREE  
MASTER OF SCIENCE IN NURSING

### Abstract

Transtracheal oxygen (TTO) catheter placement is a new procedure. It provides direct oxygen delivery to patients with advanced lung disease. Symptomatic mucus balls have been noted in 10 to 20% of TTO patients. One fatality has been reported. There is a lack of research relating to the possible causes of this potentially fatal complication. The purpose of this study was to determine if patients who experience mucus plugging share common characteristics. Oxygen flow rate (L/min.) and disease severity (% predicted of FEV1) were chosen as variables. This retrospective study examined the charts of 29 TTO patients. An unpaired 2 tailed t-test was employed to determine difference in oxygen flow rate and severity of disease between those patients who developed mucus plugs (Group 1) and those patients who did not develop mucus plugs (Group 2). Group 1 was comprised of 14 COPD patients, 1 patient with cystic fibrosis (CF) and 1 patient with idiopathic pulmonary fibrosis (IPF). The mean age was 62.13, the mean oxygen flow rate was 1.62 L/min., and the mean FEV1 was 24.06 % of predicated. Group 2 consisted of seven patients with COPD and six patients with IPF. The mean age was 65.46, the mean oxygen flow rate was 2 L/min., and the mean FEV1 was 38.15 % of predicted. There were no significant difference in oxygen requirements between those patients who developed

mucus plugs and those patients who did not develop mucus plugs ( $t = .375$ ,  $p = .711$ ). However, there was a significant difference in disease severity between those patients who developed mucus plugs and those patients who did not develop mucus plugs ( $t = -2.352$ ,  $p = .026$ ). These findings indicate that oxygen flow rates do not appear to affect the development of mucus plugging in patients with TIO. However, the more severe the FEV1, the higher the risk for mucus plugging. Furthermore, given the preponderance of COPD in Group 1, the results may suggest that not only a more severe FEV1, but also impaired mucociliary clearance in this diagnosis may contribute to mucus plugging in this group of patients. These may have implications for nursing practice. Nurses can direct better patient selection criteria and can provide appropriate patient education by defining factors that contribute to the development of mucus plugging and identifying patients at risk.