ACTA Project Grant, final report, 14th July 2015.

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Project Title:	The efficacy of prophylactic nasal high flow oxygen compared with soft face mask oxygen therapy in improving early postoperative recovery in patients after lung resection surgery.
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Study Abstract

Title: The effect of prophylactic post-operative high flow nasal oxygen on patient recovery after lung resection surgery: a single blinded, randomized, controlled trial.

Background: Continuous positive airway pressure (CPAP) has been shown to improve recovery in patients after lung resection surgery. However CPAP is not used routinely because it is costly, labour intensive, requires admission to high-dependency or intensive care wards, and often poorly tolerated. High-flow nasal oxygen (HFNO) therapy (Optiflow, Fisher and Paykel Healthcare) is a potential alternative to traditional CPAP, which delivers humidified, low level, flow-dependent positive airway pressure. The aim of this study was to determine whether prophylactic post-operative HFNO was associated with improved patient recovery after lung resection surgery. Quality of patient recovery was assessed both objectively and subjectively.

Methods: A randomized, controlled, single-blinded, study was conducted with IRB ethical approval. Patients undergoing elective lung resection were consented and randomly assigned to either HFNO or standard oxygen therapy for the first 24h post-operatively. Recovery from surgery was assessed using the PQRS scoring system for patient reporting, and measured 1, 2 and 7 days after surgery and compared with baseline.

Results: Sixty-one patients were studied. Baseline characteristics were similar between the two groups; 46% had video-assisted surgery (VATS) in the HFNO group compared with 48% in the control group, p>0.05. Geometric mean (SD) length of hospital stay was reduced in the high flow oxygen group, 2.7 (1.9) vs. control 4.0 (1.8) days, RR 0.68 (95% CI 0.48 - 0.86) p=0.030. Functional components of patient-reported recovery were also improved by 30% in the HFNO group (p<0.001).

Conclusions: Prophylactic post-operative HFNO therapy is associated with reduced length of hospital stay and improved satisfaction in patients after elective lung resection surgery, compared with standard oxygen administration.

Presentations:

1. European Society of Anaesthesia annual meeting, Berlin, Germany, May 2015.

Poster presentation: *High-flow nasal oxygen therapy reduces length of hospital stay after lung resection surgery.*

2. European Association of Cardiothoracic Anaesthesiologists (EACTA), annual scientific meeting, Gothenburg, Sweden, June 2015.

Oral presentation: *The effect of prophylactic post-operative high flow nasal oxygen on patient recovery after lung resection surgery: a single blinded, randomized, controlled trial.*

Publications:

A Randomised Controlled Trial of High-Flow Nasal Oxygen (Optiflow™) As Part Of An Enhanced Recovery Programme After Lung-Resection Surgery.

Bilal M Ansari, Maurice P Hogan, Tim J Collier, Robert A Baddeley, Marco Scarci, Aman S Coonar, Fiona E Bottrill, Guillermo C Martinez, and Andrew A Klein.

Annals of Thoracic Surgery, accepted for publication.