

THE OPTICC TRIAL: A MULTI-INSTITUTIONAL STUDY OF OCCULT PNEUMOTHORACES IN CRITICAL CARE

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Background: The management of pneumothoraces detected on CT but not on supine chest radiographs remains controversial, especially in those undergoing positive pressure ventilation (PPV) whom have significant complications of both observing and treating. There is limited prior study with limited statistical power yielding confusion regarding the need for routine drainage of these occult pneumothoraces (OPTXs). The largest prior randomized trial enrolled 27 patients. We thus conducted a pilot study at two level I trauma centres to address the feasibility and optimal design to study treatment of OPTXs in traumatized patients undergoing PPV.

Methods: Stable mechanically ventilated (or en-route to surgery) adults with OPTXs were identified at two centres (Calgary and Quebec). Patients were randomized to observation (unless drainage became clinically indicated) or to chest drainage. Episodes of respiratory distress (need for thoracostomy tube, acute/sustained increase in oxygen requirements, difficulty in achieving adequate ventilation and self-reported distress) and imaging abnormalities (new or expanding pneumothoraces, pleural effusions) were recorded until discharge.

Results: From August, 2006 to April, 2008, 24 trauma patients were enrolled (17 Calgary, 7 Quebec), with 2 later exclusions (final CT - no OPTX). Of the remaining 22 patients (14 males, 8 females; ages 18-66 years, median = 26), injury mechanisms included motor vehicle/bike crashes (68%), pedestrian struck (18%), snowmobile (9%) and snowboarding (5%) crashes. Thirteen patients (59%) were randomized to observation, 9 to drainage (41%). Four observed (31%) later had chest tubes placed non-urgently for worsening OPTXs/effusions; none with increased morbidity. Overall rates of respiratory distress (drainage: 33%, observation: 46%) and mortality (drainage: 22%, observation: 15%) were similar across groups, as were median ICU (drainage: 3, observation: 4) and in-hospital days (drainage: 10, observation: 16).

Conclusions: With no significant differences in morbidity the OPTICC trial is safe and will guide the development of a fully powered, multi-centre non-inferiority trial.