

**P109 PREDICTING DIFFICULT MECHANICAL VENTILATION IN OBESE PATIENTS UNDERGOING LAPAROSCOPIC SURGERY: AN OBSERVATIONAL STUDY**

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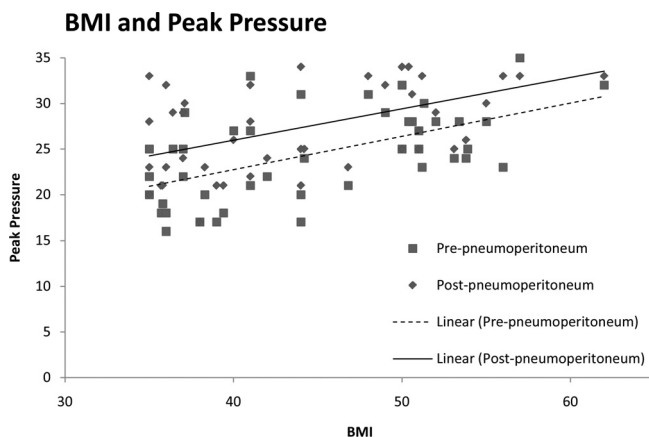
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**Introduction** Morbid obesity and super obesity are associated with increasingly negative effects on respiratory parameters, but beyond BMI itself the physical predictors of difficult intraoperative ventilation have not been demonstrated. We performed a study to identify criteria for the prediction of difficult intraoperative mechanical ventilation in obesity patients.

**Method** We performed an observational study of 48 obese patients (BMI >35 kg/m<sup>2</sup>) undergoing laparoscopic surgery (bariatric, upper gastrointestinal and gynaecological). Patients with conditions likely to affect respiratory compliance, e.g. thoracic or spinal deformity were excluded.

We analysed biometric measurements such as age, sex, weight and BMI, waist, hip and neck circumferences, waist: hip ratio, STOP-BANG scores, presence of obstructive lung disease and pre-operative oxygen saturation measurements. Respiratory mechanics were assessed pre- and post-pneumoperitoneum using standard Pitot pneumotachograph measurements, including tidal volumes, peak pressures, positive end-expiratory pressure and dynamic respiratory compliance.

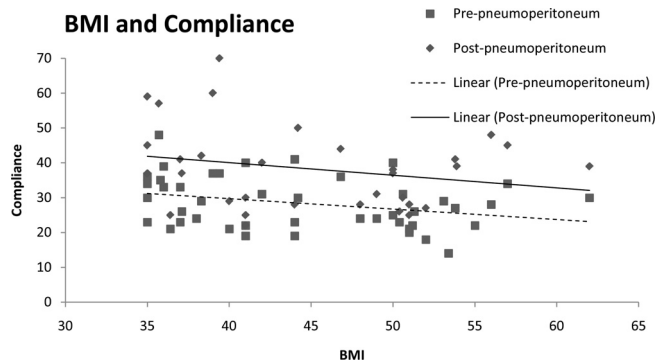
Differences in ventilator strategy (e.g. volume-control versus pressure-control and tidal volume delivered) were analysed post-hoc.



**Abstract P109 Figure 1** Showing relationship between BMI and Peak Pressure. Peak Pressure: cmH<sub>2</sub>O. BMI: kg/m<sup>2</sup>. Our study demonstrated a statistically significant correlation between BMI and increased peak pressures both pre- and post-pneumoperitoneum ( $p < 0.01$ )

**Results** See Figures 1 and 2. Our study demonstrated a statistically significant correlation between BMI and increased peak pressures both pre- and post-pneumoperitoneum ( $p < 0.01$ , Figure 1). Additionally, BMI had a statistically significant negative correlation with respiratory compliance ( $p < 0.05$ , Figure 2).

Age, sex and absolute weight, neck, waist: hip ratio, waist and hip circumference had no correlation with intraoperative respiratory mechanics.



**Abstract P109 Figure 2** Showing relationship between BMI and Compliance. Compliance ml/cmH<sub>2</sub>O and BMI kg/m<sup>2</sup>

The difference between volume-controlled and pressure-controlled strategies were analysed and shown not to be significant. **Conclusion** Our novel study shows increasing BMI has a negative influence on respiratory mechanics of the anaesthetised obese patient. It is important to stress that while BMI is the strongest predictor of increased peak pressure and reduced respiratory compliance, patient positioning and lung recruitment can have positive effects on respiratory mechanics. Further studies are needed to help identify predictors of difficult ventilation in obesity.

**P110 A REVIEW OF PERSISTENT HYPERCAPNIA AND SUBSEQUENT REFERRAL FOR OBESE PATIENTS ADMITTED INTO AN INTENSIVE CARE UNIT**

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**Introduction** Obesity hypoventilation syndrome (OHS) is increasingly common but data detailing the prevalence, outcome and long-term management, in patients admitted to the ICU, are limited. Indeed, we aimed to assess the prevalence of persistent hypercapnia in obese patients admitted to ICU and subsequent referral rate for specialist long-term management of sleep disordered breathing.

**Methods** A retrospective analysis of data that was prospectively entered into an electronic patient record was conducted, from May 2011 to May 2014, at a University Hospital. Obesity was defined as a body mass index (BMI) (>35 kg/m<sup>2</sup>) and hypercapnia as an arterial partial pressure of carbon dioxide (PaCO<sub>2</sub>) >6 kPa. All patients meeting both criteria were reviewed to assess whether these patients were referred to the regional sleep and ventilation unit.

**Results** A total of 5014 patients were ventilated in critical care of which 240 (5%) had obesity with persistent hypercapnia (age 49 ± 14 years, BMI 41.5 ± 6.7 kg/m<sup>2</sup>, PaCO<sub>2</sub> 7.5 kPa). 27% percent (65/240) were referred for assessment of sleep disordered breathing. Referred patients were more likely to have respiratory comorbidity ( $p < 0.001$ ) and were more obese ( $\Delta$ BMI 3.1 kg/m<sup>2</sup>,  $p < 0.001$ ) but of similar age ( $p = 0.977$ ) and degree of hypercapnia ( $p = 0.474$ ). Patients referred for assessment of sleep disordered breathing had improved survival compared to those who were not referred (980 days v 1271 days, log rank test  $p = 0.004$ , Figure 1).