

Moderate increase in intraabdominal pressure attenuates gastric mucosal oxygen saturation in patients undergoing laparoscopy.

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BACKGROUND: Perioperative disturbances of microvascular blood flow and oxygenation in the intestinal tract have been hypothesized to play an important role in development of the multiple organ dysfunction syndrome. Herein, increased intra-abdominal pressure (IAP) has been identified as a key factor in the initiation of the pathophysiologic cascade. The authors hypothesized that increasing the IAP by intraperitoneal insufflation of carbon dioxide attenuates microvascular oxygen saturation in gastric mucosa. They tested this hypothesis in a prospective, observational study in 16 patients scheduled to undergo elective diagnostic laparoscopy. **METHODS:** The authors continuously assessed microvascular oxygen saturation in gastric mucosa by reflectance spectrophotometry. Simultaneously systemic oxygen saturation, heart rate, arterial blood pressure, and ventilation-derived variables were measured noninvasively. During general anesthesia and controlled mechanical ventilation, baseline values were obtained. Thereafter, the IAP was increased to 8 and 12 mmHg, respectively, followed by a control period after desufflation. **RESULTS:** The increase in IAP from baseline to 8 mmHg decreased microvascular oxygen saturation in gastric mucosa from 69 \pm 7% (mean \pm SD) to 63 \pm 8% at 8 mmHg IAP ($P < 0.05$), with a further significant reduction to 54 \pm 13% at 12 mmHg IAP ($P < 0.01$). Microvascular oxygen saturation in gastric mucosa recovered rapidly to baseline level (66 \pm 10%) after release of increased IAP. In striking contrast to regional mucosal oxygen saturation, systemic oxygenation did not change with either of the interventions. **CONCLUSIONS:** The results suggest that increasing intraabdominal pressure to moderate levels, commonly applied to induce a surgical pneumoperitoneum, decreases gastric mucosal oxygen saturation.