**Impact of different intraoperative CO2 pressure levels (8 and 15 mmHg) during laparoscopic hysterectomy performed due to benign uterine pathologies on postoperative pain and arterial pCO2: a prospective randomised controlled clinical trial.**

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**Abstract**

**Objective;** To compare the effects of two different intraoperative CO2 pressures (8 and 15 mmHg) during laparoscopic hysterectomy for benign uterine pathologies in terms of postoperative abdominal and shoulder pain, laparoscopy-mediated vegetative alterations, pain medication requirement, arterial CO2 pressure (pCO2), surgical parameters and safety.

**Design;** Prospective randomised controlled study

**Setting;** German university hospital

**Population:** Female patients undergoing laparoscopic hysterectomy for benign uterine pathologies

**Methods:** Patients were randomised to standard pressure (SP; 15 mmHg, control) or low pressure (LP; 8 mmHg, experimental) group

**Main outcome measures:** Primary outcomes were postoperative abdominal and shoulder pain intensities, measured via numeric rating scale (NRS) and vegetative parameters (fatigue, nausea, vomiting, bloating) at 3, 24 and 48 hours postoperatively. Secondary outcomes were pain medication requirement (mg) and arterial pCO2 (mmHg). Surgical parameters and intra - and postoperative complications were also recorded.

**Results**: In total, 178 patients were included. Patients in the LP group (n = 91) showed significantly lower postoperative abdominal and shoulder pain scores, less vegetative alterations, lower pain medication requirements, a shorter postoperative hospitalisation and lower intra - and postoperative arterial pCO2 values compared to the SP group (*n* = 87; *p* ≤ 0.01). No differences in intra - and postoperative complications were observed between groups.

**Conclusions:** Low pressure laparoscopy seems to be an effective and safe technique for the reduction of postoperative pain and laparoscopy-induced metabolic and vegetative alterations following laparoscopic hysterectomy for benign indications.