

FP46. — INTRAPERITONEAL ADHESIONS AFTER OPEN OR LAPAROSCOPIC ABDOMINAL PROCEDURE : AN EXPERIMENTAL STUDY IN THE RAT.

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Adhesion formation is common after abdominal surgery. The incidence and severity of adhesion formation following open or laparoscopic surgery remain controversial. The role of CO₂ pneumoperitoneum is also largely discussed. This study aimed to compare adhesion formation following peritoneal injury by electrocoagulation performed through open or laparoscopic procedures in a rat model.

Sixty male rats were randomized to undergo a 1.5cm peritoneal injury with unipolar cautery under general anaesthesia : open surgery (group A, n = 20), laparoscopic surgery with CO₂ pneumoperitoneum (group B, n = 20) and laparoscopic surgery with air pneumoperitoneum (group C, n = 20). Duration of the procedures was fixed at 90 minutes in all groups, and pneumoperitoneum pressure at 10 mmHg. Ten days later, the animals underwent a secondary laparotomy to score peritoneal adhesions using qualitative and quantitative parameters.

Forty-five rats developed at least one adhesion, respectively 95% in group A, 83% in group B and 55% in group C (P < 0.01 ; Group C vs Group A, P < 0.01). According to number, thickness, tenacity, vascularization, extent, type, and grading according to Zühke classification, no significant difference was observed between groups A and B. The distribution of adhesions after open surgery was significantly different than after laparoscopic surgery (P < 0.001). Interestingly, group C rats developed significantly less adhesions at the traumatized site, and their adhesions had less severe qualitative scores compared to open surgery (P < 0.01).

In this animal model, CO₂ laparoscopic surgery did not decrease the formation of postoperative adhesion, compared to open surgery. The difference with the animals operated with air pneumoperitoneum emphasizes the role of CO₂ in peritoneal injury leading to adhesion formation.