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**Topic :** Tumor Cell Implantation

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Impact of surgical peritoneal environment on postoperative dissemination and tumor growth in a preimplanted tumor model

We recently demonstrated that surgical peritoneal environment of CO<sub>2</sub> pneumoperitoneum at a low intraperitoneal pressure (IPP) could be optimal to minimize peritoneal dissemination, when tumor cells were inoculated just before surgery, in a syngenic mouse model. However, to mimic a clinical setting, a different study design in which tumors are present before surgery is also necessary. The objective of the present study was to evaluate the impact of surgical peritoneal environment on post-operative dissemination and tumor growth over time in a preimplanted tumor model. We used our established mouse surgical model with controlled respiratory support.

On day -7, C57BJ6 mice received an intraperitoneal inoculation of a mouse ovarian cancer cell line (ID8). On day 0, mice were randomized into four groups of 32 animals each: anesthesia alone, CO<sub>2</sub> pneumoperitoneum at low (2mmHg) or high (8mmHg) IPP and laparotomy. Groups were further subdivided into four groups and a laparotomy was performed to evaluate dissemination and tumor growth on post-operative day (POD) 1, 2, 7 or 14. Comparisons were made using the one-way ANOVA.

The peritoneal dissemination score was significantly higher in the laparotomy group compared to the remaining three groups on PODs 1, 2 and 7. We detected no significant difference in the peritoneal dissemination score among the low, high IPP and anesthesia groups on PODs 1, 2 and 7. However, there was no significant difference in the peritoneal dissemination score among the three surgical groups on POD 14. We detected no significant difference in the diaphragmatic dissemination score among the four groups on PODs 1, 2 and 7, whereas it was significantly higher in the three surgical groups than the anesthesia group on POD 14. Histopathological examination demonstrated that the incidence of invasion of cancer cells into muscle layers was significantly higher in the laparotomy group than the low IPP and anesthesia groups on POD 14. There was no significant difference in tumor growth among the four groups.

Our previous and the present findings suggested that a CO<sub>2</sub> pneumoperitoneum at a low IPP had few if any short term effects on peritoneal dissemination in either a tumor cells spillage or preimplanted tumor model.