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The peritoneum is alive during surgery : from pathophysiology to the operative theater

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Topic : Tumor Cell Implantation

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Adding oxygen to the pneumoperitoneum and the influence on port site metastases

Port site metastases (PSM) are a frequent finding in advanced stage ovarian carcinoma. Different mechanisms are postulated to cause these PSM. In previous mouse experiments we observed a 50% reduction in tumorload after laparoscopy with addition of 4% oxygen.

In a RCT from 1-1-2007 we evaluated the incidence of PSM in 22 consecutive women undergoing a laparoscopy for suspected ovarian cancer with subsequent debulking laparotomy. Women were randomized to receive control laparoscopy with 100% carbon dioxide or 96% carbon dioxide with addition of 4% oxygen.

In the control group 19 port sites were excised, of which 9 (47%) showed PSM. In the oxygen group 16 port sites were excised and 8 (50%) showed evidence of PSM.

The occurrence of PSM is not only related to the use of CO₂ during exploratory laparoscopy. Other factors including direct wound contamination, aerosolization of tumor cells and episodes of desufflation and gas leaks known as the chimney effect are important and may be influencing this result.