

**Ott DE. Desiccation of the peritoneum by thin-film evaporation during laparoscopy. *JSLs* 2003; 7: 189-195.**

LINK - <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3113197/>

**Objective:**

To assess the effects of gas flow during insufflation on peritoneal fluid and peritoneal tissue regarding transient thermal behavior and thin-film evaporation. The effects of laparoscopic gas on peritoneal cell desiccation and peritoneal fluid thin-film evaporation were analyzed.

**Methods:**

Measurement of tissue and peritoneal fluid and analysis of gas flow dynamics during laparoscopy.

**Results:**

High-velocity gas interface conditions during laparoscopic gas insufflation result in peritoneal surface temperature and decreases up to 20°C/second due to rapid thin-film evaporation of the peritoneal fluid. Evaporation of the thin film of peritoneal fluid extends quickly to the peritoneal cell membrane, causing peritoneal cell desiccation, internal cytoplasmic stress, and disruption of the cell membrane, resulting in loss of peritoneal surface continuity and integrity. Changing the gas conditions to 35°C and 95% humidity maintains normal peritoneal fluid thin-film characteristics, cellular integrity, and prevents evaporative losses.

**Conclusions:**

Cold, dry gas and the characteristics of the laparoscopic gas delivery apparatus cause local peritoneal damaging alterations by high-velocity gas flow with extremely dry gas, creating extreme arid surface conditions, rapid evaporative and hydrological changes, tissue desiccation, and peritoneal fluid alterations that contribute to the process of desertification and thin-film evaporation. Peritoneal desertification is preventable by preconditioning the gas to 35°C and 95% humidity.