

LASER SMOKE/PLUME ABSORPTION VIA THE PERITONEUM AT LAPAROSCOPY

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“Laparoscopic procedures which generate smoke confine this toxic material to the intra-abdominal cavity. Absorption of portions of this material may occur via the peritoneal absorption. To evaluate whether smoke generated by this process is absorbed, a study of changes in blood concentration of methemoglobin was designed. Laparoscopic laser smoke generating procedures were compared to control groups. Twenty-five patients having smoke generated by laparoscopic procedures had methemoglobin evaluation prior to induction of anesthesia and at 5, 15, 30, 60, 120, and 180 minutes after smoke production. Twenty-five control patients having laparoscopic procedures without smoke generation were similarly evaluated for methemoglobin concentration. All patients in the smoke generating group beyond the 15 minute period showed statistically significant acute elevation of methemoglobin. At 5 minutes 76% (19/25) showed these changes. Post-operatively 64% (16/25) demonstrated a return to normal pre-operative levels. No control patient developed an abnormal methemoglobin level. These data demonstrate that elevation in blood methemoglobin level occurs acutely due to smoke produced during laparoscopic procedures. The lingering effects of this toxic intra-abdominal smoke exposure is seen in some patients as postoperative nausea and dizziness. The resultant changes reduced oxygen carrying capacity to tissues, locally and at distant sites. I conclude that as a result of intra-abdominal laser smoke an elevation of methemoglobin occurs. The specific components of the smoke plume causing these changes in methemoglobin concentration is being explored.”