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ORIGINAL CONTRIBUTIONS

# Systemic and Peritoneal Inflammatory Response After Laparoscopic or Conventional Colon Resection in Cancer Patients

## A Prospective, Randomized Trial

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**PURPOSE:** This study was designed to evaluate differences in both the peritoneal and systemic immune response after laparoscopic and conventional surgical approaches. **METHODS:** Patients with a primary carcinoma were prospectively randomized to curative laparoscopic (n = 12) or conventional (n = 14) colon resection. The proinflammatory cytokines interleukin-6, interleukin-8, and tumor necrosis factor-alpha were measured in the peritoneal drain fluid and in the serum. C-reactive protein and leukocyte counts and the differences in leukocyte subpopulations and expression of human leukocyte antigen-DR on monocytes were measured perioperatively. **RESULTS:** Significantly higher levels of proinflammatory cytokine were found in the peritoneal drain fluid than in the circulation after both procedures. Serum interleukin-6 and interleukin-8 levels were significantly lower 2 hours after laparoscopic surgery than with the conventional procedure. Postoperative cellular immune counts and human leukocyte antigen-DR expression normalized earlier after the laparoscopic approach. **CONCLUSIONS:** The systemic proinflammatory concentrations after both surgical approaches represent only a small fragment of what is generated in the peritoneal drain fluid. Even if the immediate levels of proinflammatory cytokines in

the serum are significantly lower in the laparoscopic group, the same cytokines locally produced showed no differences, which suggests that the two intra-abdominal approaches are equally traumatic. No differences in cellular response were observed between the groups. [Key words: Laparoscopy; Conventional; Wound fluid; Proinflammatory cytokines; Systemic immune response; Human leukocyte antigen-DR; Colon carcinoma]

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Surgery, whether conventional or laparoscopic, is a controlled trauma with immunologic consequences. The extent and duration of postoperative immune suppression depend on the magnitude and type of the intraoperative injury.<sup>1</sup> Postoperative immune suppression may have considerable consequences; it has been related to infectious complications and the development of tumor metastases in animal studies.<sup>2,3</sup> Some clinical research has focused on the prevention or reversal of this immune-suppressive state by modulation of the operative trauma or by

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