Letters to the editor

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Tumor dissemination during laparoscopic cholecystectomy for gallbladder carcinoma

Port site and peritoneal tumor seeding is a lethal complication following laparoscopic cholecystectomy (LC) for gallbladder carcinoma. Since the first report by Drouard et al. [4] in 1991, many other cases of seeding have been published. The number of previous articles appearing in *Surgical Endoscopy* [2, 3, 5, 8, 10–12, 14, 15] suggests that readers of the journal are very interested in this problem. We attempt here to obtain answers from the literature as to whether LC promotes tumor seeding more than open cholecystectomy, and by what mechanisms.

The true incidence of port site and peritoneal seeding after LC for gallbladder cancer is not known, as cases without this complication typically are not reported. Only a few small studies allow an estimate of incidence. Wibbenmeyer et al. [16] reported that three of six patients undergoing LC for unsuspected cancer developed seeding. Fong et al. [6] reported that four of 10 patients with laparoscopically resected cancer developed tumor implants from seeding soon after LC. Sandor and associates [12] reported that two of three patients undergoing LC for unsuspected cancer developed port site recurrences. In our experience, one of two LC patients with unsuspected cancer developed peritoneal seeding (unpublished data). Considering these four small series, the incidence of tumor seeding after LC is considerable. In contrast, we previously have reported that none of 98 patients with unsuspected gallbladder carcinoma developed wound metastases after open cholecystectomy [13].

A recent study in rats [9] revealed that port site seeding occurred more frequently after laparoscopic tumor manipulation than after an open procedure; seeding developed equally in "contaminated" ports from which a tumor-laden instrument was withdrawn and "clean" ports from which a tumor-free laparoscope was retrieved. Clinically, also, seeding may occur at ports which had no evident contact with tumor [8, 9]; pneumoperitoneum with carbon dioxide may explain seeding at apparently clean port sites [2, 9].

Another unresolved question is whether laparoscopic resection could enhance hematogeneous or lymphatic dissemination. Fong et al. [6] and Nishizaki et al. [10] have reported hepatic metastases appearing soon after LC.

Finally, many anecdotal reports of seeding after LC have omitted critical information such as the incidence of cancer in the surgeons' LC experience, the incidence of seeding in their cancer cases, the TNM stage [1, 7] of the tumor, whether bile spillage occurred, and whether a gallbladder bag was used. The follow-up period also is short in most reports. Future authors should ensure that such data is included, especially since prospective randomized trials regarding this complication are largely precluded by ethical issues and tumor rarity.

In conclusion, LC risks tumor dissemination more than open cholecystectomy, not only by direct contact but also by metastatic spread. Well-documented clinical reports and well-designed animal studies are needed to better understand this lethal complication.

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