CHAPTER 3

Abdominal Wall Recurrences in Open Surgery

L. Stocchi, H. Nelson

Introduction

An increasing interest in the topic of abdominal wall recurrences has followed the surge of minimally invasive surgery, principally due to concerns regarding early reports of an increased risk of port-site and incisional wound metastases associated with the pneumoperitoneal technique (Berends 1994). Whether this complication is an inevitable consequence of the laparoscopic approach per se or can be considered as an error in judgement or technique and/or part of the learning phase is still a matter of debate. Regardless, as a consequence the incidence of wound recurrence after open surgery has been investigated in the attempt to establish a standard with which laparoscopic surgery should be compared. The purpose of this overview is to examine the possible pathogenic mechanisms, review current reports on abdominal wall recurrences of colorectal cancer, in particular the correlations between cytology of peritoneal fluid and survival, and compare them with analogous experiences reported in the literature for other types of malignancies.

Abdominal Wall Recurrence in Colorectal Cancer

Tumor recurrence at the abdominal wall after colorectal resection is a rare event. Abdominal wound recurrences after open colonic resection range from 0.8% to 2.5% (Cass et al. 1976; Hughes et al. 1983; Reilly et al. 1996). A number of variables affect the incidence of wound recurrences, including the tumor stage and the methodology of analysis adopted. It has been shown that advanced stage tumors are associated with an increased incidence of wound recurrence, which is generally associated with peritoneal carcinomatosis. However, cases of abdominal wound recurrences following resection of stage II (Dukes’ B) colon and rectal cancer have been reported. In the report by Hughes et al. the staging was B in 8 and C in 3 out of the 11 cases where the pathology of the resected tumor was available (Hughes et al. 1983). This suggests that the pattern of recurrence is not exclusively related to the stage of the tumor. In addition, since the detection of abdominal wall recurrence frequently occurs as an incidental finding at surgery, i.e., these lesions are often asymptomatic, it is reasonable to presume that the true incidence of this phenomenon is underestimated. In fact, this is supported by autopsy studies where higher rates of abdominal wall recurrences are reported when compared with recurrences discovered at follow-up. The mechanism of detection of abdominal wall recurrence is variable. No doubt, the sensitivity of abdominal wall recurrence detection depends on the intensity and focus of the investigations.

Autopsy Studies

Autopsy studies are accurate in detecting the presence of abdominal wall recurrences, but are unable to provide data regarding the timing of recurrence and therefore cannot detail whether the abdominal wall has been the first recurrence site. Cass and colleagues reported 7 wound recurrences out of 78 local recurrences following resection of colorectal cancer in 280 patients, corresponding to 2.5% of the overall and 9% of the local recurrences (Cass et al. 1976). Although not specifically addressed in the study, it is reasonable to presume that most wound recurrences occurred in association with local recurrences described as “contiguous to the operative site”. In another autopsy study, Welch and Donaldson encountered a total of 24 cases of abdominal wall recurrences following 145 cases of colorectal cancer resection (16.6%), all of them associated with other sites of recurrence (Welch and Donaldson 1979). Autopsy studies are useful to show that the abdominal wall metastases become increasingly likely to occur as the tumor advances. However, even when detected
at autopsy, it is difficult to prove where the first site of recurrence was, or whether the recurrence extended secondarily, spreading from other areas. Sites of distant spread can often be more readily detected before the sites of locoregional failure are detected, even though the latter may be the initial site of recurrence.

**Second-Look Laparotomy**

At a time when CT was not available, the second-look surgery was promoted as an opportunity to detect recurrent colorectal cancer when excision with curative intent was still possible. The advantage of this approach is that initial sites of recurrence can be noted when they are still solitary and provide a more accurate estimation of the high-risk areas and patterns of spread; they are also more likely to be amenable to complete resection. As it might be expected, wound implants were more frequent in symptomatic patients (5.3%, 4/75) than in planned second-look operations (3/91, 3.3%) (Gunderson and Sosin 1974).

**Data from Prospective Adjuvant Therapy Trials**

The North Central Cancer Treatment Group performed a retrospective review of wound recurrence after open surgery for colon and rectal cancer using patients entered on prospective, randomized adjuvant trials. This report is instructive for a number of findings. Firstly, it provides a long-term follow-up on a wide number of patients with high-risk tumors who also received adjuvant chemotherapy and/or radiation treatments. Advanced stage tumors were not included in the analysis, since the clinical relevance of incisional wound recurrence in the context of widespread metastatic disease was considered circumspect. Out of 1,711 patients with primary adenocarcinoma of the colon or rectum treated for cure, 25 had an abdominal wound recurrence, and 11 had a documented incisional wound recurrence. While 8 patients were diagnosed by clinical examination and confirmed by local excision, 18 patients were operated for recurrent disease. Patients with stage II (Dukes' B) disease had in this study a wound recurrence rate comparable to stage III (Dukes’ C) patients. Wound recurrences were generally associated with poor outcome, with 9 out of the 11 above-mentioned patients having multiple sites of recurrence along with their surgical wounds (Reilly et al. 1996).

In contrast with it, in a retrospective analysis on 372 laparoscopic colectomies, trocar site recurrences occurred in 4 cases and resection of the recurrence was successfully accomplished in 3 of them. In the fourth one, the tumor recurred at the midline wound following a converted resection of a T4N1 cancer which was adherent to the pancreas. Therefore, it seems reasonable to presume that the type of recurrence occurring at a trocar site could be biologically different from a similar occurrence in a major laparotomy wound and generally be associated with a better prognosis, at least in colorectal cancer (Fleshman et al. 1996). However, this is still speculative.

There are insufficient data and follow-up to warrant a definitive statement on whether laparotomy vs. laparoscopy wound tumors are really different in terms of outcome. This will be interesting to follow-up if clear-cut differences are substantiated, and it would implicate different mechanisms of tumor spread between the two surgical approaches.

**Abdominal Wall Recurrence After Malignancies Other than Colorectal Cancer**

Abdominal wound recurrence has been reported following surgery for a number of malignancies, including adrenocortical (Fig. 3.1), esophageal (Recht et al. 1989), endometrial (Curtis et al. 1994; Barter 1986), hepatocellular, gallbladder, ovarian carcinoma (La Fianza et al. 1997), and pancreatic carcinoma following percutaneous biliary drainage (Cutherell et al. 1986; Doctor et al. 1997; Charnley et al. 1995). Similar recurrences have also been observed following percutaneous drainage after gastric cancer surgery (Fig. 3.2). Recently, the interest in abdominal wall recurrences has sharply increased following isolated reports of port-site recurrences following laparoscopic procedures, similar to what has been reported for laparoscopic resection of colorectal cancer. In other cases abdominal wall recurrences have long been described as a phenomenon associated with percutaneous needle biopsies (Kruitwagen et al. 1996) or standard treatment of malignancies with open surgery.

In a multicenter study on pathologic and surgical variables on 4,765 primary liver cancers conducted by the Liver Cancer Study Group of Japan, “skin metastases” were encountered at autopsy in 24 out of 1,832 cases of hepatocellular carcinoma (1.3%) and 8 out of 108 cholangiocarcinomas (7.4%). Of note, these skin metastases were found to frequently coexist with other multiple distant metastases, which sug-