mediately and total parenteral nutrition considered.[3] Enteral nutrition has priority for nutritional support. When bowel obstruction occurs it is important to decide early whether surgical intervention is necessary, for which decision abdominal CT, ultrasound and contrast radiography are useful.[4,5]

Competing interests: None declared.

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Implantation metastasis from adenocarcinoma of the colon into a fistula-in-ano: a case report

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Viable malignant cells have been isolated from the lumen of bowel and from surgical gloves and instruments after colorectal cancer surgery.[1] There are reports of implantation of malignant cells into benign anal lesions during colorectal cancer surgery,[2] and of implantation metastasis from colon cancer during colonoscopy and biopsy.[3] These reports are, however, rare, and the clinical significance of exfoliated, viable malignant cells from colorectal neoplasms remains unclear.

We review a patient with an adenocarcinoma of the left colon and a metastasis in a benign fistula-in-ano, presumably acquired through implantation of viable malignant cells shed from the primary tumour, and discuss the importance of these findings in colorectal cancer surgery.

Case report

A 44-year-old obese male came to hospital with a perianal abscess requiring incision and drainage. Shortly thereafter, a mass developed at the wound; an incisional biopsy was performed. Histopathology identified a well-differentiated mucin-producing adenocarcinoma. Colonoscopy revealed a normal rectum, but with a grossly malignant lesion 65 cm from the anal verge. Biopsy of the lesion revealed a moderately differentiated adenocarcinoma.

A complete staging work-up found no other evidence of metastatic spread. An open left hemicolectomy (primary reconstruction) was completed, with concurrent wide local excision of the infected perianal mass. The perianal wound remained open to heal by secondary intention.

The colon neoplasm (Fig. 1) was a moderately differentiated adenocarcinoma (T3 N1, mesenteric implant). The perianal neoplasm (Fig. 2) was a moderately differentiated adenocarcinoma. The histologic appearance of the 2 malignancies was similar. Immunohistochemistry staining with carcinoembryonic antigen (CEA), cytokeratin 7 and cytokeratin 20 also showed a similar pattern.

The patient recovered from surgery and adjuvant chemotherapy (6 cycles of 5-fluorouracil and leucovorin). The perianal wound healed with a residual fistula. The fistula tract was biopsied aggressively on 3 separate occasions, revealing benign inflammatory tissue, and managed successfully with a seton suture. The patient remains well at 3 years of follow-up, with no local recurrence or distant metastases identified clinically or by colonoscopy, chest radiography or CEA (< 0.5 μg/L).

Discussion

The implantation of malignant cells into benign tissues during open or laparoscopic bowel resection for colorectal cancer remains a serious concern. The sequelae of wound implantation of malignant cells are severe, dramatically impairing patient outcomes and reducing survival. Unexpected occurrences of metastases at trocar sites after laparoscopic bowel resection for colorectal cancer initiated a widespread moratorium on the laparoscopic approach.[4]

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FIG. 1. Colon cancer: moderately differentiated adenocarcinoma (hematoxylin and eosin, ×200).

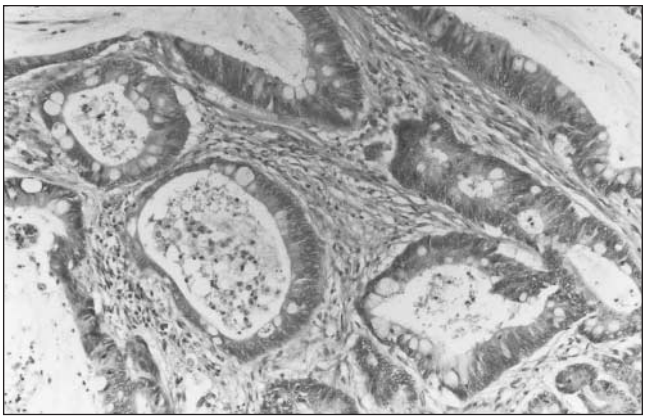

FIG. 2. Perianal tumour: moderately differentiated adenocarcinoma. Note its similarity to colon cancer. (Hematoxylin and eosin, ×200.)

Implanted cells may originate from locally advanced malignancy or be liberated by aggressive manipulation and disruption of early-stage malignancy during resection. Our case demonstrates the potential for the implantation of malignant cells originating from the lumen of the colon, a mechanism for metastasis rarely considered in the literature.

Measures to control the contamination of benign tissues by viable malignant cells during surgery for colorectal malignancy vary, but include changing of gloves, gowns and instruments, wound protection, and irrigation of wounds, trocar sites and the rectum with tumoricidal agents. The prevalence of these measures in current surgical practice and their effect on outcomes for colorectal cancer surgery have not been clearly documented.

Considerable basic science research has been completed in an attempt to understand the mechanism of wound implantation by malignant cells.[5] Currently, there is no clear consensus on the factors that predispose to or produce wound implantation, although tumour fragmentation through aggressive manipulation remains the most likely cause.

Currently, open or laparoscopic surgery for colorectal cancer is considered appropriate with trained surgical teams. With either approach, appropriate oncologic technique is mandatory to restrict the manipulation of colorectal neoplasms and to avoid contamination of benign tissues with luminal content that may contain viable malignant cells. Surgeons should be aware of the potential for wound implantation by malignant cells and maintain a high technical standard during surgery for colorectal cancer.

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