Studies on the Mechanism and Prevention of Local
Recurrence of Carcinoma at the Suture
Line after Colonic Resection

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The recurrence of cancer of the colon and rectum at the suture line has been a distressing problem in the surgical treatments of these diseases. It has been documented mainly by American surgeons\textsuperscript{7,12,16} that its incidence was as high as 50 to 70 per cent of local recurrences and the major cause would be the implantation of the desquamated cancer cells into the lumen of the colon and rectum. In Japan, because of paucity of cancer of the colon and rectum, there has been little information on it. However, also in Japan, as Majima et al.\textsuperscript{17} have previously reported the relatively high incidence of local recurrence, all surgeons should be aware of the local recurrence of cancer of the colon and rectum due to implantation of cancer cells.

This paper deals with the local recurrence and its prevention at the suture line in resection and anastomosis for cancer of the colon and rectum, based on experimental research of intra-luminal implantation of cancer cells.

Materials and methods

Male Donryu rats weighing about 150 g obtained commercially were used in this experiment. All rats were housed in metal cages and maintained on a regular chow and water \textit{ad libitum}.

For the tumor inoculated in this experiment, Yoshida sarcoma and ascites hepatoma AH-109A supplied by Sasaki Institute, Tokyo were used.

Under anesthesia with Nembutal the colon was approached by lower midline incision. After the vertical incision at the colon approximately 7 cm distal to the caecum was made, the incision wound was closed by one layer of interrupted silk suture—hereafter to be refered to as suture line—. 0.5 ml of the tumor suspension was inoculated from the caecum to the lumen of the colon, then the abdominal wall was closed.

For an attempt at the prevention of the suture line recurrence, 5-Fluorouracil (5-FU) was inserted into the lumen of the colon 30 minutes after $10^4$ cells of Yoshida sarcoma or AH-109A were inoculated into the colon already subjected to the suture line.

Results

1. Tumor growth at the suture line

A total of 68 rats was sacrificed 3, 5, 7, 10, 15, 20 and 30 days after the rats were subjected to the suture line receiving $10^6$ cells of the tumor for the observation
Fig. 1.—Photomicrograph of the tumor growth of Yoshida sarcoma at the suture line 5 days after operation. Right lower corner indicates the high magnification of tumor growth.

Fig. 2.—Photomicrograph of the tumor growth of AH-109A at the suture line 10 days after operation. Right side shows solid tumor growth of AH-109A at the suture line.