On the Postoperative Prognosis in Ulcer-Carcinoma of the Stomach

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From the findings that a cancer focus in the mucous membrane at the ulcer margin may not infrequently infiltrate the deeper part of the ulcer base though its area is smaller than 2 cm. in maximum width, and that the base of callous ulcer is made up of callous omentum tissue, Majima has concluded, in his paper on the process of development of ulcer-carcinoma, that carcinomatous infiltration of the ulcer base is indicative of an early stage of peritoneal carcinomatosis, and that there are found not a few cases in which only poor prognosis is to be given in spite of the small size of the lesion.

We have made an investigation of late results of gastrectomy in cases in our clinic, and comparison has been made between these results and histopathologic findings with the resected specimens, with the results to be reported in the present communication.

Late Results of Gastrectomy

An investigation has been made of the postoperative course in 70 cases, excluding cases of hospital death and those within one year after operation; and in 60 cases of them late results of gastrectomy became clear, as summarized in Fig. 1, in which the cases have been classed in 4 groups according to the depth of carcinomatous infiltration (Majima), this depth of the infiltration being taken as representative of the histologic findings.

In 10 cases of grade 1, in which cancer tissue was localized in the mucous membrane at the ulcer margin, there has been no case of relapse of disease to death; all the patients are healthy at present, after postoperative 2 to 3 years in 5 cases and 4 to 7 years in 5 cases. Of the 10 cases, 9 were operated on for "gastric ulcer," and 1 for suspicion of malignant degeneration; in no cases was recognized metastasis of the regional lymph nodes.
In 2 of 5 cases of grade 2, in which cancer tissue at the ulcer margin infiltrated the muscular layer but not the ulcer base, the patients died after 4 years 2 months and 1 year 8 months, respectively. These 2 cases of death were operated on for suspicion of ulcer-carcinoma, and lymph-nodal metastasis was confirmed microscopically. In the remaining 3 cases the patients are healthy at present, after postoperative 2 years, 2 years 3 months, and 11 years 9 months, respectively. The last case of 11 years 9 months survival was operated on for “gastric cancer,” and no lymph-nodal metastasis was found.

Of 5 patients of grade 3, in which cancer tissue at the ulcer margin infiltrated the subserous layer, 2 are healthy at present, after postoperative 10 and 9 years, respectively; no lymph-nodal metastasis was observed. The remaining 3 patients died after postoperative 6, 3, and 2 years, respectively; lymph-nodal metastasis was observed in these 3 cases.

Of 40 cases of grade 4, in which cancer tissue infiltrated a great part of the ulcer base and groups of cancer cells were found beyond the gastric wall as well as in the normal omentum adjoining the callous omentum composing the base, 35 cases were operated on for “gastric cancer,” and in 32 cases cancer cells were detected in resected lymph glands. Cases of death have amounted to as many as 34 in this group, the deaths occurring after more than 3 years postoperatively in 3 cases, after 2 to 3 years in 3 cases, and after about 1 year in 28 cases.

From what has been stated above it will be understood that in the group of cases (grades 1 to 3), in which infiltration of carcinoma originated
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at the ulcer margin was confined to a small part of the base or to the subserous layer, late results of gastrectomy have been favorable, whereas the results have been unfavorable in the group of cases (grade 4), in which the infiltration extended to a great part of the ulcer base and beyond the serous membrane, namely, there are large differences in late results of gastrectomy between the groups of grade 1 to 3 and the group of grade 4.

Comparison of Late Results of Gastrectomy between Ulcer-Carcinoma and Gastric Cancer

Based upon the results mentioned above, our 60 cases have been divided into 2 groups, the group of grade 1 to 3 and the group of grade 4, and survival rates in successive years after operation in each group have been calculated, as shown in Fig. 2. It will be seen that the survival rates were 100, 93.8, 91.7, 80.0, and 66.7 per cent after postoperative 1, 2, 3, 4, and 5 years, respectively, in the former group of grades 1 to 3, while they were 55.0, 24.2, 11.1, 4.8, and 0 per cent after postoperative 1, 2, 3, 4, and 5 years, respectively, in the latter group of grade 4, thus showing much lower rates than in the former group.

When the cases of ulcer-carcinoma are not classified and considered as a whole, we obtain survival rates as follows: 70.0, 46.9, 35.9, 29.0, and 22.2 per cent after postoperative 1, 2, 3, 4, and 5 years, respectively. The survival curve drawn from these data is found to approximate the corresponding one obtained with 422 cases of resection of gastric cancer in
our clinic, as shown in Fig. 2, though a slight difference in the five year survival rate will be seen between the two curves (22.2 per cent for ulcer-carcinoma, and 28.9 per cent for gastric cancer).

**DISCUSSION**

Finsterer\(^2-5\) repeatedly stressed that the postoperative prognosis for ulcer-carcinoma is more unfavorable than for gastric cancer. According to him, even in cases of early ulcer-carcinoma where operation was performed for "ulcer" and malignant degeneration was detected first by microscopic examination, about one half of the patients died within 5 years with relapse of the malignancy, the 5-year survival rate being 51.4 per cent. In cases which were suspected or diagnosed as ulcer-carcinoma during operation, even if the operation was as radically as for primary cancer, the 5-year survival rate was as low as 9.3 per cent, making a striking contrast to the corresponding rate (29.6 per cent) in cases of gastric cancer. Ayabe\(^6\) reported a 3-year survival rate of 33 per cent for ulcer-carcinoma, and of 34 per cent for gastric cancer. In our cases, the late results of gastrectomy in ulcer-carcinoma are similar to those in gastric cancer. However, the 5-year survival rate in ulcer-carcinoma (22.2 per cent) was lower than in gastric cancer (28.9 per cent) as Finsterer points out. At any rate, judging from the survival rates in successive years after operation, the postoperative prognosis for ulcer-carcinoma may be said to be nearly as unfavorable as for gastric cancer.

Recently Ranson\(^7\) have reported, in his paper on the cancer of the stomach, favorable results of ulcer-carcinoma. This discrepancy seems to be due, at least partly, to differences in the criteria used for the diagnosis of ulcer-carcinoma. In our cases, the postoperative survival rates in ulcer-carcinoma of grades 1 to 3 were 91.7 and 66.7 per cent after postoperative 3 and 5 years, respectively, while those in ulcer-carcinoma of grade 4 were 11.1 and 0 per cent after postoperative 3 and 5 years, respectively. If the cases of grade 4, in which carcinomatous infiltration extended to a great part of the ulcer base, had been excluded from the cases of ulcer-carcinoma for deviating from the criteria of Hauser,\(^8\) the survival rate would have become much higher than it was, thus pointing to a favorable prognosis. It is, however, generally accepted that ulcer-carcinoma does exist. Since it is a carcinoma, ulcer-carcinoma need not be restricted to the ulcer margin for long, and there may well exist an ulcer-carcinoma which has extended from the margin to its environs. Thus, from a viewpoint near that of Aschoff,\(^9\) those cases of infiltration of the deeper part have been judged as cases of ulcer-carcinoma, and classed as of grade 4. If this viewpoint is adopted, our late results of operation, including those from grade 4 cases,
tell us that the prognosis for ulcer-carcinoma is as unfavorable as for gastric cancer.

Finsterer\textsuperscript{2,5)} mentioned the following reasons why the prognosis for ulcer-carcinoma is more unfavorable than for gastric cancer: There is a strong tendency for ulcer-carcinoma to make a growth of infiltrating type; cases of ulcer-carcinoma may often be operated on with the clinical diagnosis of "ulcer," where the great omentum plays some part in relapse of malignancy; and lymph glands are liable to earlier involvement. This can be approved also from the results of our investigation. As a reason from the unfavourableness of ulcer-carcinoma prognosis, however, we should like to emphasize the frequent occurrence of cases of grade 4 (infiltration of the deeper part), namely, those cases which are liable to peritoneal carcinomatosis in spite of the small size of the cancer focus in the mucous membrane at the ulcer margin. This has been pointed out in our clinic these two years,\textsuperscript{1,10-12)} and the conviction has been deepened with increase of cases. Briefly speaking, as the base of callous ulcer is made up of callous omentum, and the mucous membrane of the ulcer margin, where carcinoma originates, becomes closer to the omentum of the base; when there takes place rapid carcinomatous infiltration at the ulcer base, therefore, it is regarded as incipient peritoneal carcinomatosis. According to Kuru,\textsuperscript{13)} frequent occurrence of highly malignant carcinoma simplex of scirrhous type, and a rapid deep carcinomatous infiltration of a poorly resistive established scar tissue containing few elastic fibers make the postoperative prognosis for advanced ulcer-carcinoma unfavorable.

From what has been stated above it goes without saying that cases of callous ulcer should be operated on before carcinoma develops, and that, operation for callous ulcer should be performed as radically as for carcinoma where resection of omentum tissue over a wide range in the environs of the base and thorough cleaning of swollen lymph glands are particularly necessary.

**Summary**

An investigation has been made on the late results of gastrectomy with 60 cases of ulcer-carcinoma where operation was performed more than one year ago, with the results to be summarized as follows: In cases of ulcer-carcinoma of grades 1 to 3 of deep infiltration, late results of operation are favorable, whereas the results are very unfavorable in cases of ulcer-carcinoma of grade 4.

**References**

2) Finsterer, Arch. klin. Chir., 1924, 131, 71.
4) Finsterer, ibid., 1938, 88, 13.
6) Ayabe, Igaku (Jap.), 1949, 6, 268.
11) Abe, Majima & Kurakake, Igaku (Jap.), 1952, 8, 280.