Gastric Cancer following Gastrectomy for Benign Gastroduodenal Disease

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Received for publication March 27, 1991

Summary: Twenty-four cases of resected remnant cancers following partial gastrectomy were retrospectively investigated for benign gastroduodenal disease. The time interval between the initial gastrectomy and the remnant gastrectomy was more than 10 years in 19 (79%) patients and less than 10 years in 5 (21%) patients. There were 2 cases with remnant cancer at stage I, 1 at stage II, 3 at stage III and 13 at stage IV for the all cases with a time interval of more than 10 years. Early-type remnant gastric cancer has a frequency of only 5%. The proportion of positive lymph node metastases was high, in 84%.

Key words: gastric cancer—remnant stomach—gastroduodenal disease—endoscopy—total gastrectomy—prognosis

Introduction

Any increase in the number of patients with remnant gastric cancer is of special interest since the overall incidence of gastric cancer is declining in Japan. A total of 24 patients with remnant gastric cancer following partial gastrectomy for benign gastroduodenal disease were observed in Kurume University Hospital since 1970 and these are reviewed for prognosis and management.

Patients and Results

From 1970 to 1990, a total of 54 patients with remnant gastric cancer following partial gastrectomy underwent resection in the First Department of Surgery, Kurume University Hospital. Of these, 24 patients had previously undergone gastric resection for benign gastroduodenal disease.

Fig. 1. Survival time for 19 patients with remnant gastric cancer

TABLE 1
Summary of Cases

Pt. No.	Age	Sex	Initial Operation	Reconstruction	Interval (years)	Location	Gross Type	Histology	Stage
1	50	m	DU	B-I	11	C	1	tub 2	III
2	71	m	GU	B-I	13	SL	1	pap	IV
3	77	m	GU	B-I	14	C	1	tub 1	IV
4	64	f	GU	B-I	15	C	3	tub 1	III
5	79	m	GU	B-II	10	C	3	por	IV
6	68	m	GU	B-II	11	C	3	tub 1	IV
7	58	m	GU	B-II	15	SL	2	por	IV
8	67	m	GU	B-II	15	Maj	5	sig	II
9	63	m	DU	B-II	16	C	3	por	III
10	69	m	GP	B-II	19	A	5	tub 1	I
11	66	m	GU	B-II	20	post	3	tub 1	III
12	69	f	DU	B-II	20	A	0	tub 1	I
13	65	m	GU	B-II	20	A	3	sig	IV
14	54	m	DU	B-II	22	A	2	tub 2	IV
15	71	m	GU	B-II	25	post	3	tub 2	IV
16	62	m	DU	B-II	31	SL	4	por	IV
17	81	m	GU	B-II	34	A	3	tub 2	IV
18	60	m	GU	B-II	36	C	3	pap	IV
19	69	m	GU	B-II	37	SL	2	tub 1	IV

m: male f: female DU: Duodenal Ulcer GU: Gastric Ulcer GP: Gastric Polyp
 C: Cardia SL: Non-Anastomotic Suture Line Maj: Greater Curvature A: Anastomotic
 post: Posterior Wall Gross Type and Stage (= Japanese Research Society for Gastric Cancer)

The time interval between the initial partial gastrectomy and the remnant gastrectomy was more than 10 years for 19 (79%) patients and less than 10 years for 5 (21%) patients. The 5 patients with a time interval of less than 10 years were excluded from the present study.

For the 19 patients in this study, the original pathology was a gastric ulcer in 13 (69%) patients, a duodenal ulcer in 5 (26%) and a gastric polyp in 1 (5%) patient.

Fifteen (79%) patients had undergone initial reconstruction by Billroth-II (B-II) and 4 (21%) by Billroth-I (B-I). The age at the time of cancer diagnosis, free time interval, cancer location, cancer type and cancer stage according to the criteria of the Japanese Research Society for Gastric Cancer (1981) are summarized in Table 1. The survival times for the

patients are also in Fig. 1.

Discussion

Cancer in a resected stomach was first described by Belfour in 1922. Although gastric resections have been performed in large numbers since that time, only a few cases of remnant gastric cancer had been reported in the literature before 1950 (Kuhlmayer and Rokitanski, 1954). Thereafter, many cases of gastric cancer occurring in resected stomachs have been reported with a high number from Europe and Scandinavia (Debray et al. 1958), and a low number from Japan and the United States. Any recent increase in the number of patients with remnant gastric cancer is of special interest since the overall incidence of gastric cancer is

declining in Japan.

A total of 19 patients with remnant gastric cancer occurring more than 10 years after partial gastrectomy for benign gastroduodenal disease were described with particular attention to the surgical management and prognostic factors. There is convincing evidence that the rate of intestinogastric reflux is of importance for inducing the changes of the mucosa in the postoperative stomach, and this has been studied experimentally (Morgenstern, 1968; Kobukada, 1986), showing that cancer risk increased with the incidence of reflux. Also human studies have indicated a correlation between reflux, mucosal changes and cancer risk (Domellof et al. 1979). Moreover, the bacteriological flora in the remnant stomach may favour the formation of nitrosamines that could be carcinogenic (Muscroft et al. 1981).

The remnant stomach is more at risk after a B-II operation than after a B-I operation indicating that there could be a factor other than hypochlorhydria or the amount of gastric mucosa available for carcinogenesis. This factor may be bile reflux which is known to be greater after a B-II operation (Toftgaard, 1989).

Most authors have reported a median patient age of 60-70 years at the time of the remnant gastric cancer diagnosis, with no statistical difference from the median age of those with primary gastric cancer.

Sons et al. (1987) reported that the average "free interval" to the detection of the cancer was 22.6 years after B-II, 23 years after B-I, and 34.4 years after gastroentero-anastomosis without resection. The population with remnant gastric cancer had a higher proportion of men; with the male to female ratio in 819 cases reported (Viste et al. 1986) to be 4.4:1. This must be compared to primary gastric cancer where the male

to female ratio was 2:1 (Takeda et al. 1987). These findings are not unexpected since operations for peptic ulcers were more frequently performed in men than in women (Saegesser and James, 1972).

Nicholls (1974) reported that 16 of 32 (50%) remnant gastric cancers could be resected and 15 of the 16 (94%) underwent total gastrectomies.

The abdominal approach is sufficient for treatment of early cancer, while the thoracoabdominal approach is often necessary for advanced remnant gastric cancer (Takeda et al. 1989). Sometimes only palliative remnant gastric cancer operations were performed to preserve digestion. Stage IV remnant cancer was observed in 13 of 19 (69%) patients in the present study.

Some authors have reported a high (11%) postoperative mortality (Dougherty et al. 1982; Viste et al. 1986). In the present series, postoperative complications occurred in 20% of the patients with an operative mortality rate of 0.

The prognosis for patients with remnant gastric cancer is generally considered to be poor with an overall 5 year survival rate of 3-10% in many series outside of Japan (Viste et al. 1986). Only 11 long-term survivors were found in the world literature by Saegesser et al. (1972). This is due to the difficulty in detecting the cancer sufficiently early to avoid a high incidence of advanced remnant gastric cancers.

In conclusion, some differences were found in the characteristics, especially at the advanced stage, of patients with remnant gastric cancer and patients with primary gastric cancer. Careful examination by endoscopy for early diagnosis is desirable. Advanced cancers should be managed with an extended total gastrectomy, however, sometimes palliative total gastrectomy should be selected to preserve digestion.

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