Total Gastrectomy in Advanced Gastric Cancer

Arun Pausawasdi, MD

From the Department of Surgery, Siriraj Hospital, Mahidol University, Bangkok, Thailand.

From 1977 to 1979 there were forty two patients with advanced gastric cancer in the hands of the author. Palliative total gastrectomy was performed in twenty five of them, ie. fifty nine per cent. There were thirteen males and twelve females, with the age group ranging from thirty one to seventy years. Reconstruction of the gastrointestinal tract following total gastrectomy in all cases was by end-to-side esophago-jejunostomy with complimentary jejuno-jejunostomy. There was leakage in two cases ending fatally, ie, eight per cent. All survivors from the operation could take food orally as normal or near normal. There is one patient still doing well two years after the operation. The only complication was anemia which required occasional blood transfusion. From the result of this study the author advocates that palliative total gastrectomy is a worthwhile operation for patients with advanced gastric cancer.

Even though gastric cancer has been known to man for more than one hundred and fifty years[1], the study on its etiology and the right mode of treatment for the best end result is still a challenging problem at the present time. However, it is accepted that in the treatment of gastric cancer, removal of the primary lesion gives a more satisfactory result than leaving the lesion in situ[2,3,10] and for the removal of the primary lesion extensive total gastrectomy gave the same result as partial gastrectomy[4,5]. It has also been revealed from this study that on reviewing the records of two hundred and seventy one patients admitted in the Department of Surgery, Siriraj Hospital, from 1968 to 1972, that in the treatment of gastric cancer, removal of the primary lesion gave a better result as mentioned above (Table 1).

Total gastrectomy is indicated in patients with gastric cancer when the malignant lesion cannot be widely encompassed by subtotal radical gastrectomy. Recent data indicates that total gastrectomy is necessary in twenty to forty per cent of the resection for cancer[5,6,10].

The very important problem to be solved is what is the best procedure in the case of advanced gastric cancer, to leave the primary lesion in situ or removal of the whole lesion as a palliative procedure. This is the objective of this study.

MATERIALS AND METHODS

From 1977 to 1979, forty two cases of advanced gastric cancer were operated upon by the author. Total gastrectomy was performed in twenty five cases, ie. fifty nine per cent. In these twenty five cases, thirteen were male and twelve were female. The ages ranged from thirty one to seventy years, the most common age group was thirty one to forty years (Table 2).

Chief Complaint : As mentioned above all were advanced cases, so the leading symptoms were abdominal mass and vomiting. Three cases had hematemesis (Table 3).

Features of the Operation : In all twenty five

Table 1 Gastric Cancer (1967 - 1972) : Follow up and Survival.

Operations	Number	Loss	1 m.	3 m.	6 m.	9 m.	1 Yr.	2 Yrs.	3 Yrs.	4 Yrs.	5 Yrs.
No Operation	6	6	0	0	0	0	0	0	0	0	0
Subtotal Gastrectomy	68	22	46	46	41	32	23	14	10	3	2
Total Gastrectomy	3	0	3	3	3	2	1	1	1	1	1
Esophago-gastrectomy	6	3	3	3	3	1	1	1	1	0	0
Bypass Procedure	46	23	23	23	14	5	2	0	0	0	0
Explor. Lap. & Biopsy	33	22	11	5	2	1	0	0	0	0	0
Total Follow Up Cases	**162**	**76**	**86**	**80**	**63**	**41**	**27**	**16**	**12**	**4**	**3**

Table 2 Total Gastrectomy in Advanced Gastric Cancer (From 1976 - 1979 : 25 Cases)

Incidence : Sex :	Male : Female = 13 : 12	
Age :	31 - 40 Yrs	13 Cases
	41 - 50 Yrs	6 Cases
	51 - 60 Yrs	4 Cases
	61 - 70 Yrs	2 Cases

Table 3 Chief Complaints

Abdominal Mass & Vomiting	11 Cases
Vomiting	6 Cases
Abdominal Mass	4 Cases
Haematemesis	3 Cases
Others	1 Cases

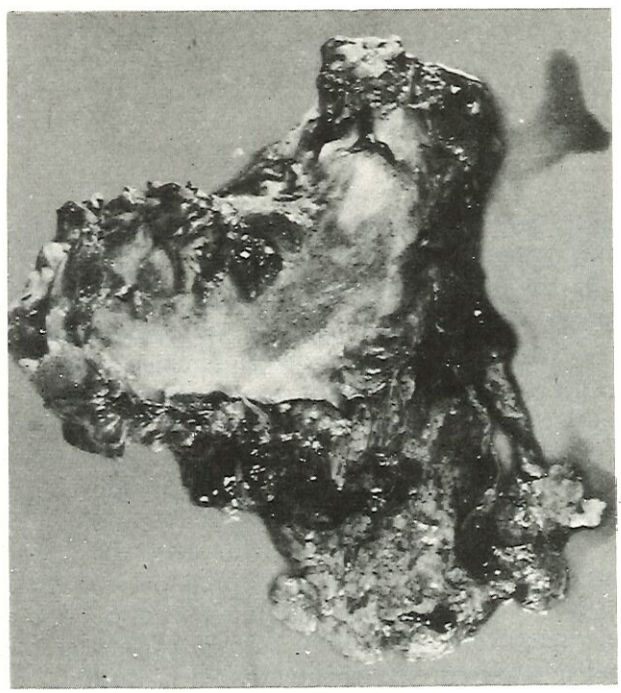

Fig. 1 The resected stomach showing the lesion involved the whole stomach from cardia to pylorus.

cases in which total gastrectomy was necessary, the lesion involved the whole stomach (Fig. 1, 2). Partial gastrectomy could not widely encompass the whole lesion. Total gastrectomy with identifiable esophageal tissue proximally and duodenal tissue distally was performed in all twenty five cases.

In this study total gastrectomy was performed primarily not as a radical operation, but as a palliative resection only. Surgery was kept to the minimum possible. Some organs, which were invaded by the tumor, had to be resected. Simple total resection of the stomach could only be performed in twelve cases, in another thirteen cases other organs had to be resected together with the stomach. Splenectomy was done in eleven out of thirteen cases, splenectomy and distal pancreatectomy in one case and splenectomy, distal pancreatectomy and partial resection of the left lobe of liver in one case (Table 4).

Reconstruction following total gastrectomy was in all cases by end-to-side esophagojejunostomy with complementary jejuno-jejunostomy (Fig. 3,4).

Five patients did not required blood transfusion during surgery, three of them received two units of blood each during surgery. The average blood replacement during surgery in these twenty five patients was one unit (500 ml.).

The operating time in these twenty five patients varied from two and half hours to four hours, with average operating time of three hours.

Duration of hospitalization in the operative survivors varied from twelve days to eighteen days, with an average hospitalization of fifteen days.

Pathology : The histopathology of all cases was adenocarcinoma with lymphnodes metastases.

Postoperative Complication : Rupture of the esophago-enteric anastomosis occurred in one male and one female patients. Wound infection developed in another three patients. The other twenty patients had uncomplicated post operative courses.

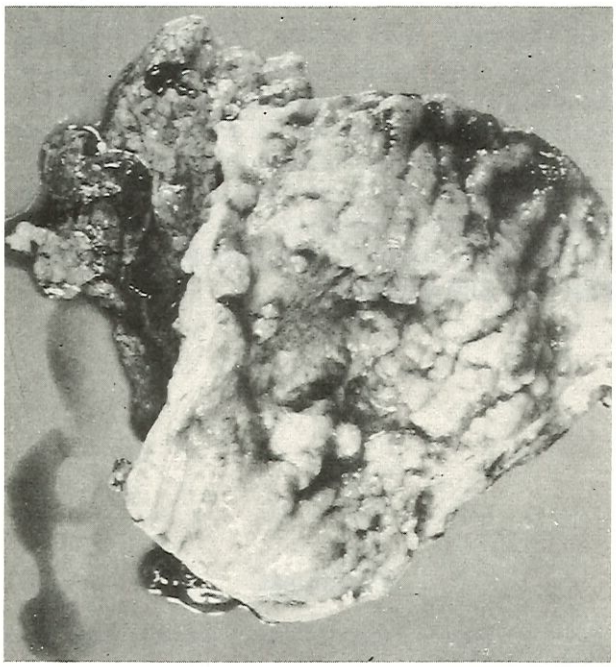

Fig. 2 The mucosal surface of the resected stomach.

Table 4 Extent of Operation (Organ Resection)

Gastrectomy Alone	12 Cases
Gastrectomy with Other Organ Resection	13 Cases
- Splenectomy Alone	11 Cases
- Splenectomy with Pancreatic Resection	1 Case
- Splenectomy with Hepatic & Pancreatic Resection	1 Case

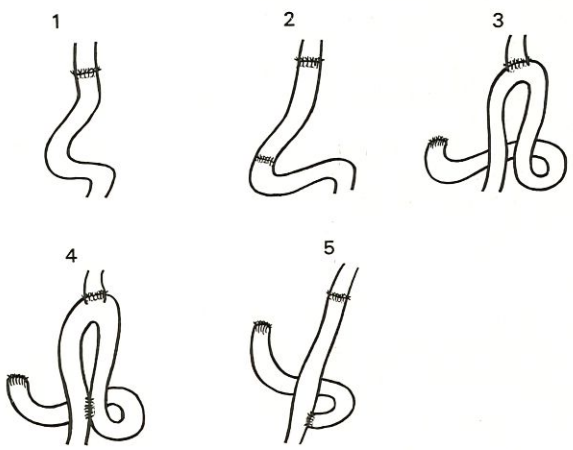

Fig. 3 Various methods of reconstruction of the gastrointestinal tract following total gastrectomy.

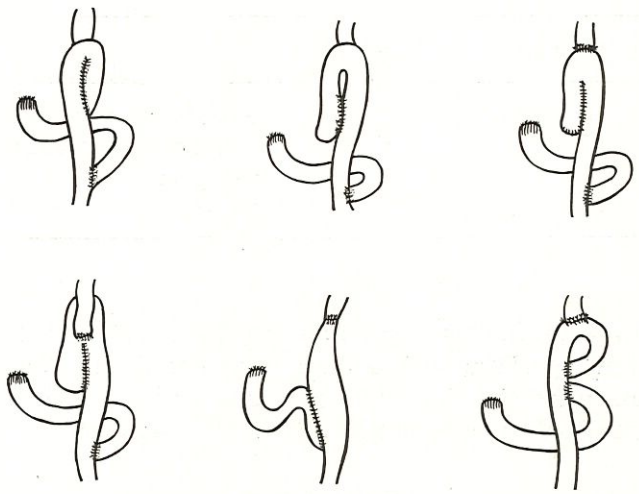

Fig. 4 Modifications of jejunal pouch constructed for replacement of the stomach.

Table 5 Mortality Rate of the Operations for Advanced Gastric Cancer (41 Cases)

Operations	No.	Dead	% Mortality Rate
Total Gastrectomy	25	2*	8
Proximal Gastrectomy	3	—	—
Subtotal Gastrectomy	5	—	—
Gastro-enterostomy	4	—	—
Feeding Jejunostomy	1	—	—
Gastrostomy	2	—	—
Explor. Lap. & Biopsy	1	—	—
Total	**41**	**2**	**4.8**

*from leakage

Operative Mortality Rate : Two out of twenty five patients died from leakage of the esophago-enteric anastomosis, ie. eight per cent. One patient was a female of forty two years, and another a male of forty five years (Table 5).

Follow Up : Follow up study is the major and most difficult problem to overcome for many reasons. The main reason being the economic status of the patients. However, there were fifteen patients who came to our follow up clinic during the first six months after the operation. Three of them died from obstructive jaundice and liver failure. One year after the operation, there were six patients attending the follow up clinic, one later died from advanced metastasis with intestinal obstruction. Eighteen months after

Table 6 Follow up

P.O. Months	Cases	
6	15	(3 Died from metastasis)
12	6	(1 Died from metastasis)
18	2	(Doing well)
24	1	(Doing well)

the operation there were only two patients left in the follow up clinic with good general condition. Two years after the operation only one patient came to our follow up clinic in a healthy state (Table 6).

DISCUSSION

There were many indications for total gastrectomy to be performed as a radical operation[5,7]. But in this study total gastrectomy was performed as a palliative procedure. Simple removal of the primary lesion and reconstruction of the gastrointestinal tract were performed for the purpose that the patients can take food in the usual way during the final period of their lives. There were many methods of reconstruction of the gastrointestinal tract, each for a specific purpose (Fig. 3,4)[4,5,8]. Regardless of any method of reconstruction after total gastrectomy the nutritional effect is the same[9]. The author chose the simplest method since it is easy to perform with less complications.

The most serious complication of total gastrectomy and almost always a fatal one is esophageal anastomotic failure. It was found in seven to twenty nine per cent of cases[11]. It has been revealed from this study that two cases died from anastomotic leakage. In both cases the lesion invaded the lower end of the esophagus. Resection of the esophagus was higher than usual, making it difficult to anastomose the esophagus to jejunum. There was so much injury to the tissues that the anastomosis failed to heal.

All the survivors from the operation had the ability to enjoy the rest of their lives as before the operation, at least being able to take food orally, which was what they desire most. Some had malnutrition due to their decreased food intake. The patient who survived for two years, required blood transfusion periodically because of severe anemia. In the opinion of the author total gastrectomy is a worthwhile operation for the patient with advanced gastric cancer, at least it can relieve the dysphagic symptom, which is the most distressing symptom for the patient. Succesful total gastrectomy yields an admirable result for both patients and surgeons.

REFERENCES

1. Holle, F : Spezielle Magen-Chirurgie. Springer Verlag. Berlin-Heidelberg-New York, 1968.
2. Costello, CB, Taylor, TV, Torrance, B : Personal Experience in the Surgical Management of Carcinoma of the Stomach. Br J Surg 64:47-51, 1977.
3. Stern, JL, Denman, S, Elias, EG, Didolka, M, Holyoke, ED : Evaluation of Palliative Resection in Advanced Carcinoma of the Stomach. Surgery 77:291-298, 1975.
4. McNeer, G, Bowden, L, Booher, RJ, McPeak, CJ : Elective Total Gastrectomy for Cancer of the Stomach : End Results. Ann Surg 180:252-256, 1974.
5. Paulino, F, Roselli, A : Carcinoma of the Stomach. With Special Reference to Total Gastrectomy. Current Problems in Surgery December 1973.
6. Maki, T : Ergebnisse der Totalen Gastrektomie Beim Magenkarzinom. Langenbecks, Ach Klin Chir 325:450-458, 1975.
7. Henrichsen, S, Kronborg, O, Brenoe, E : Total Gastrectomy for Cancer of the Stomach. Acta Chir Scand 240:147-150, 1974.
8. Kalemba, J, Lazarkiewicz, B : New Method of Reconstruction of the Alimentary Canal After Total Gastrectomy. Surgery 76:748-753, 1974.
9. Bradley, EL, Isaac, J, Hersh, T, Davidson, ED. Millikan, W : Nutritional Consequences of Total Gastrectomy. Ann Srug 182: 415-429, 1975.
10. Maruta, K, Shida, H : Some Factors which Influence Prognosis after Surgery for Advanced Gastric Cancer. Ann Surg 167:313-318, 1968.
11. Papacristou, DN, Fortner, GJ : Anastomotic Failure Complicating Total Gastrectomy and Esophagogastrectomy for Cancer of the Stomach. Am J Surg 138:399-402, 1979.