

CONTRIBUTION OF ENDOSCOPY IN THE DIAGNOSIS OF EARLY GASTRIC CANCER

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Introduction

Medical endoscopy has a considerably old history, it is already a century since Kussmaul tried to look into the human stomach for the first time in 1868. Endoscopy and its instrumentation had been improved through constant technical progress until Hirschowitz, 1958, developed a new fiberscope which changed the previous endoscopic method completely. Since 1963, Kondo, Tsuneoka and Takemoto had developed Machida's fibergastroscope, Type FGS-A, in Japan. Light guiding fiberscopes were developed in 1968 with various model of the endoscopes. On the other hand, Gastrocamera GT-V and GT-Va developed by Tasaka's group became prevalent in use clinically in Japan since 1965.

In Taiwan, an Olympus Gastrocamera Type IV was introduced in 1960, Hirschowitz's gastrofiberscope in 1963, GT-V in 1965 and GT-Va, GTFA in 1967 in National Taiwan University Hospital. Machida's fibergastroscope "FGS-A" was introduced in Taipei Municipal Jen Ai Hospital in 1965. FGS-B, GT-V, GT-Va, in 1967, FGS-S in 1968 were available there-after. Since 1969, FES-L, FGS-CL, light guiding fiberscopes with light source of RH-150, RX-500 were used, and FGS-BL, FGS-SL were succeedingly introduced in Taiwan in 1970. In 1970, endoscopic cinematography were studied by the aid of RX-500.

After the gastric fiberscopy and gastrocamera photography have become prevalent in Taiwan, many gastric lesions which escaped from X-ray examination were first noticed by endoscopy. This improvement in gastric diagnosis had stimulated the radiologists and let them also make much progress in gastric diagnosis.

In the past six years 11 cases of early gastric cancer were experienced in Taipei Municipal Jen Ai Hospital which were chiefly diagnosed endoscopically. This is one of the results of the progress achieved by the gastric endoscopy.

Material and Methods

Since Feb. 1965, using various endoscopes such as FGS-A, FGS-B, GT-V, GT-Va, FGS-S, FGS-CL, FGS-BL, FGS-SL, more than 4300 times of gastroscopy were done upon the patients with epigastral distress in Taipei Municipal Jen Ai Hospital.

Results

The results of the examinations show early gastric cancer in 11 cases (13 cancer nests) advanced gastric cancer in 142 cases, gastric ulcer in 500 cases, and others as shown in Table 1.

Table 1. Early Gastric Cancer in Taipei Municipal Jen Ai Hospital, 1966-1971.

Case No. Operation Date	Name, Age Sex Period of Complaint	Type, Location Invasion	Size cm.	Endoscopy	X-ray	Specimen	Coexisting	Prognosis
1. 1966 6, 20	Su, 43, M 5Y. 2M.	III+IIc, sm, Angle	1.0x0.5	FGS-A 	x 1 			Biopsy L & W
2. 1967 11, 20	Sung, 57, M ? 2M	IIa+IIc, sm, IIa+IIc, sm, IIc, m Antrum, Ant, Ant, Post.	1.0x0.8 0.8x0.8 0.4x0.4	FGS-A FGS-Bx3 GT-Vax3	x 3 		etat mamelonne ulcer scar polyps Lung ca.	died ATP
3. 1968 4, 4	Chiu, 57, F 1Y. 1M.	IIc, m Lower Body	2.0x3.0 Angle	GT-Vax2 	x 2 			L & W (+)
4. 1969 10, 1	Lin, 58, M ? 2M.	IIa+IIc, sm, Antrum, L.C.	3.0x2.0	FT-Vax2 	x 2 			L & W
5. 1969 10, 8	Lee, 56, M 3Y. 1M.	III+IIc, sm, Angle, L.C.	2.3x1.4	GT-Va EGS-B 	x 2 			L & W
6. 1969 11, 1	Chen, 71, M 20Y. 8M.	IIc+III, sm, Antrum, L.C.	2.0x0.7	GTFA GT-Vax2 FGS-S 	x 4 			L & W
7. 1970 4, 21	Yang, 47, M. 3Y. 1M.	IIc, sm, Antrum, L.C.	1.8x0.7	FGS-CL FGS-B 	x 4 			L & W
8. 1970 6, 15	Hsu, 71, M. ? 6M.	I, sm, Antrum, Ant.	3.5x5.5x 1.5	FGS-S 	x 2 		Cardia G.U. Upper B.G.U. D.U.	L & W
9. 1971 3, 1	Lin, 66, M 3Y. 2M.	IIc, sm, Cardia, Ant.	1.7x0.7	FGS-SLx2 	x 2 		Cardia Kissing ulcers g.u., d.u.	L & W
10. 1971 5, 1	Chou, 71, M 10Y. 2M.	III+IIc, sm Pylorus Post.	0.8x0.6	FGS-SL 	x 2 		Body g.u. Penet.G.U.	L & W
11. 1971 11, 30	Shen, 44, M ? 1Y.	IIc, m, sm,	4.2x2.7	FGS-S FGS-SL FGS-CL FGS-BL 	x 2 			L & W (+)
1969 4, 16	Kao, 55, F 10Y. 5M.	Br. II IIc+III, m Antrum	3.0x2.0 4.0x5.0 (1.0x0.7)	GT-Va 	x 2 			L & W

1. Annual Incidence of Early Gastric Cancer

As shown in Table 2, annual incidence of early gastric cancer in this series is each one case in 1966, 1967 and 1968, 3 cases in 1969, 2 cases in 1970, and 3 cases in 1971.

Table 2. The annual incidence of early gastric cancer

Year	No. of cases
1966	1
1967	1(3)
1968	1
1969	3
1970	2
1971	3
Total	11(13)

2. The Type of Early Gastric Cancer

Among 11 cases of the early gastric cancer, one case has three separated cancer nests making the number of early cancer nests in this series to be 13 as shown in Table 3. Among these 13 cancer nests, 12 nests have depressed areas (IIc), and 5 nests are pure IIc. Three are mixed lesion with elevation and depression (IIa + IIc). One is mainly depressed but also with ulceration (IIc + III), and 3 have ulceration as main lesion but with erosions at the ulcer edge (III + IIc). There is no case of pure excavated type (III) in this series. The protruded type (I) is only one case.

Table 3. Type of superficial gastric cancer

Type	No. of Ca.
I	1
IIa + IIc	3
IIc	5
IIc + III	1
III + IIc	3
Total	13

3. Size of The Early Gastric Cancer

The size of early gastric cancer is ranging from 0.4×0.4 cm. to 4.2×2.7 cm. in dimension. If taking the size less than 2 cm. in its diameter as a minute one, 8 nests among 13 belong to minute as shown in Table 4.

Table 4. The minute early gastric cancer (less than 2 cm.)

Type	Size
IIa + IIc	1.0×0.8 cm.
	0.8×0.8
IIc	0.4×0.4
	1.8×0.7
	1.7×0.7
IIc + III	2.0×0.7
III + IIc	1.0×0.5
	0.8×0.6

If taking the size less than 1 cm. as a minute cancer, 5 nests among 13 belong to minute as shown in Table 5.

Table 5. The minute early gastric cancer
(less than 1 cm.)

Type	Size
IIa + IIc	1.0 × 0.8 cm.
	0.8 × 0.8
IIc	0.4 × 0.4
III + IIc	1.0 × 0.5
	0.8 × 0.6

4. Location of The Lesions

Each one locates at cardiac orifice, pyloric ring and lower body near angle, 3 at angle, and the remaining 7 at the antrum.

5. Diagnosis Before Operation

Seven out of 11 cases were diagnosed as early gastric cancer endoscopically before operation, among them 4 were proved by biopsy pre-operatively. One case was mistaken as an advanced cancer Borrmann type I. A lucky case of early gastric cancer at pylorus was operated as pyloric stenosis due to duodenal ulcer accompanied an ulcer at lower body near angle. Another lucky case of early gastric cancer, III + IIc, at angle was operated as chronic gastric ulcer. One case of small early cancer at cardia was operated as multiple gastric ulcers.

6. Early Gastric Cancers Coexisting with Multiple Lesions

(Pleomorphisms of Early Gastric Cancer)

There are 4 cases of early gastric cancer of this series show multiplicity or coexisting gastric lesions. The figures of this kind of changes are as follows:

- (1) Multicentric early gastric cancers at the antrum, IIa + IIc, IIa + IIc, IIc with chronic gastritis of etat mamelonne appearance, ulcer scar, and polyps in the stomach and carcinoma in the left lung as double carcinoma. The lung lesion was also resected. (Fig. 1, Fig. 2, Fig. 3.)

Fig. 1. FGS-S, picture of case No. 2 showing a shallow depression on the anterior wall of Antrum surrounded by five or six small elevations, IIa + IIc.



Fig. 2. X-ray of case No. 2 by compression study shows several tiny nodules forming rosette appearance at Antrum, anterior wall.

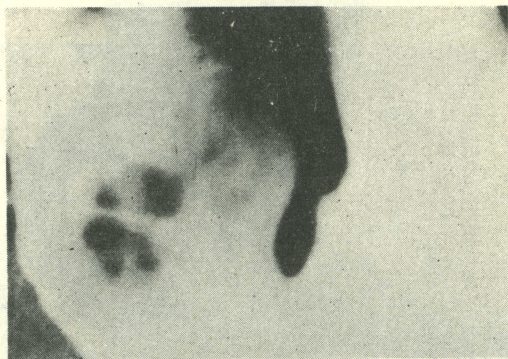


Fig. 3. Resected specimen of case No. 2 shows multicentric early gastric cancer IIa + IIc, IIa + IIc, and IIc at Antrum with polyps, erosions, and ulcer scar.

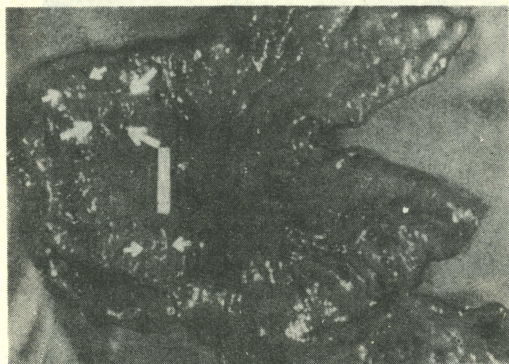


Fig. 4. X-ray of case No. 8 shows a large filling defect mass locating at Antrum, anterior, having an ulcer measuring 2.0×2.5 cm. at the tip.

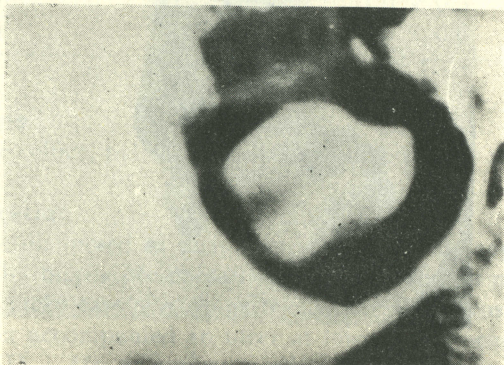


Fig. 5. FGS-S of case No. 8 shows a well defined molar-shaped protrusion covered with the extension of surrounding mucosa having broad base and rather deep defect at the tip. Type I early gastric cancer at Antrum, anterior wall.



(2) Early gastric cancer coexisting with multiple gastric ulcers.

- a. Type I early gastric cancer, $3.5 \times 3.5 \times 1.5$ cm: coexisting with an ulcer 2.3×1.2 cm. at cardia and an giant ulcer, 5.0×3.0 cm. at the posterior wall of upper body. (Fig. 4, Fig. 5.)

Fig. 6. FGS-CL, picture of case No. 9 Kissing ulcers in the vicinity of cardiac orifice near L.C., the small one at the anterior side proved as IIc.

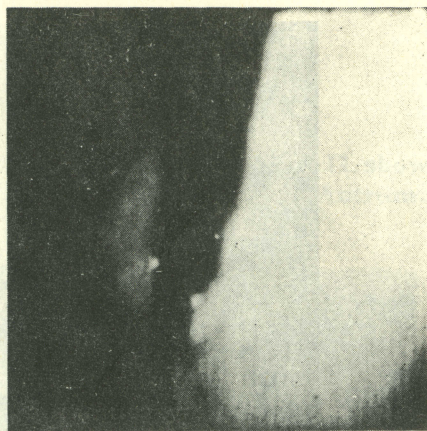
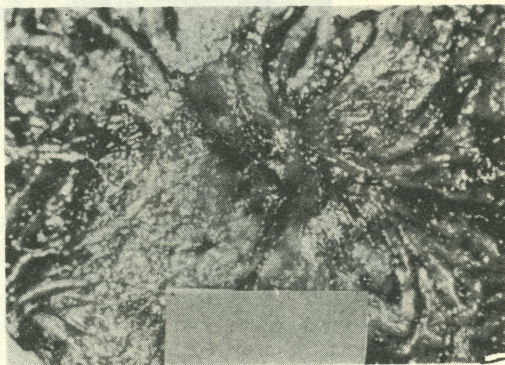


Fig. 7. Resected specimen of case No. 9 shows triangular shaped ulcer with converging folds measuring 1.7×0.7 cm. on the anterior aspect of cardia, while the posterior ulcer is benign.



- b. Cardia early cancer type IIc, 1.7×0.7 cm. making kissing ulcers in cardia with the third ulcer at the posterior wall of upper body. (Fig. 6, Fig. 7.)
- c. Early cancer, 0.8×0.6 cm. at the edge of penetrating pyloric ulcer coexisting with an ulcer at the lower body near angle.

Discussion and Conclusion

The recognition of gastric carcinoma in a still curable phase must be our goal in dealing with this malignant tumors. The five year survival rate has reached as high 92% for IIc (sm) according to Hayashida's report in 1969 in Japan, while it was 28.4% for operated and 34% for resected advanced gastric cancer in Cancer Institute Hospital in Tokyo, Japan.

Fig. 8. FGS-CL, picture of case No. 11 showing a small depression with converging folds having terminal disruption, clubbing at Antrum, interpreted clearly as IIc lesion.

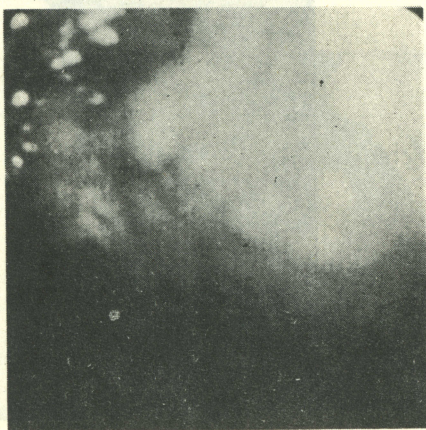
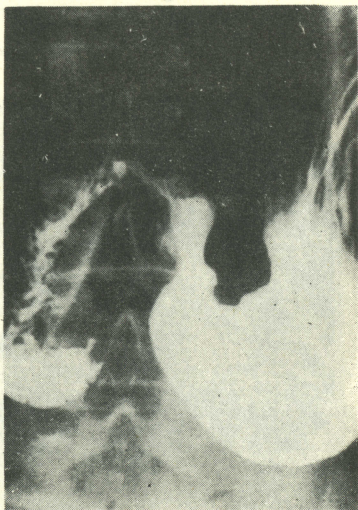


Fig. 9. X-ray of case No. 11 shows an irregularity of the Antrum, L.C., and widening of the Angle.



In conclusion, the fact that gastric cancers limited to the mucosa or submucosa remained cured after the operation goes far beyond the traditional five years survival rate every where considered as a criterium. Our series are all living and well except one case of multicentric gastric cancer with double cancer of the lung expired 2 years after lobectomy of the left lobe. He died of metastasis of lung cancer (proved by autopsy).

In the past six years, 11 cases, 13 nests of the early gastric cancer were experienced in Taipei Municipal Jen Ai Hospital. Of these, 8 lesions were belonged to minute early gastric cancer if defining a size as less than 2 cm, and 5 out of 8 minute cancer being less than 1 cm. in diameter.

Endoscopic diagnosis of early gastric cancer about the minute one of less than 2 cm. in diameter is much difficult in solitary lesion.

Seven cases out of 11 were single or solitary lesion of depressed type, and most of them were rather easily diagnosed having characteristic feature of superficial depressed IIc nature. (Fig. 8, Fig. 9, Fig. 10.)

Fig. 10. Resected specimen of case No. 11 shows IIc measuring 4.2×2.7 cm. at Antrum.

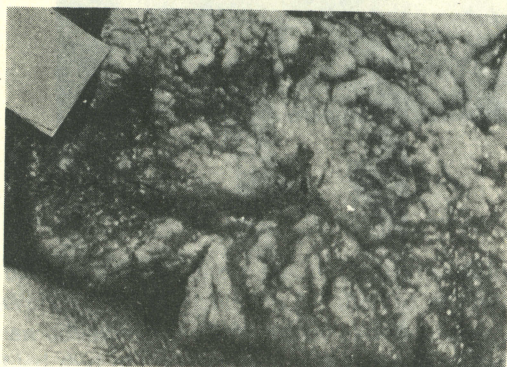


Fig. 11. FGS-CL, A case of R.L.H. showing multiple shallow ulcers covering by dirty yellowish brownish thick coating at Antrum extending to Angle region.

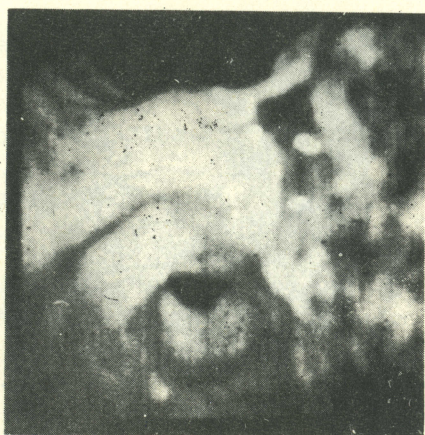


Fig. 12. A case of R.L.H., X-ray shows tube like rigid prepyloric narrowing and shallow ulceration of the Antrum and Angle suggestive of an advanced cancer radiologically but Ilc should be ruled out.

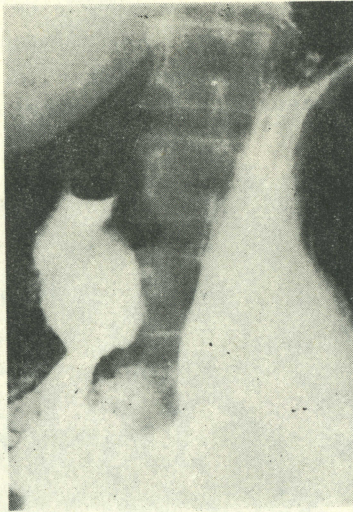


Fig. 13. Resected specimen of R.L.H. shows rather thick gastric wall of rubber-like consistency, revealing a large shallow hemorrhagic ulceration measuring 10 x 5 cm. in the whole Antrum.

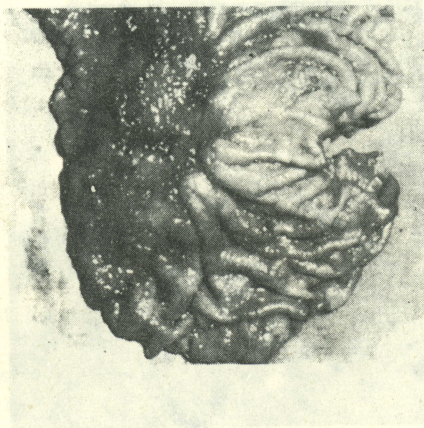
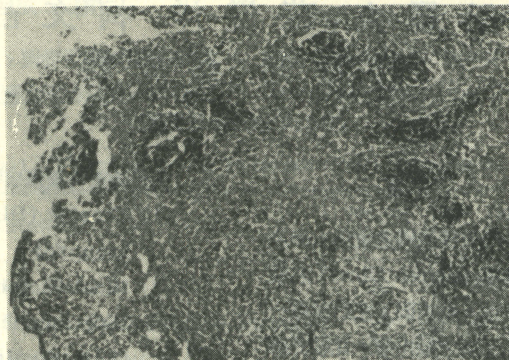


Fig. 14. Histology of R.L.H. The ulcerated Antrum is heavily infiltrated by hyperplastic lymphoid tissue with follicular formation without evidence of malignancy.



Before making diagnosis of early gastric cancer IIc, one must carefully differentiate from "Reactive Lymphoreticular Hyperplasia" of the stomach by the aid of endoscopic biopsy. Clinically it is easily misdiagnosed as an advanced or early gastric cancer endoscopically and roentgenologically. The findings resembled that of all types and combination of early gastric cancer especially IIc except type I. (Fig. 11, Fig. 12, Fig. 13, Fig. 14.)

Four cases out of 11 had multiple lesions in the stomach. Three cancer of which were coexistent with other more striking lesions, especially multiple gastric ulcers. One must carefully differentiate every lesion of the multiple gastric ulcers including kissing ulcers from the malignant one i.e. presence of minute early gastric cancer.

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