

A Study of Endoscopic Classification of Duodenal Ulcer and Its Clinical Significance — Preliminary Report

Shiann Pan M.D.
Chen-Shiung Liao M.D.

According to morphological change of duodenal bulb endoscopically, we divided duodenal ulcer into 3 types. Type I had a normal shape of duodenal bulb, type II had a bridging fold across the bulb, type III had multiple giant folds occupying the bulb. Each type was further divided into sub-types a and b, according to their ulcer activity.

In this series, 45 out of 93 cases (48.38%) of duodenal ulcer belonged to type I (31.18%, 29 cases, of type Ia and 17.2%, 16 cases, of type Ib); 30 out of these 93 cases (32.25%) belonged to type II (30.1%, 28 cases, of type IIa and 2.15%, 2 cases, of type IIb); 18 out of 93 cases (19.57%) belonged to type III, all of the type III cases were type IIIa.

Type I ulcer had a youngest age peak, located at 21 to 30 year-old. Their duration of history usually was within 1 year (84.8%). Most cases (75.85%) of type Ia had a prominent complaint of hunger epigastralgia. Type Ib had no dominant form of chief complaint. Type II ulcer had a broad zone of age peak, from 21 to 50 year-old. Their duration of history usually was 1 — 5 years (73.3%). The prominent complaint of type IIa ulcer also was hunger epigastralgia (71.4%), that maybe suggests that the degree of deformity of the bulb of type II ulcer still did not interfere the transport of food material. The case number of type IIb was too little to be discussed. Type III ulcer had an oldest age peak, from 31 to 50 year-old. Their duration of history usually was more than 10 years (83.3%), most cases (66.6%) had a prominent complaint of epigastralgia with post-prandial fullness which seems to have a close relationship with the deformity of the bulb.

As compared with type I and type II, type III ulcer had a high frequency of post-prandial vomiting and intractable pain, and a low frequency of bleeding.

Although there was no ulcer activity in type Ib endoscopically, various forms of clinical symptom still presented, which suggests that clinical picture of duodenal ulcer couldn't be explained by morphological change and ulcer activity only.

Case numbers, age peak, and duration of disease history suggest that a natural course of duodenal ulcer seems to progress from type I to type II to type III.

Because duodenal ulcer is the most common kind of peptic ulcer disease in

Taiwan, we are very concerned about its clinical course.

Recent advancement and improvement of digestive endoscope had made it possible to diagnose duodenal ulcer accurately. But further study on morphological change of the duodenal bulb due to duodenal ulcer is still rare.

There are various forms of clinical picture in cases of duodenal ulcer, which couldn't be explained by ulcer activity only, the morphological change of duodenal bulb should be considered too.

In this paper, we classified duodenal ulcer according to morphological change of the bulb endoscopically, in order to further study the clinical pictures of each type of duodenal ulcer, and to study the clinical significance of this classification.

Material and Method

From Nov. 1977 to April 1978, 293 patients had received 300 endoscopic examinations in our hospital on account of epigastralgia, abdominal fullness, or bleeding. Patients were either in-patients or out-patients, their age ranged from 15 to 91 year-old. Male were 195 cases and female were 98 cases. They received 201 and 99 examinations respectively.

In this series, 93 cases of duodenal ulcer, 26 cases of gastric ulcer, and 10 cases of gastric ulcer combining with duodenal ulcer were found (Tab. I).

According to morphological change of the bulb endoscopically, we divided duodenal ulcer into 3 types (Fig. 1).

Type I had a normal shaped duodenal bulb, ulcer or ulcers may be located at any site of the bulb; type II had a bridging fold across the bulb with pseudo-diverticulum formation, ulcer or ulcers may be located at one or both ends of the bridging fold, or as a linear ulcer located just on the fold; type III ulcer had multiple giant folds occupying the bulb, ulcer or ulcers may be located at any end of any giant fold, or covered by giant folds.

Each type was further divided into

sub-types a and b, according to their ulcer activity. Sub-type a indicated that there was active ulcer, sub-type b indicated that there was ulcer scar only.

We analyzed age distribution, chief complaint, and duration of history of each type of duodenal ulcer, according to this classification.

Results

There was about one case of duodenal ulcer to be found out of three endoscopic examinations given, the ratio of duodenal ulcer to gastric ulcer was about 3.57 to 1 (93 to 26).

As shown in table II, 45 out of 93 cases (48.38%) of duodenal ulcer belonged to type I, including 29 cases of type Ia (31.18%) and 16 cases of type Ib (17.2%). 30 out of these 93 cases (32.25%) belonged to type II, including 28 cases of type IIa (30.1%) and 2 cases of type IIb (2.15%). 18 out of these 93 cases (19.57%) belonged to type III, all of the type III cases were type IIIa. Type I was the most, type II was the next, and type III was the last common form of duodenal ulcer in this series.

As shown in table III, type I ulcer had a youngest age peak from 21 to 30 year-old; type II ulcer had a broad zone of age peak, from 21 to 50 year-old; type III ulcer had an oldest age peak, from 31 to 50 year-old. In this series, on the other hand, the gastric ulcer had an age peak from 41 to 50 year-old, and there was little difference in case number from 31 to 60 year-old. In other words, the age peak of gastric ulcer was older than that of all types of duodenal ulcer; the age peak of type I duodenal ulcer was younger than that of type III ulcer for about 10 to 20 year-old.

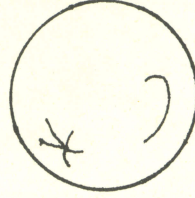
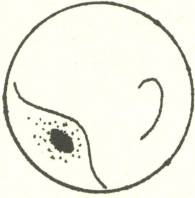
As shown in table IV, in type Ia ulcer, 22 cases or 75.85% had a chief complaint of hunger epigastralgia, among these, 5 cases complicated with bleeding; 5 cases

Figure 1 Endoscopic Classification of Duodenal Ulcer*

Type I: Normal shape of the duodenal bulb

Type Ia: With active ulcer(s)

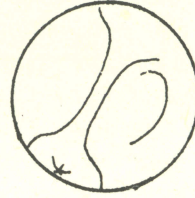
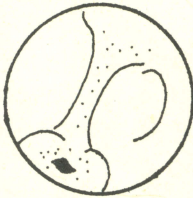
Type Ib: With ulcer scar(s) only



Type II: Bridging fold across the bulb

Type IIa: With active ulcer(s)

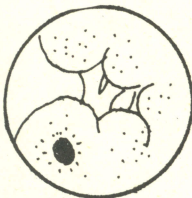
Type IIb: With scar(s)



Type III: Multiple giant folds occupying the bulb

Type IIIa: With active ulcer(s)

Type IIIb: With scar(s)



*Number and location of ulcer was not to be considered in this classification.

or 17.2% had a chief complaint of epigastralgia with postprandial fullness. As to the chief complaint of type Ib ulcer, 6 cases or 37.5% was hunger epigastralgia, with post-prandial fullness, and 3 cases or 18.75% was abdominal fullness. As to the chief complaint of type IIa ulcer, 20 cases or 71.4% was hunger epigastralgia, among these, 4 cases complicated with bleeding; 4 cases or 14.28% were epigastralgia with post-prandial fullness; and 2 cases or 7.14% was abdominal fullness. In type IIIa ulcer, 12 cases or 66.6% had a prominent complaint of epigastralgia with postprandial fullness, among these, 4 cases complicated with postprandial vomiting and intractable pain, one case complicated with bleeding. There were only 2 cases of type IIb ulcer in this series, one of them had a chief complaint of hunger epigastralgia, the other case had a chief complaint of epigastralgia with postprandial fullness.

In general, most cases of type Ia and type IIa ulcer had a prominent complaint of hunger epigastralgia, most cases of type IIIa ulcer had a chief complaint of epigastralgia with postprandial fullness. More than one third of type Ib ulcer had a chief complaint of hunger epigastralgia, similar to that of type Ia and type IIa; more than one third of type Ib ulcer complained of epigastralgia with postprandial fullness, similar to that of type IIIa ulcer. Some cases of type Ib and some cases of type IIa complained of abdominal fullness only.

As shown in table V, VI, VII, 38 out of 45 cases (84.8%) of type I ulcer (26 cases or 89.7% of type Ia and 12 cases or 75% of type Ib) had a short duration of history below 1 year. 22 out of 30 cases (73.3%) of type II ulcer (20 cases or 71.4% of type IIa and 2 cases or 100% of type IIb) had a history from one year through 5 years. 15 out of 18 cases (83.3%) of type III ulcer had a history

above 10 years.

There were 7 cases received follow-up examination after medical treatment for 6 weeks, including 4 cases of type Ia, 2 cases of type IIa, and one case of type IIIa. The 4 cases of type Ia had an excellent result endoscopically and clinically, all the open ulcers became scars, and the clinical symptoms subsided completely. The 2 cases of type IIa also had a good result, all the open ulcers became scars too, but the bridging fold still persisted. The case of type IIIa had no improvement endoscopically and clinically.

In this series, 18 out of 93 cases (19.3%), including 10 cases or 22.2% of type I ulcer, 6 cases or 20% of type II ulcer, and 2 cases or 11.1% of type III ulcer complicated with bleeding. As compared with type I and type II, the type III ulcer had a relative low frequency of bleeding.

4 out of these 93 cases (4.3%) of duodenal ulcer complicated with postprandial vomiting and intractable pain, all of the 4 cases were type IIIa ulcer.

Discussion

Based on the fact that case numbers of each type of duodenal ulcer decreased from type I to type II to type III; age peak and duration of history increased from type I to type II to type III; it suggests that natural course of duodenal ulcer seems to progress from type I to type II to type III.

Although there was no ulcer activity in type Ib endoscopically, various forms of clinical symptom still presented, which suggests that clinical picture of duodenal ulcer couldn't be explained satisfactorily by morphological change of the bulb and ulcer activity only.

There was a case of type Ib ulcer which had a history of bleeding just few days prior to endoscopical examination. We do

not know whether there was a rapid healing process presented in this case or not?

The chief complaint of type Ia and type IIa cases had no distinct difference, both types had a prominent complaint of hunger epigastralgia, that maybe suggests that the degree of deformity of the bulb of type II ulcer still did not interfere the transport of food material.

In type IIIa ulcer, the post-prandial fullness was a prominent complaint, that maybe indicates that deformed bulb of type III ulcer made the transport of food material difficult.

There were 4 cases of type IIIa ulcer which had a prominent complaint of post-prandial vomiting and intractable pain, it maybe relates to ulcer activity besides marked deformity of the bulb.

Type III ulcer had a relative low frequency of bleeding. We do not know how to explain it yet.

The follow-up case of type IIIa ulcer had a very poor response to medication. In our opinion, further follow-up study on whether the medical response of type IIIa ulcer is good or not is necessary, in order to determine if the type IIIa ulcer is a medical or surgical object.

Table I Endoscopic Findings in 300 Examinations (From Nov. 1977 to Apr. 1978)

Endoscopic Findings	Case No. (%)
Duodenal Ulcer	93 (31.74)
Gastric Ulcer	26 (8.87)
Gastric & Duodenal Ulcer	10 (3.41)
Stomal Ulcer	4 (1.36)
.....	
TOTAL	293 (100.00)

Duodenal Ulcer: Gastric Ulcer = 3.57 : 1

Table II Case Number in Each Type of Duodenal Ulcer

Type of D.U.	Case No. (%)
Type I	45 (48.38)
Ia	29 (31.18)
Ib	16 (17.20)
Type II	30 (32.25)
IIa	28 (30.10)
IIb	2 (2.15)
Type III	18 (19.57)
TOTAL	93 (100.0)

Table III Age Distribution of Gastric Ulcer & Each Type of Duodenal Ulcer

Age Ulcer	15-20	21-30	31-40	41-50	51-60	61-70	71-80	81-	Total
G.U.	1	2	5	7	5	2	4	0	26
D.U.									
Type I	7	15		8	5	1	0	1	45
II	2	8	6	8	3	2	1	0	30
III	0	1	7	8	1	1	0	0	18
Total	9	24	21	24	9	4	1	1	93

Table IV Chief Complaint of Each Type of Duodenal Ulcer

Chief Complaint \ Type of D.U.	Ia	Ib	IIa	IIb	III	TOTAL
Hunger epigastralgia	17	5	16	1	5	44
Hunger epigastralgia & bleeding	5	1	4	0	0	10
Epigastralgia & post-prandial fullness	4	6	4	1	11*	26
Epigastralgia & post-prandial fullness & bleeding	1	0	0	0	1	2
Abdominal fullness	0	3	2	0	0	5
Bleeding	2	1	2	0	1	6
TOTAL	29	16	28	2	18	93

* 4 cases complicated with postprandial vomiting and intractable pain

Table V Duration of History in Type I Duodenal Ulcer

Complaint \ Duration	Below 1 yr.		Above 1 yr.	
	Type Ia	Type Ib	Type Ia	Type Ib
Hunger epigastralgia	20 (5)	4	2	2 (1)
Epigastralgia & postprandial fullness	4 (1)	5	1	1
Abdominal fullness	0	2	0	1
No complaint	2 (2)	1 (1)	—	—
Total	26 (8)	12 (1)	3	4 (1)

() . . . bleeding cases

Table VI Duration of History in Type II Duodenal Ulcer

Complaint \ Duration	Below 1 yr.		1 – 5 yrs.		Above 5 yrs.	
	Type IIa	IIb	IIa	IIb	IIa	IIb
Hunger epigastralgia	2	0	16 (4)	1	2	0
Epigastralgia $\bar{c}$ postprandial fullness	0	0	2	1	2	0
Abdominal fullness	0	0	2	0	0	0
No complaint	2 (2)	—	—	—	—	—
Total	4 (2)	0	20 (4)	2	4	0

() . . . bleeding case

Table VII Duration of History in Type III Duodenal Ulcer

Complaint \ Duration	Below 10 yrs.	Above 10 yrs.
Hunger epigastralgia	1	4
Epigastralgia $\bar{c}$ postprandial fullness	1	11*
Abdominal fullness	0	0
No complaint	1**	—
Total	3	15

* 4 cases complicated with postprandial vomiting and intractable pain, 1 case complicated with bleeding.

**bleeding case

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2. Ishikawa S, Matsumoto M, Koizumi H, et al: An endoscopic study of duodenal ulcer. Proceedings of the 2nd Asian Pacific Congress of Endoscopy. p.152-157, 1976
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Plate 1

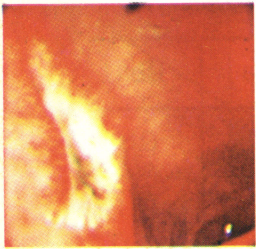


Plate 2

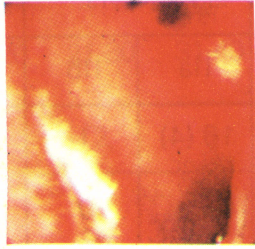


Plate 3

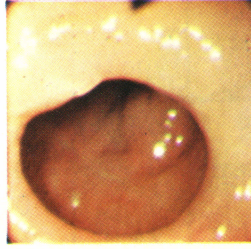


Plate 4

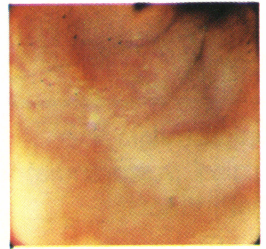


Plate 5

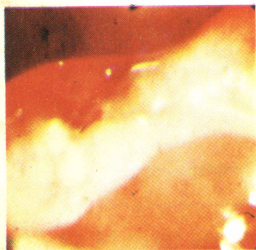


Plate 6

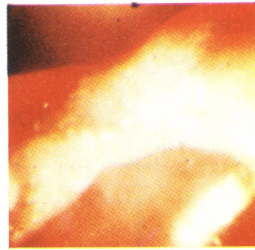


Plate 7

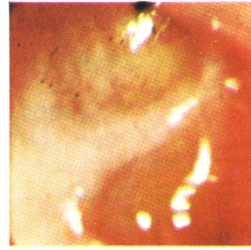


Plate 8

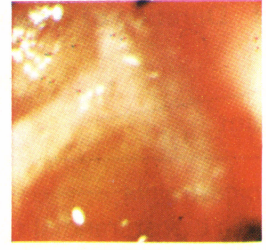


Plate 9

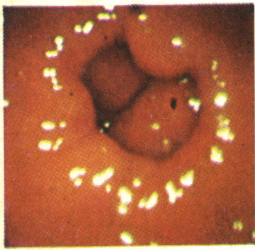


Plate 10

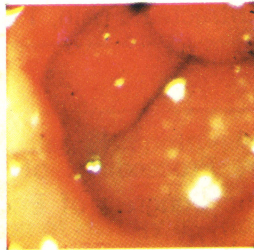


Plate 1, 2.

Type Ia duodenal ulcer:

A big ulcer over anterior wall,
2 small ulcers over posterior wall
of the bulb.

Plate 3, 4.

Type Ib duodenal ulcer:

Ulcer scar with convergency of folds,
anterior wall of the bulb.

Plate 5, 6.

Type IIa duodenal ulcer:

A bridging fold across the bulb with
active ulcer over anterior end of the fold

Plate 7, 8.

Type IIb duodenal ulcer:

A bridging fold across the bulb
without active ulcer to be seen.

Plate 9, 10.

Type IIIa duodenal ulcer:

Multiple swollen folds occupying
the bulb.

內視鏡下十二指腸潰瘍之分類及其臨床意義之研究

—初報

潘 憲 廖正雄

在台灣十二指腸潰瘍是最常見的消化性潰瘍。凡上腹部不適而接受消化系內視鏡檢查者，約三分之一證實為十二指腸潰瘍。近年來消化系內視鏡日趨發達，正確地診斷十二指腸潰瘍已非難事，唯尚乏人進一步做內視鏡下十二指腸潰瘍形態變化之探討。

本文將 93 例十二指腸潰瘍依內視鏡下十二指腸球部之形態變化分為三型：第一型者十二指腸球部無變形；第二型者有一橋形皺襞橫跨於球部；第三型者球部變形厲害，充滿巨皺襞。每一型又依潰瘍之活動性分為甲類及乙類（Sub-types a & b）。甲類表示有活動性潰瘍，乙類表示只有潰瘍疤痕。依照上述之分類，我們將各型潰瘍之年齡分佈，主訴，及罹病時間之長短做一分析。

在本系列中，第一型（Type I）潰瘍最多，共 45 例佔 48.38%，其中甲類（Type Ia）29 例，佔 31.18%；乙類（Type Ib）16 例，佔 17.2%。第二型（Type II）潰瘍 30 例，佔 32.25%，其中甲類（Type IIa）28 例，佔 30.1%；乙類（Type IIb）2 例佔 2.15%。第三型（Type III）者 18 例，佔 19.57%，均屬於甲類（Type IIIa）。

第一型潰瘍高峰年齡最為年輕，在 21 至 30 歲，其臨床病史大都在一年以內（84.8%），甲類者之主訴以上腹飢痛為主（75.85

%），乙類者或為上腹飢痛，或為上腹不適合併食後腹脹，並無偏向那種特定形式。第二型潰瘍高峰年齡較不突出，由 21 至 50 歲大致相同，其臨床病史大都在 1 至 5 年間（73.3%）；甲類者之主訴仍以上腹飢痛為主（71.4%），乙類者病例數太少，無法討論。第三型潰瘍在本系列中均為甲類，其主訴以上腹不適合併食後腹脹為主（66.6%），其臨床病史大都在 10 年以上（83.3%），其高峰年齡最為老大，在 31 至 50 歲。

在本系列中，所有 4 例合併食後嘔吐及無法控制之劇痛者，均屬第三型甲類。但如與第一、第二型潰瘍比較，第三型潰瘍似乎較無出血傾向。

第一型乙類潰瘍在內視鏡下雖無活動性，但臨床上仍可出現各種症候，似乎表示十二指腸潰瘍之臨床表徵不能單純地以形態學上之變化及潰瘍之活動性完全加以解釋。

第三型潰瘍除上腹不適外，食後腹脹相當明顯，似乎與球部之變形有關。大多數第三型甲類潰瘍並無明顯之食後腹脹，表示其球部變形之程度尚不足以影響食物之運轉。

就各型潰瘍之病例數，高峰年齡，及病史之長短來看，似乎十二指腸潰瘍之自然病程即是由第一型轉為第二型，再轉變為第三型。

仁濟醫院內科

民國 67 年 5 月 25 日受理