Combine meeting

2023/11/24

Presenter: Fellow 李俊康

Supervisor: VS 連漢仲

Background

- Chart No: 3072954F
- Name: 陳ＯＯ
- Age: 64 y/o
- Gender: Male
- Family history: Nil
- Body weight: 59kg

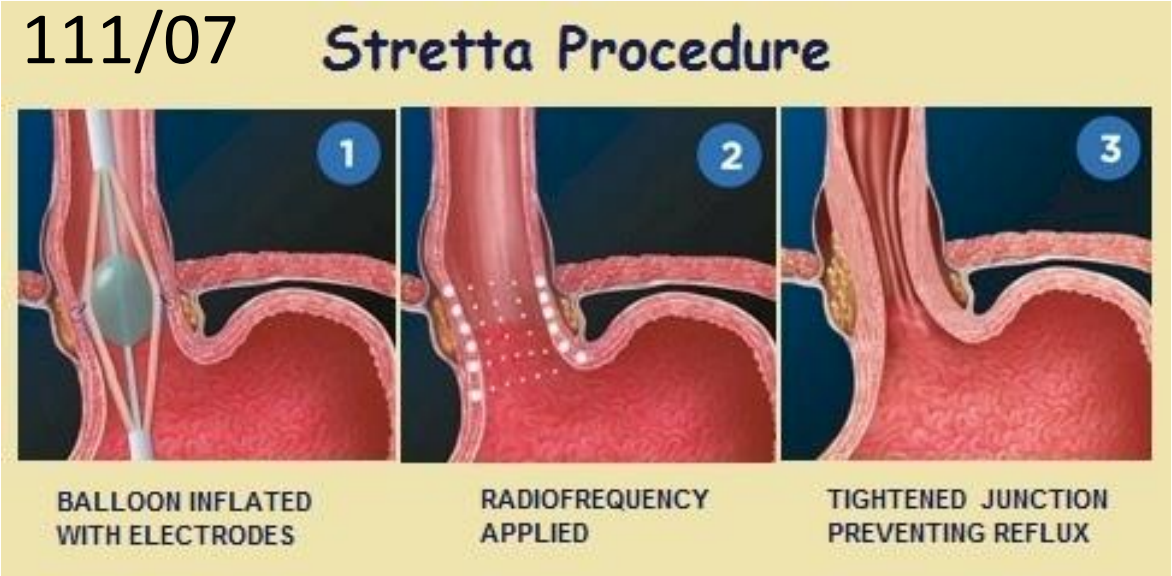
Chief complaint

- Belching day and night for 2-3 years

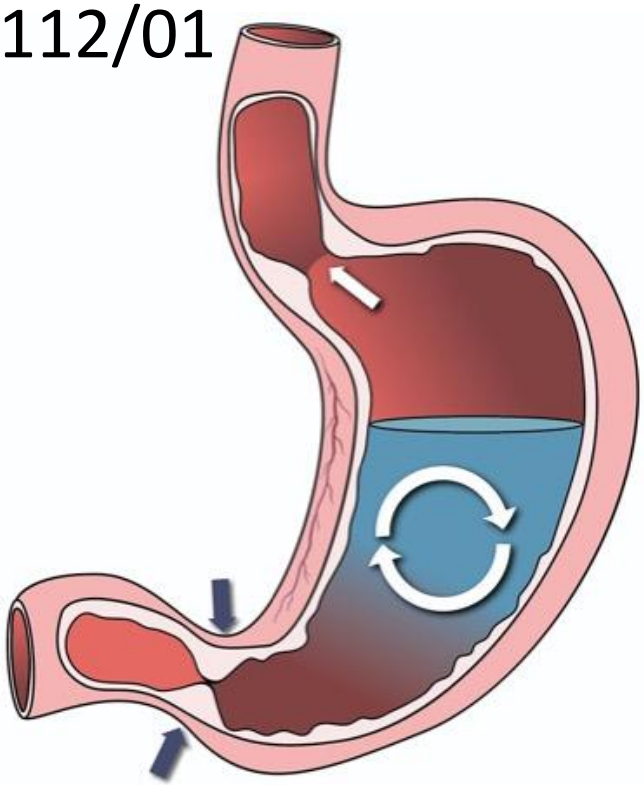
Past history

- GERD with Barrett's esophagus
  - s/p Stretta in 2022/7
  - s/p ARMS and G-POEM in 2023/1
- Hypertension
- Hyperlipidemia
- Diabetes mellitus

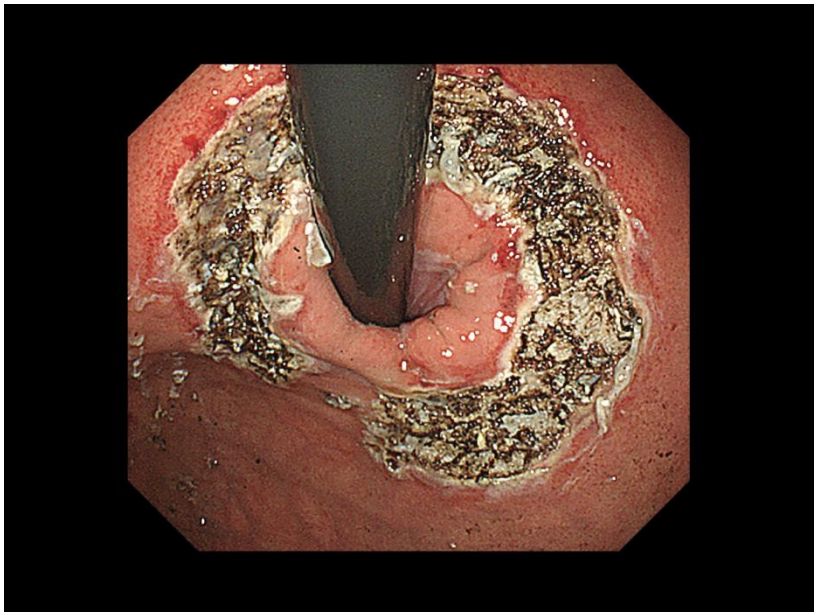
111/07



112/01



112/01



Gastric peroral endoscopic myotomy (G-POEM)

Anti-reflux mucosectomy (ARMS)

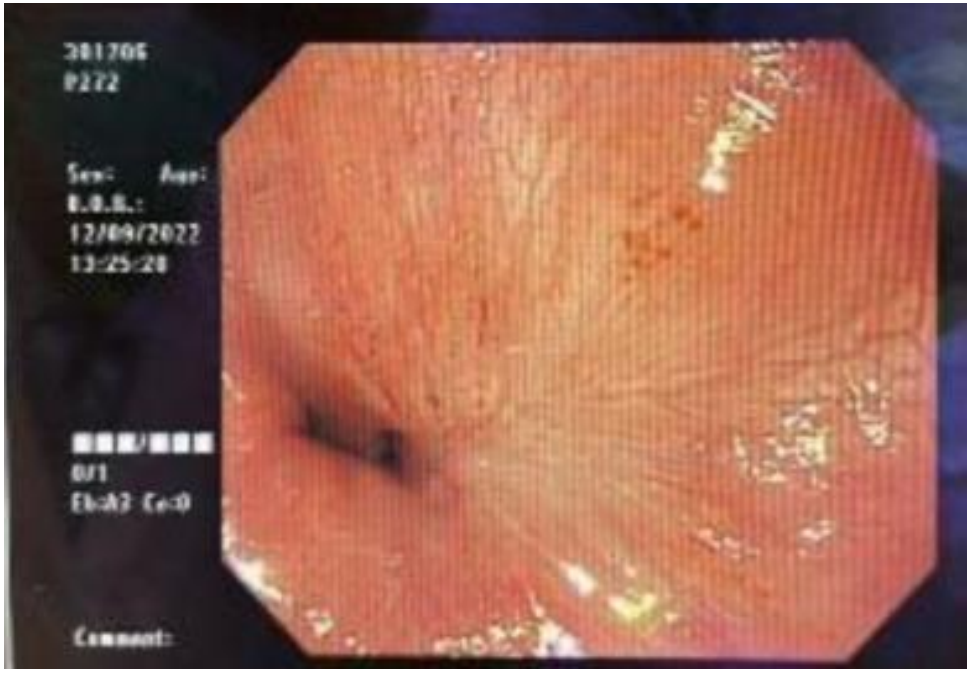
Serial exam (2021/7)

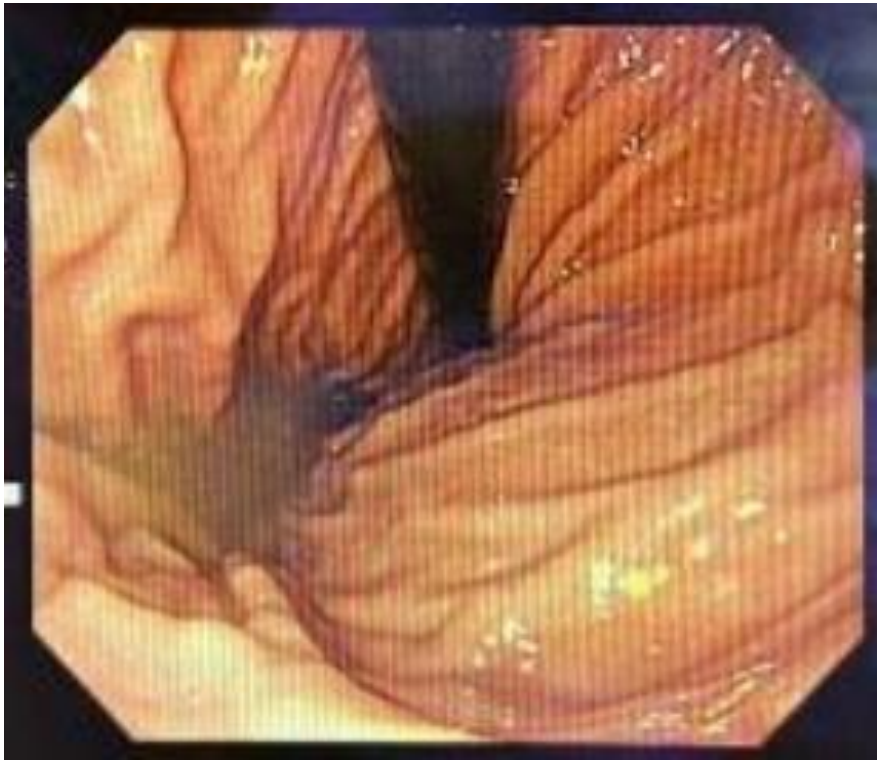
- HRIM: normal
- Bravo esophageal pH test: 12.8% (AET, acid exposure time)

Drug history

- Esomeprazole
- Metoclopramide
- Dimethicone
- Nicorandil
- Valsartan
- Aspirin
- Famotidine
- Metformin
- Atovarstatin

陳O O, 外院胃鏡, 2022/12/9



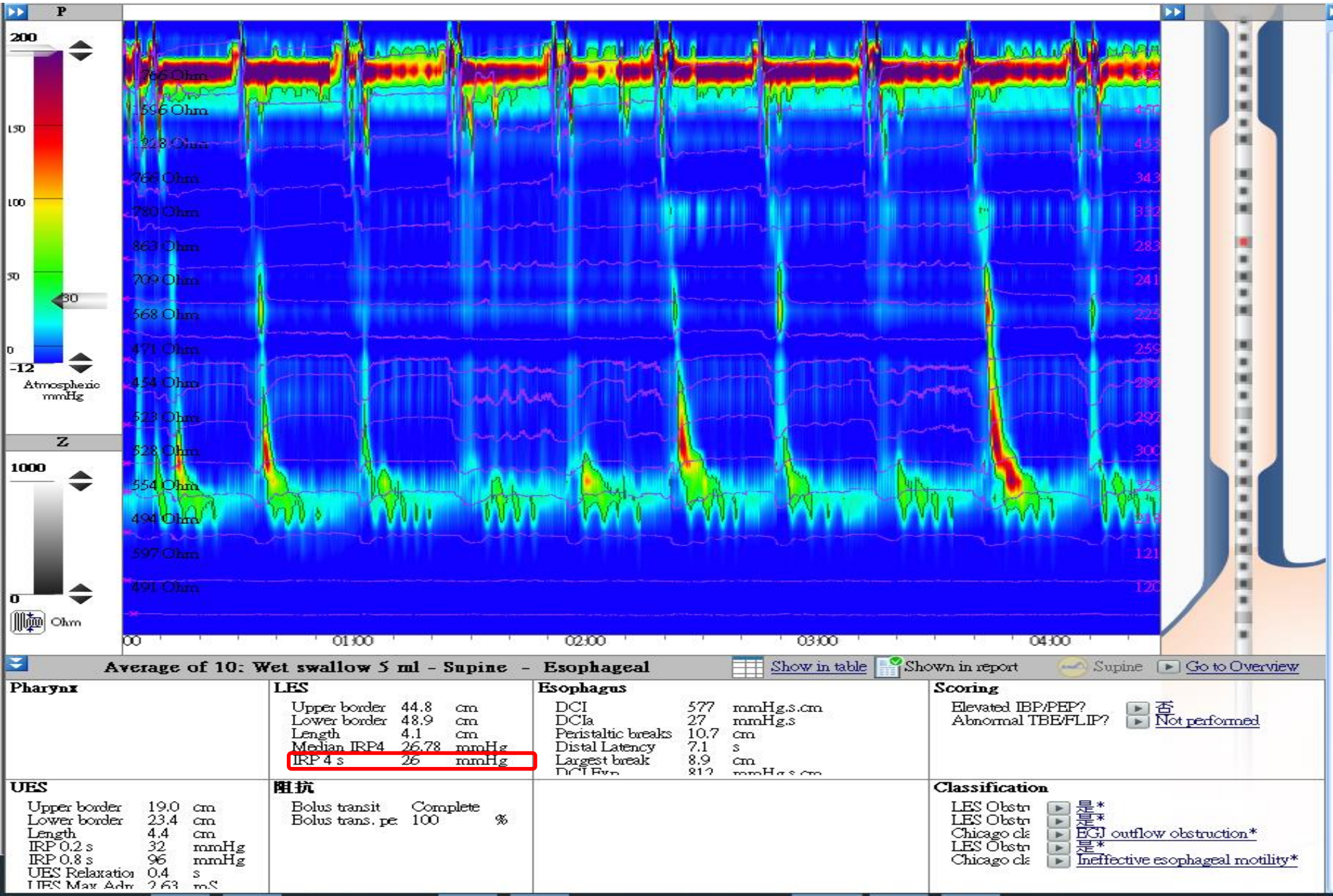


陳O O, Sono, 2023/4/24

Finding:
> Mild fatty liver change.
> Calcification about 0.8cm at right lobe of liver.
> Otherwise, no other specific findings in this study.

Impression:
As above description.

陳O O, HRIM, 2023/5/23



陳O O, HRIM, 2023/5/23

Height: 165 cm Weight: 57 kg

[INDICATIONS]
■Post-operation

[COMPLETENESS OF THE PROCEDURE]
■Completed

[RESULTS]
1. Resting measurements
■ Resting pressure
  Lower esophageal sphincter: (39) 10-45mmHg
  Upper esophageal sphincter: (279) 33-180mmHg
■ Location of upper margin
  Lower esophageal sphincter: (44.8)
  Upper esophageal sphincter: (19)
■ Length
  Lower esophageal sphincter: (4.1) 2.4-5.5cm
  Upper esophageal sphincter: (4.4)

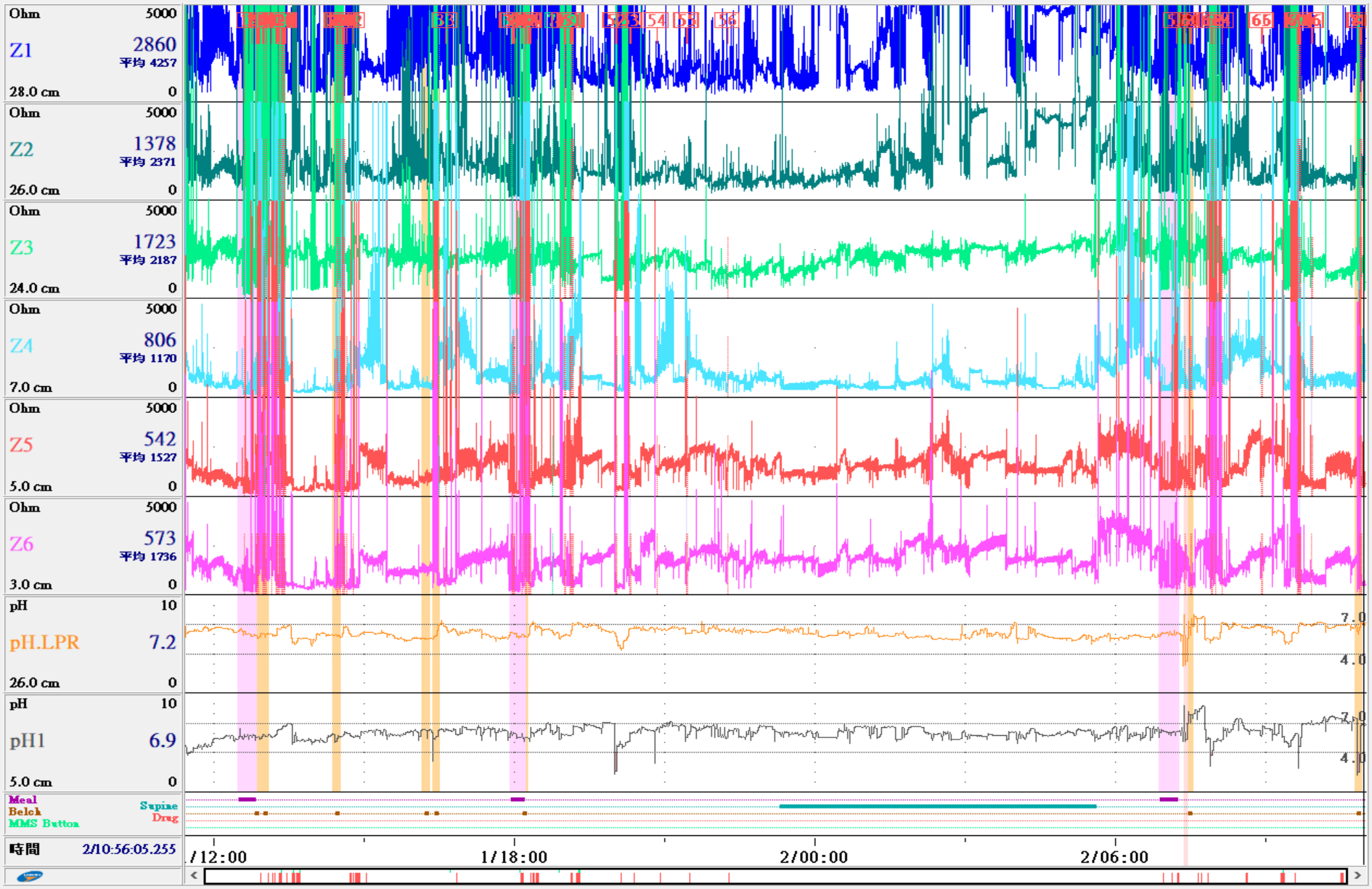
2. Esophagogastric junction (EGJ) outflow & peristalsis during wet swallows
■ Integrated relaxation pressure (IRP) (median)
  Supine: (26.78) <21mmHg (by MMS HRIM)
  Upright: (23.36) <15mmHg (by MMS HRIM)
■ Distal contractile integral (DCI) (mean)
  Supine: (577) 450-8000mmHg.s.cm
  Upright: (985) 450-8000mmHg.s.cm
■ Distal latency (mean)
  Supine: (7.1) >4.5s
  Upright: (6.4) >4.5s
■ Multiple rapid swallows (MRS) (DCI ratio)
  Supine: (371) MRS DCI/(577) Baseline DCI=(0.64)(Normal>1)
■ Rapid drink challenge (RDC) (IRP ratio)
  Upright: (23) RDC IRP/(23.36) Baseline IRP=(0.98)(Normal <1)

3. Esophagogastric junction (EGJ) competence
■ EGJ morphology (supine)
  ■Type I (superimposed of LES and crural diaphragm)
■ EGJ contractile integral
  (75) mm Hg·cm (supine) Normal range: 65 (47-95, 127) (median (IQR, 95%))
  (54) mm Hg·cm (upright)

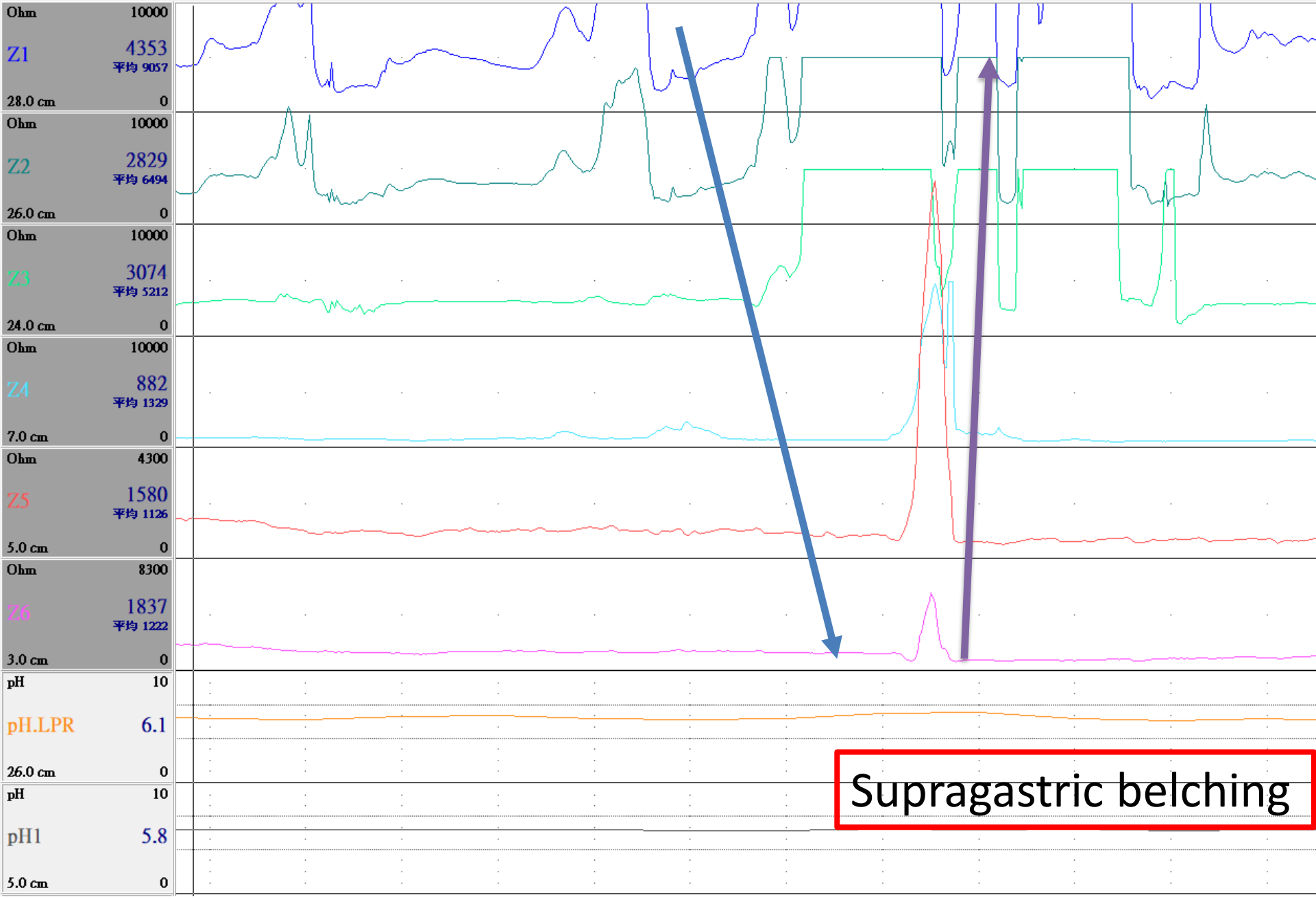
[CONCLUSIONS]
■Normal esophageal motility

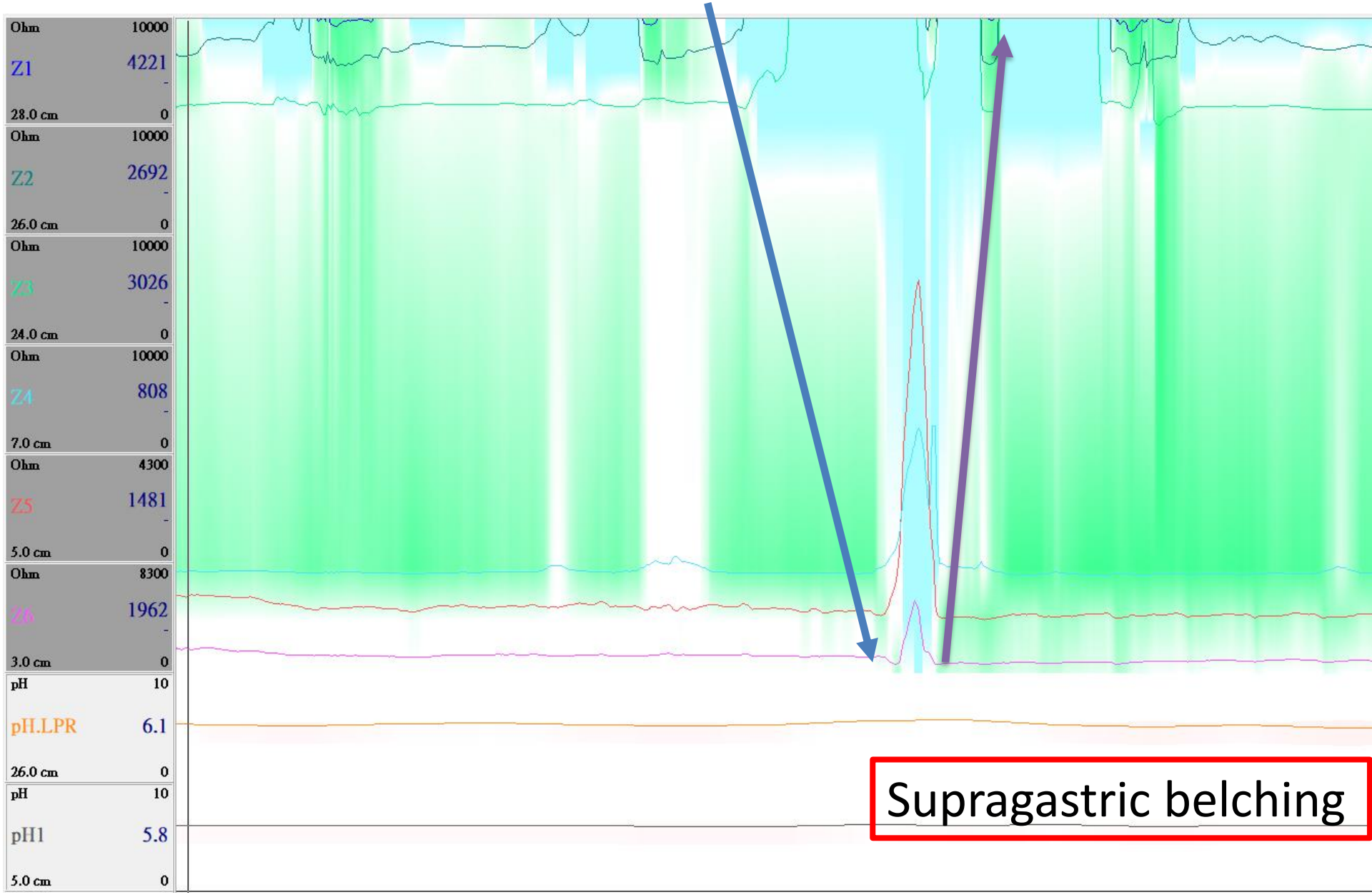
Note:
1.Supine 10 times Wet swallows: 20% Normal,70% Ineffective contraction(70% Failed),10% Fragmented contraction.
2.Upright 10 times Wet swallows: 70% Normal contraction,30% Fragmented contraction.
3.The median IRP elevated, but there is no intrabolous pressurization, no dysphagia and chest pain. The possibility of EGJ outflow obstruction is low.

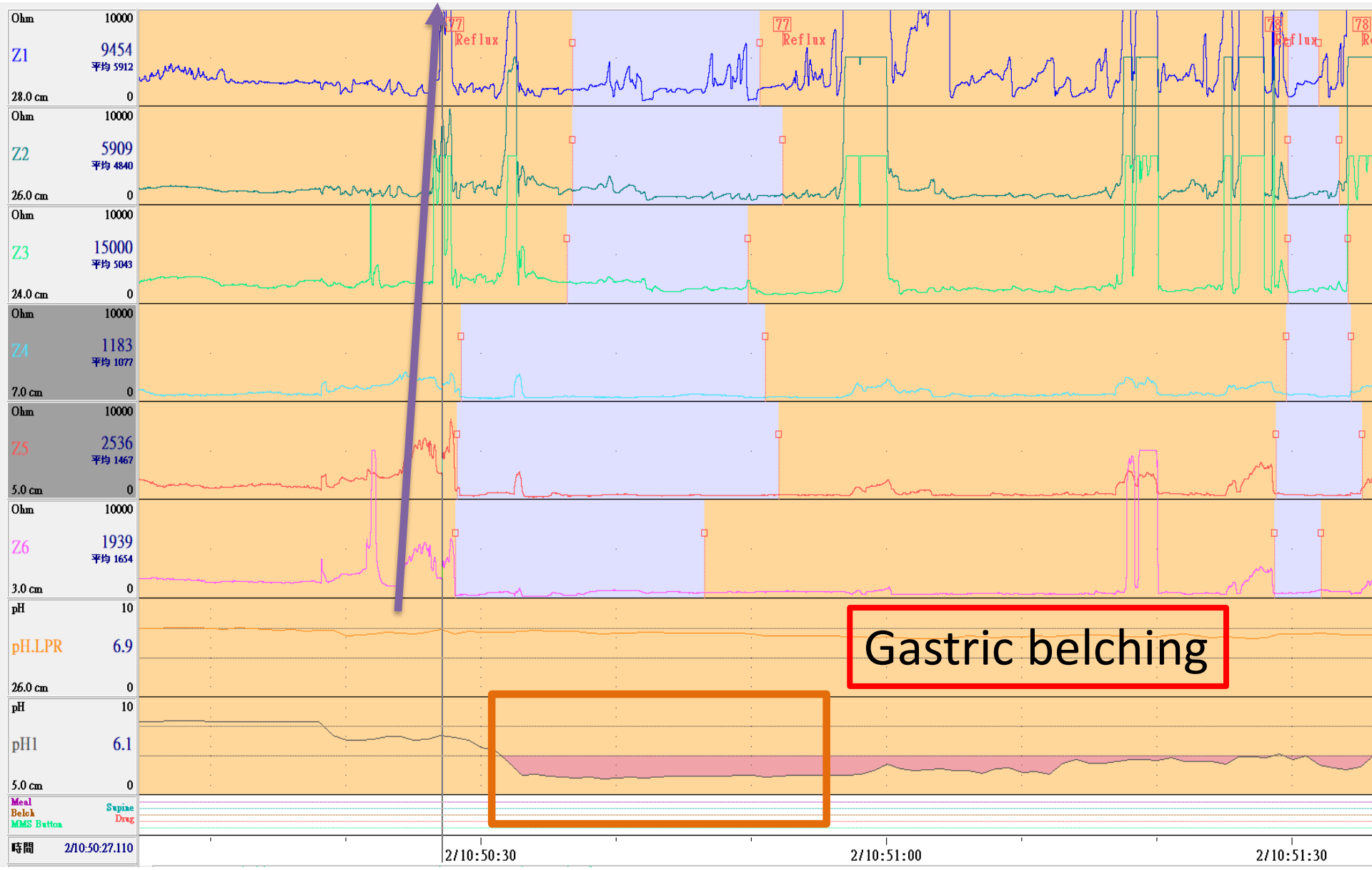
陳O O, MIIPH OFF PPI, 2023/5/23

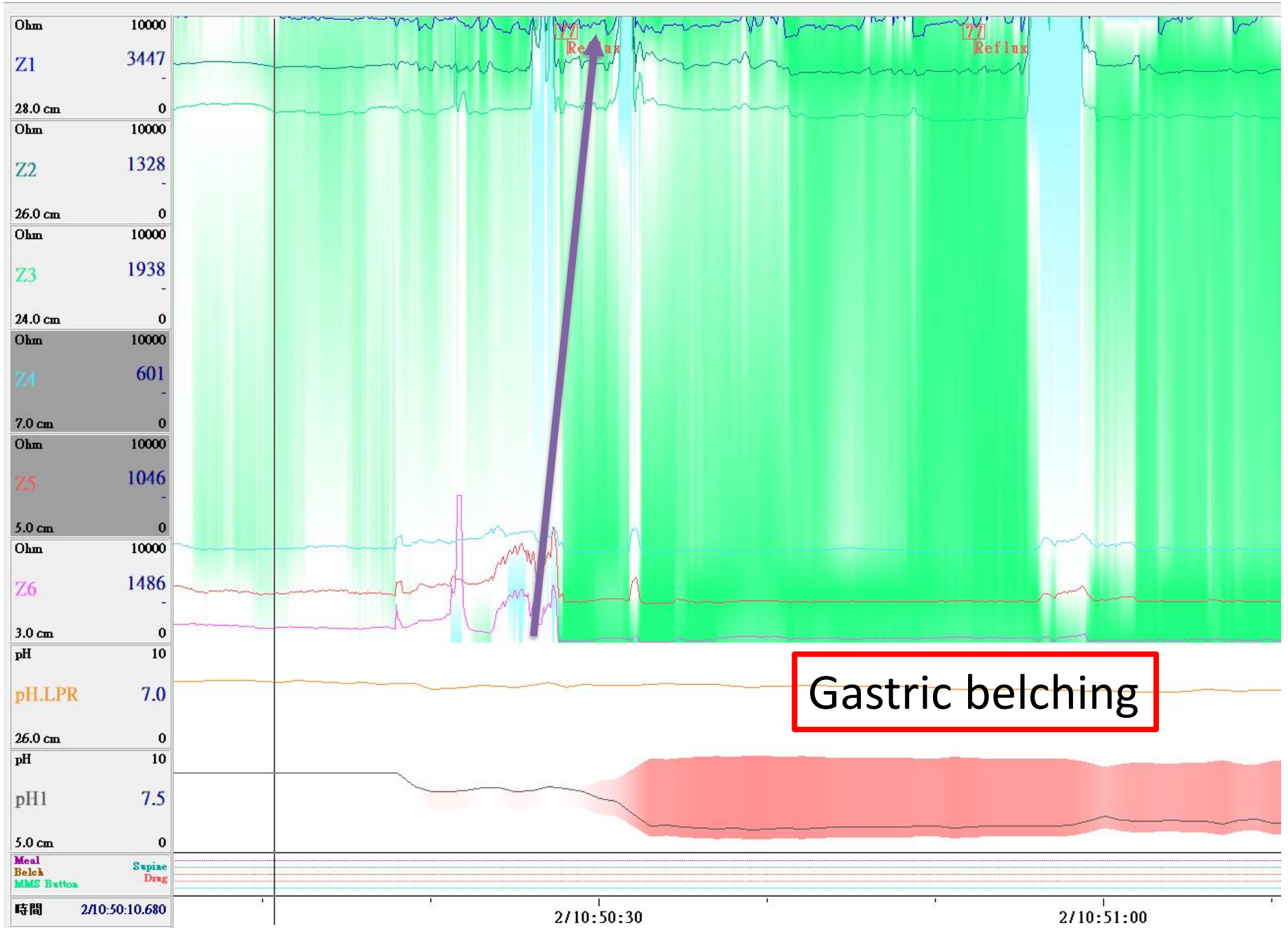


AOI = Impedance (Reflux)

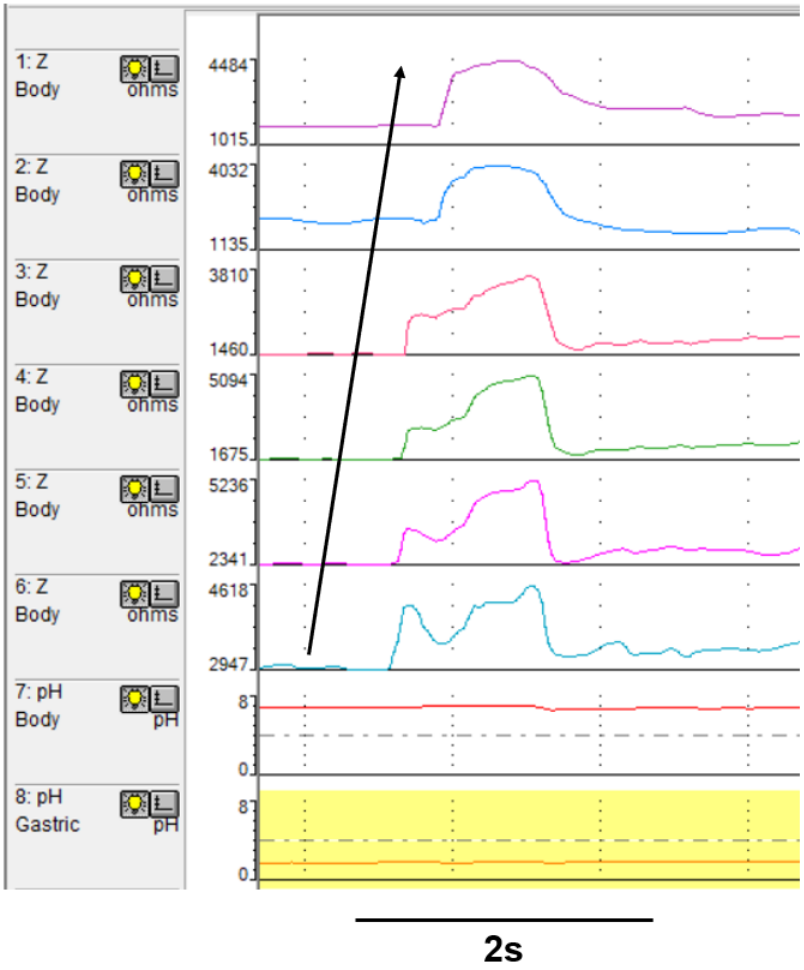

Ohm 10000
Z1 4353
平均 9057
28.0 cm 0
Ohm 10000
Z2 2829
平均 6494
26.0 cm 0
Ohm 10000
Z3 3074
平均 5212
24.0 cm 0
Ohm 10000
Z4 882
平均 1329
7.0 cm 0
Ohm 4300
Z5 1580
平均 1126
5.0 cm 0
Ohm 8300
Z6 1837
平均 1222
3.0 cm 0
pH 10
pH.LPR 6.1
26.0 cm 0
pH 10
pH1 5.8
5.0 cm 0
Supragastric belching


Ohm 10000
Z1 4221
28.0 cm 0
Ohm 10000
Z2 2692
26.0 cm 0
Ohm 10000
Z3 3026
24.0 cm 0
Ohm 10000
Z4 808
7.0 cm 0
Ohm 4300
Z5 1481
5.0 cm 0
Ohm 8300
Z6 1962
3.0 cm 0
pH 10
pH.LPR 6.1
26.0 cm 0
pH 10
pH1 5.8
5.0 cm 0
Supragastric belching


Ohm 10000
Z1 9454
平均 5912
28.0 cm 0
Ohm 10000
Z2 5909
平均 4840
26.0 cm 0
Ohm 10000
Z3 15000
平均 5043
24.0 cm 0
Ohm 10000
Z4 1183
平均 1077
7.0 cm 0
Ohm 10000
Z5 2536
平均 1467
5.0 cm 0
Ohm 10000
Z6 1939
平均 1654
3.0 cm 0
77 Reflux
77 Reflux
78 Reflux
pH 10
pH.LPR 6.9
26.0 cm 0
pH 10
pH1 6.1
5.0 cm 0
Meal
Belch
MMS Button
Supine
Drug
時間 2/10:50:27.110
2/10:50:30
2/10:51:00
2/10:51:30
Gastric belching

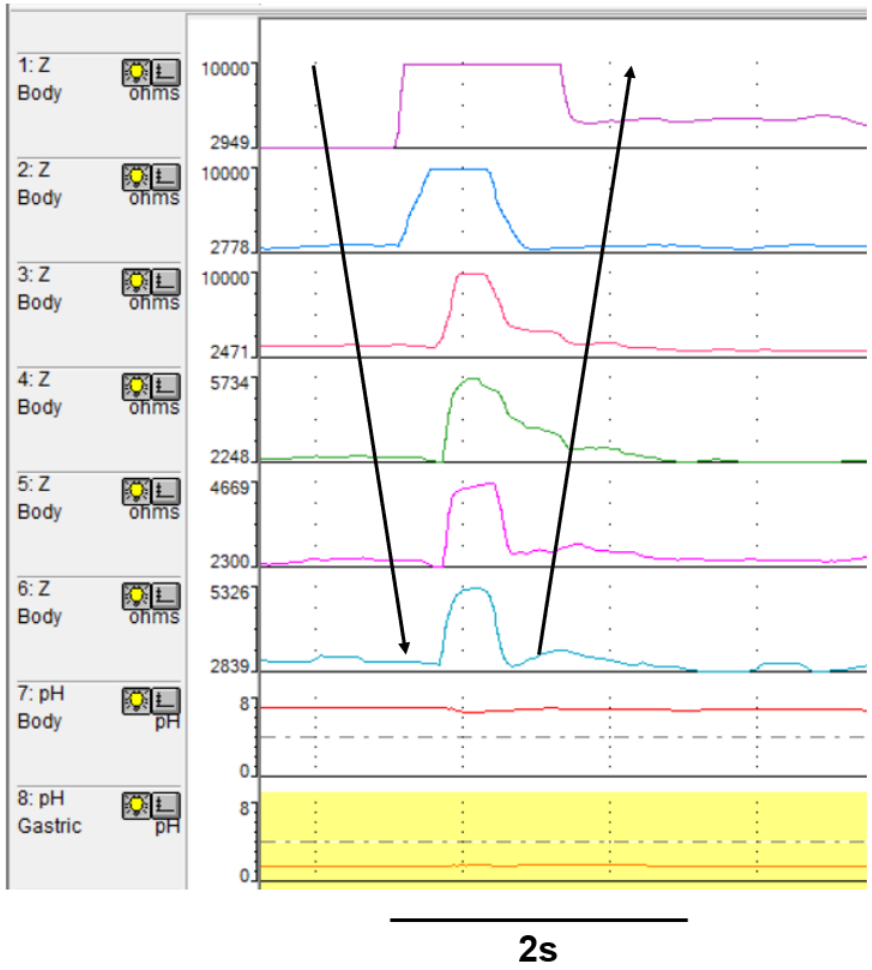

Ohm 10000
Z1 3447
28.0 cm 0
Ohm 10000
Z2 1328
26.0 cm 0
Ohm 10000
Z3 1938
24.0 cm 0
Ohm 10000
Z4 601
7.0 cm 0
Ohm 10000
Z5 1046
5.0 cm 0
Ohm 10000
Z6 1486
3.0 cm 0
pH 10
pH.LPR 7.0
26.0 cm 0
pH 10
pH1 7.5
5.0 cm 0
Meal
Belch
MMS Button
Supine
Drug
時間 2/10:50:10.680
77 Reflux
77 Reflux
Gastric belching
2/10:50:30
2/10:51:00

Gastric belching



2s

Supragastric belching



2s

陳O O, MIIPH OFF PPI, 2023/5/23

[INDICATIONS]
■Post-operation

This is a
■24h hypopharyngeal multichannel intraluminal impedance-pH test

pH sensor:
■2 pH located at
  ■hypopharynx and distal esophagus: (1) cm above UES, (5) cm above LES

During the test, the patient was
■Off PPI

[RESULTS]
■Acid-distal esophagus
  ■Acid %time distal
  [Total] 0.5 (<4.2%) [Upright] 0.8 (<6.3%) [Supine] 0.0 (<1.2%)
  ■No. of reflux distal
  [Total] 74 (<80) [Upright] 74 [Supine] 0
  ■Reflux clearance time (sec)
  ■Symptom index
  [Total] 75% (<50%)
  ■Symptom association probability
  [Total] 100% (<95%)
  ■DeMeester score
  [Total] 2.09 (<14.7)

■Acid-pharynx
  ■Acid %time pharynx
  [Total] 0.0 (<1.3%) [Upright] 0.0 (<1.3%) [Supine] 0.0 (<0.0%)
  ■No. of pharyngeal acid reflux (PAR)
  [Total] 0 (<1) [Upright] 0 (<1) [Supine] 0 (<1)

[SYMPTOM-REFLUX ASSOCIATION]
■Belching
  No. of symptoms related to acid reflux 6
  No. of symptoms not related to reflux 2
  Symptom index (<50%) 75%

[CONCLUSIONS]
■Functional Heartburn (FH) or alternative diagnosis

[Note]
Acid SI 12.5% SAP 74%
Total SI 75% SAP 100% for belching,thus reflux episodes may be the result rather than the cause of belching.

AET: 0.5%

Symtom index: 75%

SGB episodes > 20 times

Intervention (since 2023/6)

- Drug
  - Probiotics (Viomент, Antibiophilus, Miyarisan)
  - Antidepressant (Xanax, Rivotril)
  - Prokinetic agent (Mosad)
- Food education

The Reflux Symptom Index (RSI)

MIIPH TEST DAY

	在過去一個月內，以下問題是否影響你？(0-不會，5-重度)	112/ 3/2	112/ 4/20	112/ 5/23	112/ 9/1	112/ 10/6
1	沙啞或聲音的問題	0	1	0	0	0
2	清喉嚨	2	2	3	2	2
3	過多喉嚨黏液或鼻涕倒流	1	2	0	3	1
4	吞嚥食物，液體或藥丸困難	0	0	0	0	0
5	進食或躺下後咳嗽	1	1	0	0	0
6	呼吸困難或嗆到事件	0	0	0	0	1
7	令人討厭或惱人的咳嗽	0	1	2	1	0
8	有東西黏在喉嚨或有塊狀物在喉嚨的感覺	0	2	4	0	0
9	心灼熱，胸痛，消化不良或胃酸跑上來	2	1	0	2	1
	Total	6	10	9	8	5

Score range: 0-45 (normal ≤13),
the higher the score, the more severe the symptom.

Belafsky PC, 2002 J Voice.
Lien HC, 2015 Value Health

Reflux Disease Questionnaire (RDQ)

MIIPH TEST DAY

回想過去一個月， 您認為以下症狀出現時的如何？		112/3/2		112/4/20		112/5/23		112/9/1		112/10/6	
程度：0-不會，5-重度 頻率：0-不會，5-每天		程度	頻率	程度	頻率	程度	頻率	程度	頻率	程度	頻率
1	胸骨後方感到灼熱----------	1	5	0	0	0	0	2	0	0	0
2	胸骨後方感到疼痛----------	0	0	0	0	0	0	1	0	0	0
3	上腹中間感到灼熱----------	0	0	1	0	0	0	1	2	0	0
4	上腹中間感到疼痛----------	0	0	0	0	0	0	1	1	0	0
5	口腔內有酸味----------	2	0	1	0	1	1	0	2	1	1
6	有東西從胃部向上移動而感到不適	5	5	4	5	0	0	2	2	1	1
	Total	**18**		**10**		**2**		**9**		**4**	

Score range: 0-40 (normal <12)

Shaw MJ, 2001 Am J Gastroenterol CHINESE GERD STUDY GROUP, 2004 Chin J Dig Dis

食道過度警覺及焦慮量表 (EHAS)

MIIPH TEST DAY ↓

	在過去一個月內，以下問題是否影響你？ (0-非常不同意，4-非常同意)	112/ 3/2	112/ 4/20	112/ 5/23	112/ 9/1	112/ 10/6
1	我似乎無法忘記我的症狀	4	4	3	1	2
2	我很難享受生活，因為我無法擺脫喉嚨/胸部/食道的不適	0	4	4	2	2
3	這些症狀很可怕，我覺得它們讓我不知所措	2	4	3	3	2
4	只要一醒來，我就會一整天擔心我的喉嚨/胸部/食道會感到不適	4	3	1	3	2
5	我經常會擔心喉嚨/胸部/食道的問題	2	4	2	2	2
6	這些症狀很可怕，我認為它們永遠不會改善	3	3	3	2	1
7	關於減輕症狀，我毫無辦法	2	4	3	2	1
8	當我喉嚨/胸部/食道不適時，我會感到害怕	3	4	2	2	1
9	我焦急地希望這些症狀消失	4	4	3	3	4
	Symptom-specific anxiety total score (1-9)	24	34	24	20	17
10	我很快就會注意到我的食道症狀的位置或範圍的變化	3	2	3	2	2
11	我會意識到我的食道有突然或暫時的變化	3	2	1	2	2
12	即使我忙於另一件事，我也會注意到我的症狀	3	3	2	1	2
13	我會專注於食道的感覺	3	2	2	2	2
14	我對心灼熱或胸痛等食道的感覺非常敏感	0	2	0	3	0
15	我會一直追蹤我症狀的程度	1	3	2	3	2
	Esophageal hypervigilance (10-15)	13	14	10	13	10

The GERDyzer

MIIPH TEST DAY ↓

過去7天來，生病(指逆流相關症狀)對您生活品質的影響。(0-完全沒有；10-很嚴重)		112/ 3/2	112/ 4/20	112/ 5/23	112/ 9/1	112/ 10/6
1	整體來說，過去7天您覺得如何？	8.6	2.4	4.8	5.3	5.0
2	過去7天，生病所帶來的痛苦/不適對您造成的影響有多大？	8.8	8.7	8.2	8.0	5.0
3	過去7天，生病對您身體健康造成的影響有多大？	9.3	9.2	8.3	7.1	5.0
4	過去7天，生病對您精神活力造成的影響有多大？	9.0	8.9	8.4	7.4	5.1
5	過去7天，生病對您日常活動造成的干擾有多大？	9.2	8.9	8.0	7.0	3.6
6	過去7天，生病對您休閒活動造成的干擾有多大？	9.9	8.8	8.3	7.2	3.9
7	過去7天，生病對您社交生活造成的干擾有多大？	8.1	7.4	8.5	8.3	4.1
8	過去7天，生病對您飲食習慣造成的干擾有多大？	8.6	8.3	8.	6.7	3.3
9	過去7天，生病對您心情造成的影響有多大？	8.8	8.7	8.7	7.9	4.7
10	過去7天，生病對您睡眠造成的影響有多大？	8.8	7.0	6.9	10.0	4.5
	Total	**62.2**	**53.5**	**53.7**	**51.0**	**31.3**

Score range: 0-70,
the higher the score, the worse the QoL.

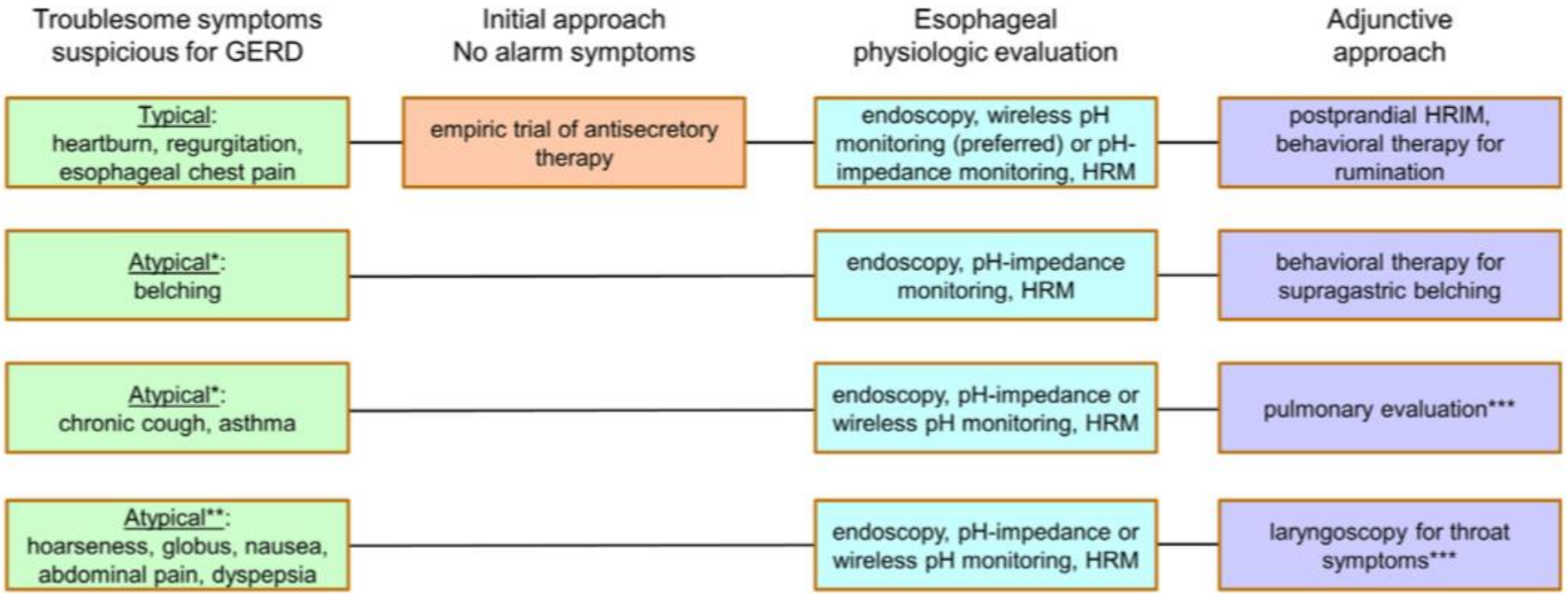
Holtmann G, 2009 Aliment Pharmacol Ther
Wu CP & Lien HC, 2016 Medicine

Belching

- Supragastric belching (SGB)
  - an unconscious behavioural disorder
  - air ingested or injected into the esophagus does not reach the stomach before eructation
- Gastric belching
  - physiological reflex
  - where air in the proximal stomach is vented during a transient **LES relaxation**
  - can trigger reflux
- Healthy volunteer data indicates SGB>13 episodes/24h is pathological, although the necessity of the treatment depends on symptom burden.

Koukias N, 2015, J Neurogastroenterol Motil.

Lyon consensus 2.0



Gyawali CP, 2023 Gut

Back to our patient

- GERD with Barrett's esophagus
  - s/p Stretta in 2022/7
  - s/p ARMS and G-POEM in 2023/1
- Reflux hypersensitivity overlapping with supragastric belching

Discussion

- Comment: supragastric belching 可用 pH impedence monitor鑑別出來, 介紹給大家知道有檢查可以做
- Q1: 這個病人當初為何會做G-POEM
- A1: 可能覺得胃排空差, 做完ARMS 怕脹氣所以一併做
- Q2: 中榮有醫師在做G-POEM
- A2: 許斯淵醫師可能有時候會做