



Case discussion

報告人: R4 王立安

指導醫師: 連漢仲主任



Patient Profile

- Name : 陳XX
- ID : 003142075E
- Gender : Male
- Birthday : 32/02/20
- Age : 81
- Smoking: (+)
- Family history: Nil



Chief complaint

- Poor appetite and post prandial vomiting for 6 months

Past medical history

- Arrhythmia
- s/p laparoscopic cholecystectomy
- Right ureter stone, s/p cystolithotripsy in 2024/04



2024/03/20 GI OPD

- Referred to Chief Lien's clinic with the complaint of body weight loss and post-prandial vomiting
- Suggest repeat UE/EUS, Barium esophagography, HRIM

2024/03/25 GI UGI scopy



3142075E

Name: ■

2024/03/25

12:34:20.367

(16/115)

Img:16

Ser:1

Sex: Age:

D.O.B.:

03/25/2024

12:42:16

Upper G-I Sonoscopy(ESOPHAGUS)

Acq Time:12:40:18:453

■■■■/■■■■(0/1)

Eh:A8 Ce:0

Comment:

GIF-H290

Scope size: 8.9/8.9

Channel: 2.8

Serial No.: 2259443

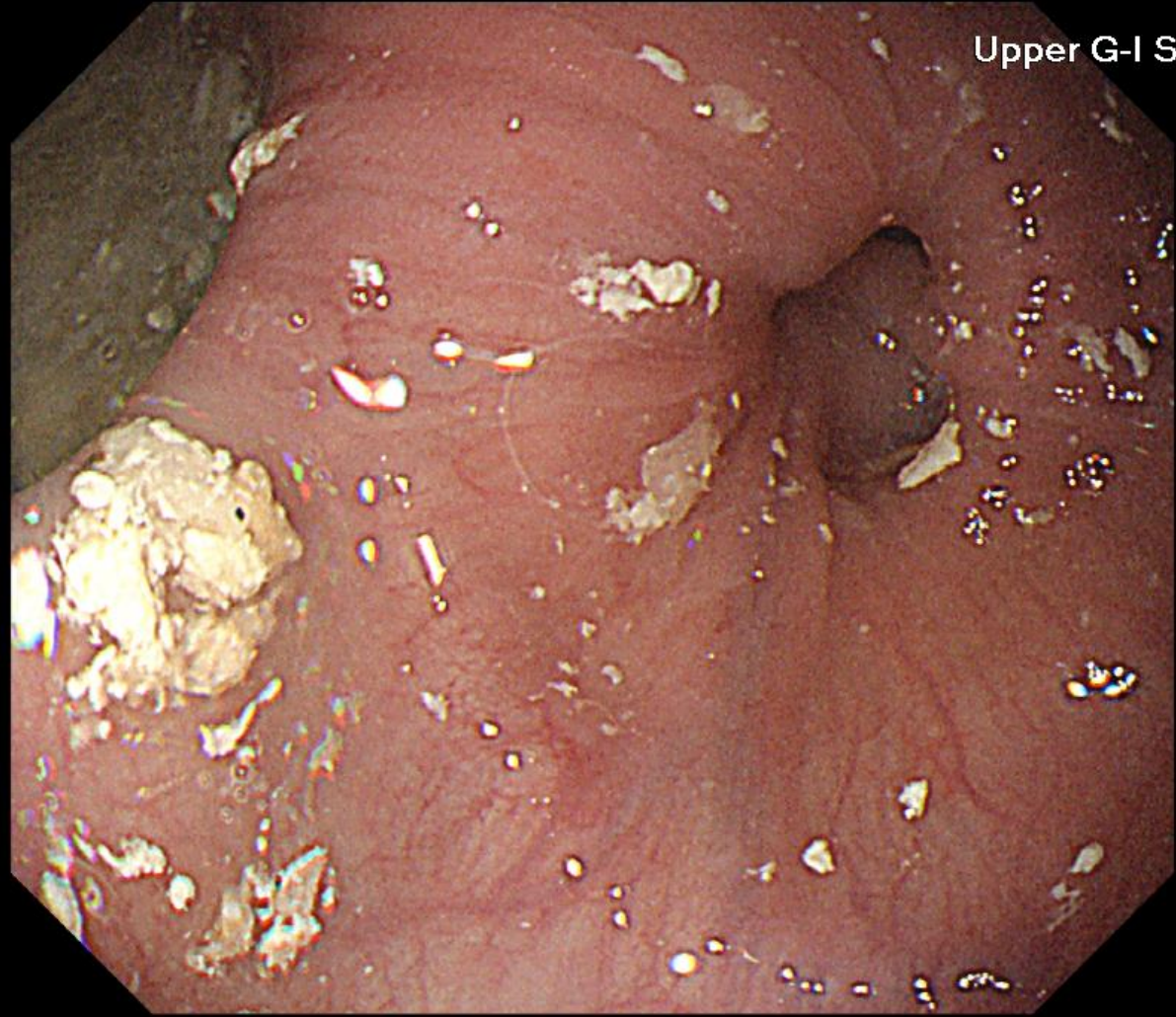
SW1: Freeze

SW2: Enhancement

SW3: Release 1

SW4: NBI

SW5: Dual Focus



300Pix

Fit 78%

?_?i??

GI-MKC1

TWINBEANS

TWINBEANS



2024/03/25
12:34:20.367

3142075E

03/25/2024 12:48:19
- 0

12MHz

G : 5
C : 6

muscularis propria layer

D1: 8.7mm

GI

4cm

MEDIA

CV: 1

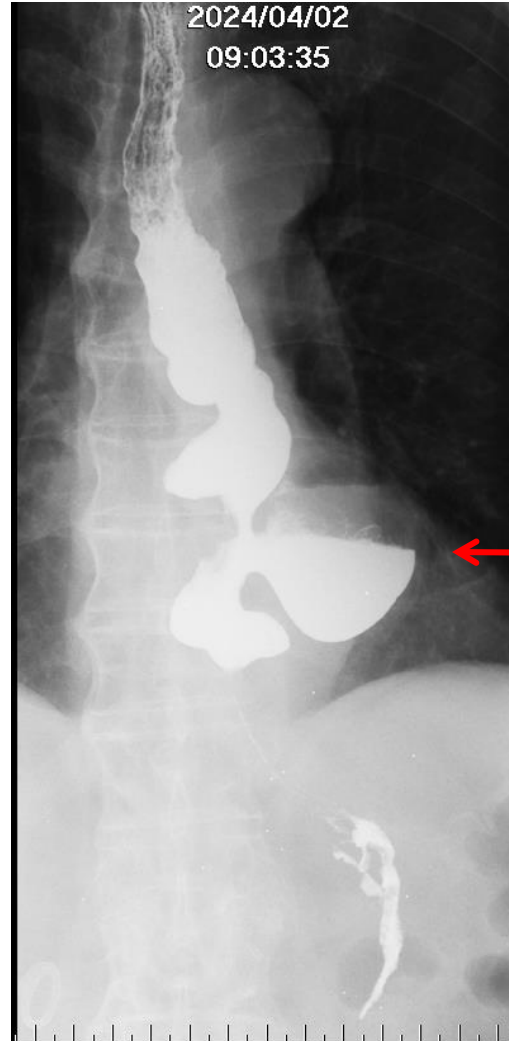
US

(R)

1/

- 4
17

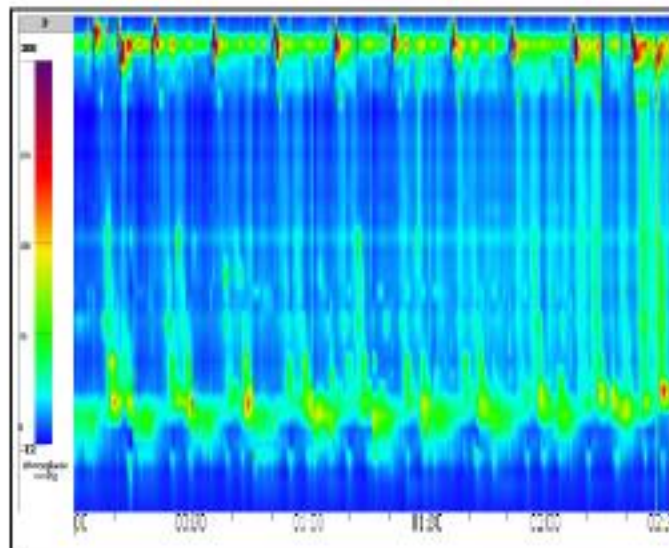
2024/04/02 Esophagography



A segmental narrowing at L/3 esophagus with stasis of contrast medium
Dilation of esophagus
Diverticulum
R/I achalasia with epiphrenic diverticulum



Average of 10: Wet swallow 5 ml - Supine Analysis type: Esophageal



Chicago classification 4 *

Type III achalasia

* The normal values and analysis are according to the Chicago Classification 4 as published in Neurogastroenterology & Motility, 2020;33:e14058. The classification is valid for adults and is based on the primary position in which 10 wet swallows are performed, either supine or upright. Assessment of swallows in the secondary position and with provocation provide supportive data. The Chicago Classification is only applicable for primary esophageal motility disorders. The actual diagnosis remains under all circumstances the responsibility of the clinician/physician.

Chicago classification 3 *

EGJ outflow obstruction

* The normal values and analysis are according to the Chicago Classification³ as published in Neurogastroenterology & Motility, 2015, Vol. 27, Issue 2, p160-174. The classification is valid for adults and based on series of 10 swallows of 5 ml water each, swallowed in a supine posture. The Chicago Classification is only applicable for primary esophageal motility disorders. The actual diagnosis remains under all circumstances the responsibility of the clinician/physician.

Esophagus

DCI	94 mmHg.s.cm
Peristaltic breaks	13.5 cm
Distal Latency	3.7 s
Intrabolus pressure	33.3 mmHg

Impedance

Bolus transit	Complete
Bolus transit percentage	100 %

LES

Upper border	43.4 cm
IRP 4 s	33.1 mmHg
Intraabdominal length	1.6 cm

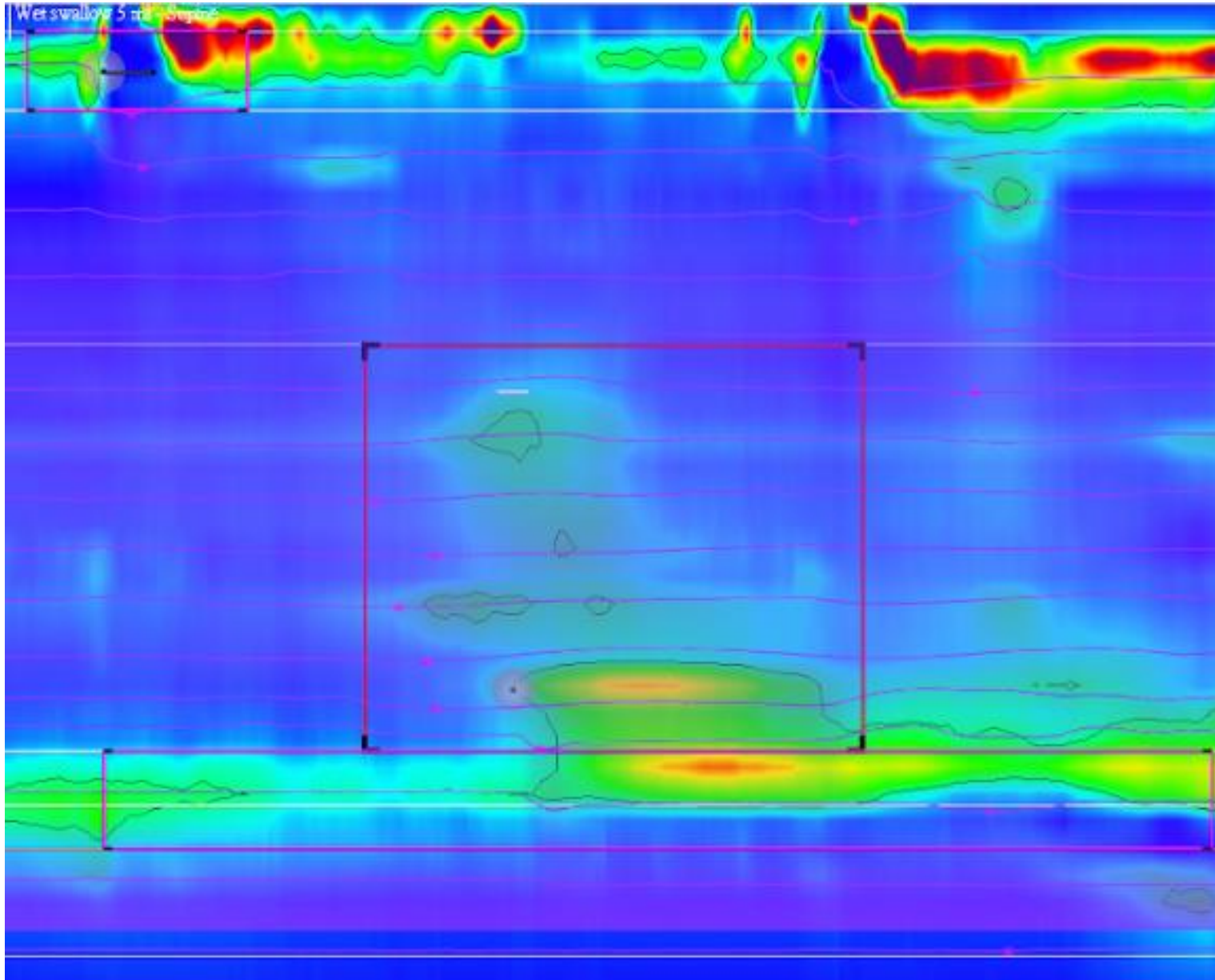
UES

Upper border	17.0 cm
IRP 0.2 s	0.4 mmHg
IRP 0.8 s	15.9 mmHg
UES Relaxation Time	0.4 s

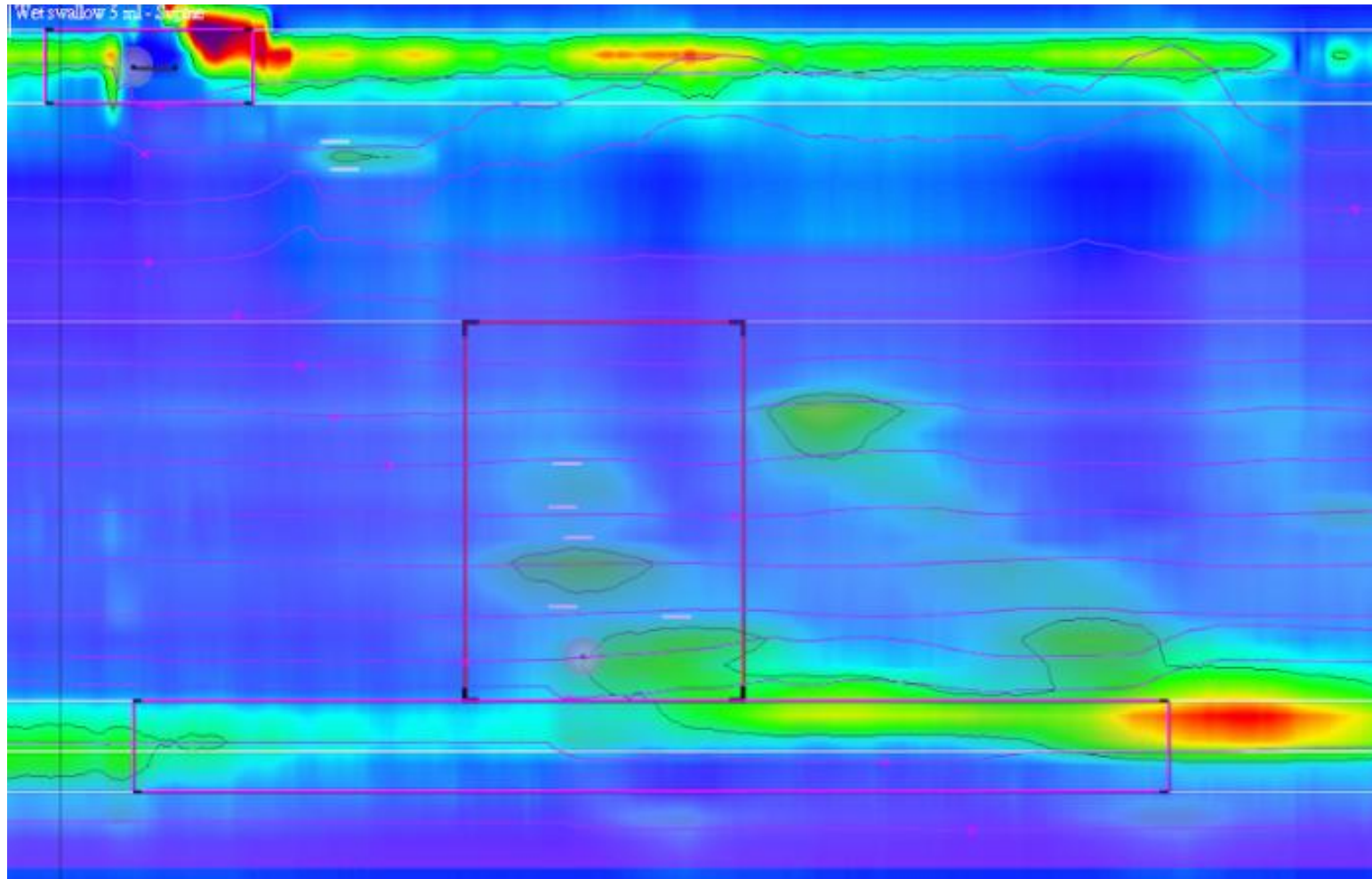
2024/04/08 HRIM WS(supine)

Average esophagus results

Wet swallow 5 ml - Supine	DCI mmHg.s.cm	Peristaltic breaks cm	Distal Latency s	Intrabolus pressure
1	369	10.3	3.7	-
2	122	14.4	4.3	-
3	63	15.3	-	-
4	68	17.7	3.7	-
5	27	17.0	3.8	-
6	99	17.0	3.6	-
7	68	16.9	3.2	-
8	11	19.2	-	-
9	16	7.1	-	-
10	-	0.0	-	33
Average	94	13.5	3.7	33



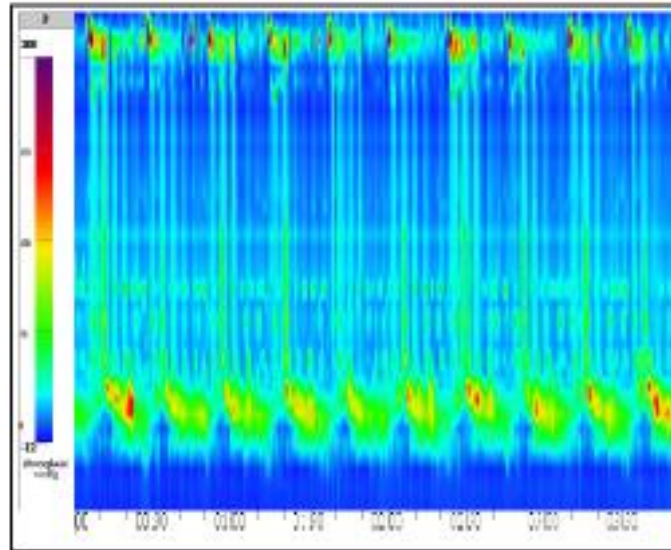
- DCI: 369
- DL: 3.7



- DCI: 122
- DL: 4.3



Average of 10: Wet swallow 5 ml - Upright Analysis type: Esophageal



Chicago classification 4 *

Type III achalasia

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Esophagus

DCI	63 mmHg.s.cm
Peristaltic breaks	9.4 cm
Distal Latency	2.8 s
Intrabolus pressure	36.2 mmHg

Impedance

Bolus transit	Complete
Bolus transit percentage	100 %

LES

Upper border	42.0 cm
IRP 4 s	35.0 mmHg
Intraabdominal length	4.6 cm

UES

Upper border	16.5 cm
IRP 0.2 s	-2.7 mmHg
IRP 0.8 s	5.1 mmHg
UES Relaxation Time	0.4 s

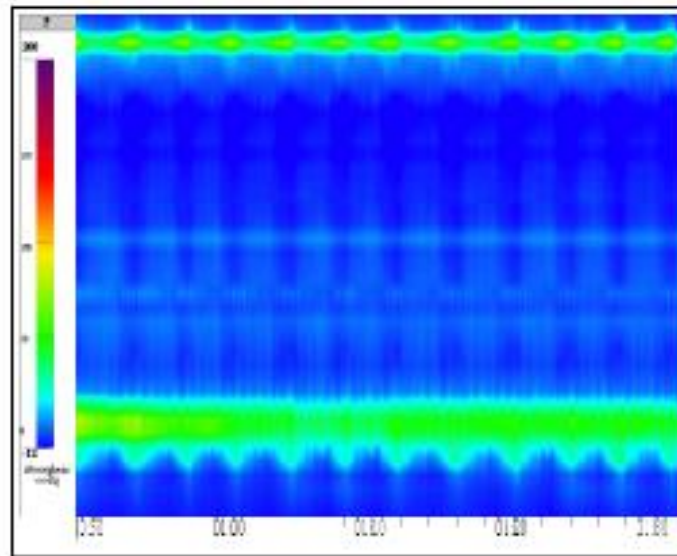
2024/04/08 HRIM WS(supine)

Average esophagus results

Wet swallow 5 ml - Upright	DCI	Peristaltic breaks cm	Distal Latency	Intrabolus pressure mmHg
1	-	0.0	-	36.2
2	55	14.3	3	-
3	29	12.1	2	-
4	48	9.6	3	-
5	77	2.1	-	-
6	29	16.1	3	-
7	111	1.5	3	-
8	60	15.9	3	-
9	57	9.0	-	-
10	104	13.6	3	-
Average	63	9.4	3	36.2



Resting pressure #1 Analysis type: Esophageal



Scoring

Hiatal hernia	否
UES resting pressure	Normal
LES resting pressure	Hypertensive

UES

Upper border	17.0 cm
Resting pressure (mean)	55.6 mmHg
Resting pressure (minimal)	33.8 mmHg

LES

Upper border	43.4 cm
Resting pressure (mean)	57.1 mmHg
Resting pressure (minimal)	39.4 mmHg
EGJ-Cl	135 mmHg.cm



2024/04/02 Esophagography

```
[RESULTS]
1. Resting measurements
  ■ Resting pressure
    Lower esophageal sphincter: ( 57 ) 10-45mmHg
    Upper esophageal sphincter: ( 56 ) 33-180mmHg
  ■ Location of upper margin
    Lower esophageal sphincter: ( 43.4 )
    Upper esophageal sphincter: ( 17 )
  ■ Length
    Lower esophageal sphincter: ( 3.6 ) 2.4-5.5cm
    Upper esophageal sphincter: ( 2.2 )

2. Esophagogastric junction (EGJ) outflow & peristalsis during wet swallows
  ■ Integrated relaxation pressure (IRP) (median)
    Supine: ( 31.83 ) <21mmHg (by MMS HRIM)
    Upright: ( 35.88 ) <15mmHg (by MMS HRIM)
  ■ Distal contractile integral (DCI) (mean)
    Supine: ( 94 ) 450-8000mmHg.s.cm
    Upright: ( 63 ) 450-8000mmHg.s.cm
  ■ Distal latency (mean)
    Supine: ( 3.7 ) >4.5s
    Upright: ( 2.8 ) >4.5s
  ■ Multiple rapid swallows (MRS) (DCI ratio)
    Supine: ( 375 ) MRS DCI/( 94 ) Baseline DCI=( 3.98 )(Normal>1)
  ■ Rapid drink challenge (RDC) (IRP ratio)
    Upright: ( 44 ) RDC IRP/( 35.88 ) Baseline IRP=( 1.22 )(Normal <1)

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

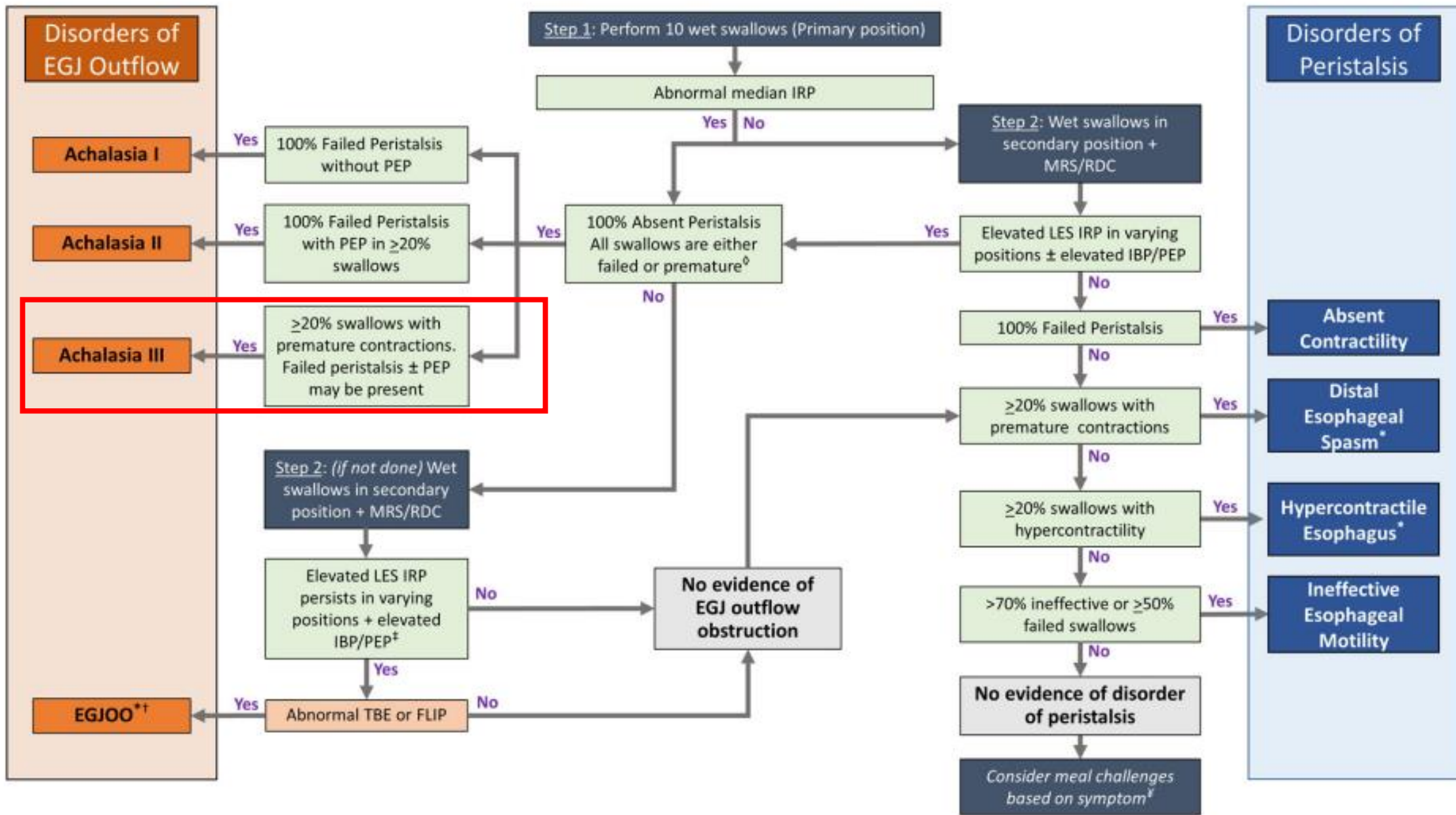
[CONCLUSIONS]
  ■ Achalasia, Type III
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Supine 10 times Wet swallows:

- 100% Ineffective contraction(100% Failed)
- 60% premature
- 10% Panesophageal pressurization

Upright 10 times Wet swallows:

- 100% Ineffective contraction(100% Failed)
- 70% premature
- 10% Panesophageal pressurization





Management

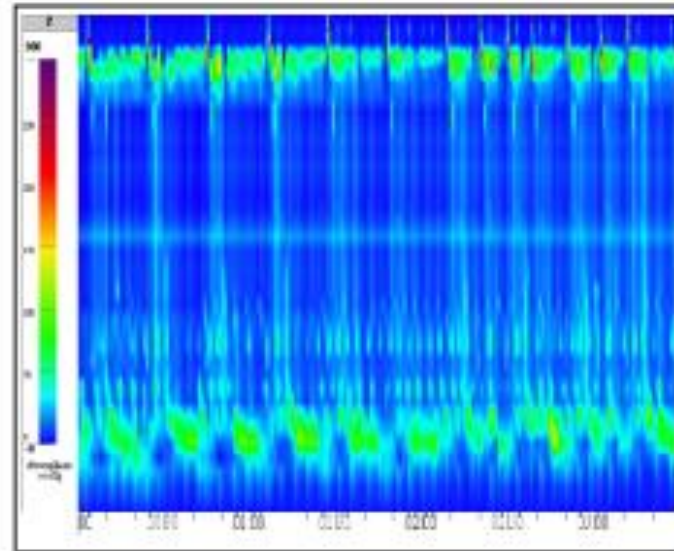
- Referred to CS and received laparoscopic Heller myotomy with Dor fundoplication on 2024/05/10

2024/09/03





Average of 10: Wet swallow 5 ml - Supine Analysis type: Esophageal



Chicago classification 4 *

Type I achalasia

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Chicago classification 3 *

Type I achalasia

* The normal values and analysis are according to the Chicago Classification* as published in Neurogastroenterology & Motility, 2015, Vol. 27, Issue 2, p160-174. The classification is valid for adults and based on series of 10 swallows of 5 ml water each, swallowed in a supine posture. The Chicago Classification is only applicable for primary esophageal motility disorders. The actual diagnosis remains under all circumstances the responsibility of the clinician/physician.

Esophagus

DCI	267 mmHg.s.cm
Peristaltic breaks	6.7 cm
Distal Latency	3.8 s

Impedance

Bolus transit	Complete
Bolus transit percentage	100 %

UES

Upper border	16.9 cm
IRP 0.2 s	5.2 mmHg
IRP 0.8 s	21.4 mmHg
UES Relaxation Time	0.4 s
UES Max Admittance	2.2 mS

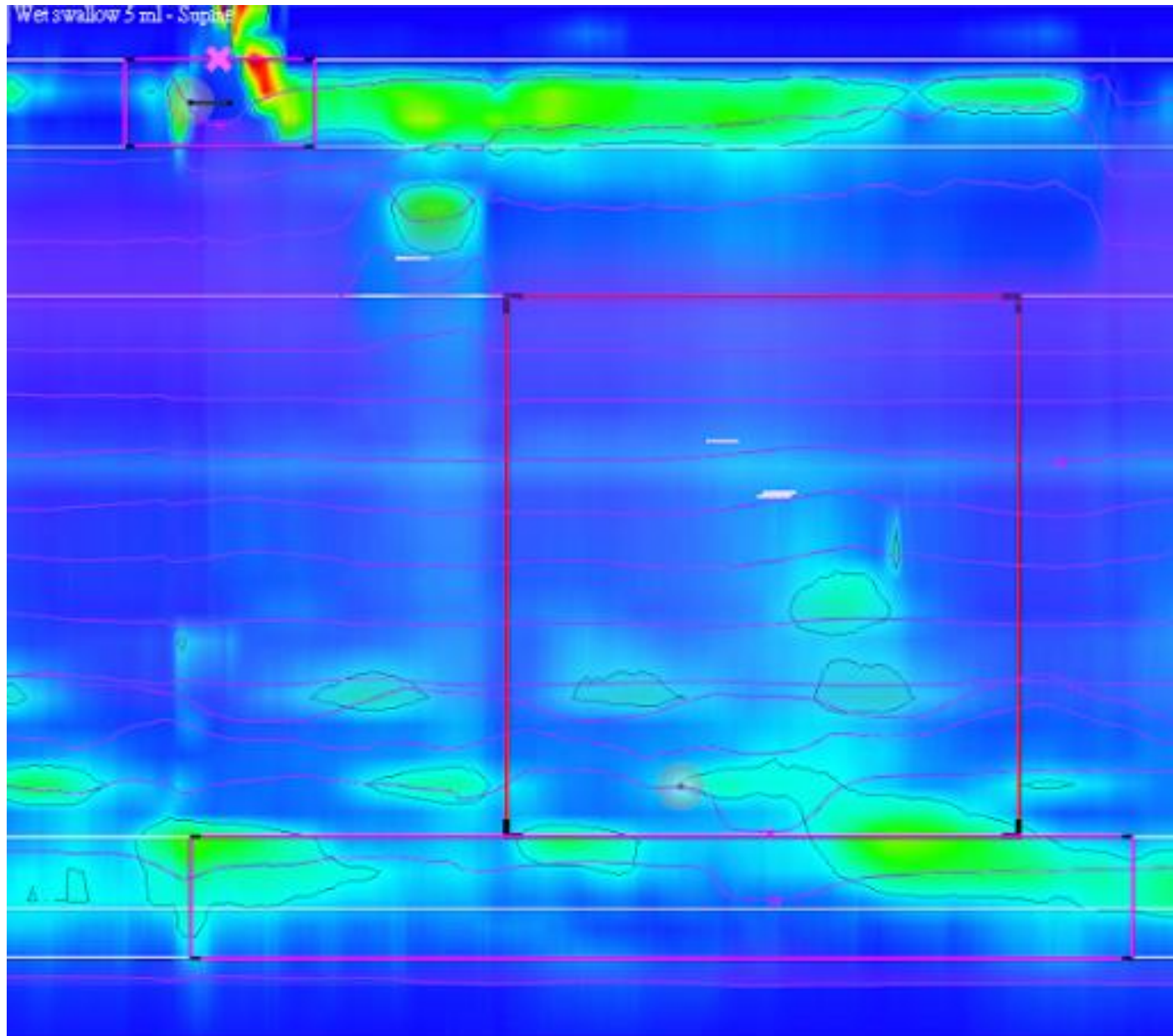
LES

Upper border	43.9 cm
IRP 4 s	34.1 mmHg
Intraabdominal length	1.7 cm

2024/09/03 HRIM WS(supine)

Average esophagus results

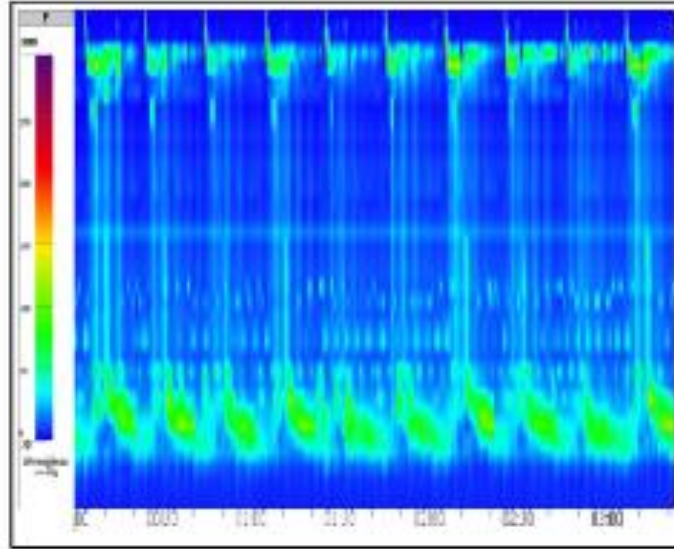
Wet swallow 5 ml - Supine	DCI mmHg.s.cm	Peristaltic breaks cm	Distal Latency s	Intrabolus pressure
1	230	11.2	3.3	-
2	336	0.0	2.7	-
3	231	7.9	4.3	-
4	375	0.0	3.2	-
5	203	11.9	4.3	-
6	71	15.7	3.5	-
7	254	6.2	5.2	-
8	294	5.0	3.8	-
9	278	8.4	3.9	-
10	398	0.7	3.6	-
Average	267	6.7	3.8	-



- DCI: 254
- DL: 5.2



Average of 10: Wet swallow 5 ml - Upright Analysis type: Esophageal



Chicago classification 4 *

Type I achalasia

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Chicago classification 3 *

Type I achalasia

* The normal values and analysis are according to the Chicago Classification⁴ as published in *Neurogastroenterology & Motility*, 2015, Vol. 27, Issue 2, p160-174. The classification is valid for adults and based on series of 10 swallows of 5 ml water each, swallowed in a supine posture. The Chicago Classification is only applicable for primary esophageal motility disorders. The actual diagnosis remains under all circumstances the responsibility of the clinician/physician.

Esophagus

DCI	260 mmHg.s.cm
Peristaltic breaks	6.0 cm
Distal Latency	3.5 s

Impedance

Bolus transit	Complete
Bolus transit percentage	100 %

UES

Upper border	17.5 cm
IRP 0.2 s	-3.5 mmHg
IRP 0.8 s	1.6 mmHg
UES Relaxation Time	0.5 s
UES Max Admittance	2.3 mS

LES

Upper border	43.0 cm
IRP 4 s	35.5 mmHg
Intraabdominal length	2.0 cm

2024/09/03 HRIM WS(upright)

Average esophagus results

Wet swallow 5 ml - Upright	DCI mmHg.s.cm	Peristaltic breaks cm	Distal Latency s	Intrabolus pressure
1	266	0.0	3.3	-
2	413	6.4	3.0	-
3	268	11.8	3.6	-
4	145	1.1	2.8	-
5	245	12.8	3.4	-
6	306	11.4	4.2	-
7	208	0.0	2.3	-
8	326	6.4	3.8	-
9	155	10.5	4.9	-
10	272	0.0	3.3	-
Average	260	6.0	3.5	-



2024/09/03 HRIM

```
[RESULTS]
1. Resting measurements
  ■ Resting pressure
    Lower esophageal sphincter: ( 44 ) 10-45mmHg
    Upper esophageal sphincter: ( 73 ) 33-180mmHg
  ■ Location of upper margin
    Lower esophageal sphincter: ( 43.5 )
    Upper esophageal sphincter: ( 17 )
  ■ Length
    Lower esophageal sphincter: ( 4.5 ) 2.4-5.5cm
    Upper esophageal sphincter: ( 3.0 )

2. Esophagogastric junction (EGJ) outflow & peristalsis during wet swallows
  ■ Integrated relaxation pressure (IRP) (median)
    Supine: ( 32.97 ) <21mmHg (by MMS HRIM)
    Upright: ( 35.3 ) <15mmHg (by MMS HRIM)
  ■ Distal contractile integral (DCI) (mean)
    Supine: ( 267 ) 450-8000mmHg.s.cm
    Upright: ( 260 ) 450-8000mmHg.s.cm
  ■ Distal latency (mean)
    Supine: ( 3.8 ) >4.5s
    Upright: ( 3.5 ) >4.5s
  ■ Multiple rapid swallows (MRS) (DCI ratio)
    Supine: ( N/A ) MRS DCI/( 267 ) Baseline DCI=( 0 )(Normal>1)
  ■ Rapid drink challenge (RDC) (IRP ratio)
    Upright: ( 34 ) RDC IRP/( 25.3 ) Baseline IRP=( 0.96 )(Normal <1)

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

[CONCLUSIONS]
  ■ Achalasia, Type I
```

- No Normal peristalsis
- Supine 10 times Wet swallows: 100% Ineffective contraction(100% Failed),90% Premature contraction
- Upright 10 times Wet swallows: 100% Ineffective contraction(100% Failed),90% Premature contraction
- The median IRP elevated,both in supine and upright position.base on C.Cv4.0.

Eckardt score

		1 st HRIM ↓	OP ↓	2 nd HRIM ↓
		2024/4/2	2024/5/31	2024/8/29
1	體重減輕	1	0	0
2	吞嚥困難	0	0	0
3	胸口疼痛	0	0	0
4	逆流	1	1	1
	Total	2	1	1

Scores 0-1: stage 0, 2-3: stage I, 4-6: stage II, score > 6: stage III

The Reflux Symptom Index (RSI)

在過去一個月內，以下問題是否影響你？ (0-不會，5-重度)		1 st HRIM ↓	OP ↓	2 nd HRIM ↓
		2024/4/2	2024/5/31	2024/8/29
1	沙啞或聲音的問題	0	0	1
2	清喉嚨	0	2	2
3	過多喉嚨黏液或鼻涕倒流	0	2	2
4	吞嚥食物，液體或藥丸困難	0	0	1
5	進食或躺下後咳嗽	0	0	2
6	呼吸困難或噎到事件	0	0	0
7	令人討厭或惱人的咳嗽	0	1	1
8	有東西黏在喉嚨或有塊狀物在喉嚨的感覺	2	0	2
9	心灼熱，胸痛，消化不良或胃酸跑上來	3	2	2
Total		5	7	13

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

Reflux Disease Questionnaire (RDQ)

回想過去一個月， 您認為以下症狀出現時的如何？		1 st HRIM ↓		OP ↓		2 nd HRIM ↓	
		2024/4/2		2024/5/31		2024/8/29	
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
1	胸骨後方感到灼熱-----	0	0	0	0	0	0
2	胸骨後方感到疼痛-----	0	0	0	0	0	0
3	上腹中間感到灼熱-----	3	0	1	0	0	0
4	上腹中間感到疼痛-----	0	0	0	0	0	0
5	口腔內有酸味-----	0	0	2	3	2	3
6	有東西從胃部向上移動而感到不適	3	0	2	3	2	3
Total		6		10		10	

Score range(Item1,2,5,6): 0-40 (normal <12)

The GERDyzer

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)		1 st HRIM ↓	OP ↓	2 nd HRIM ↓
		2024/4/2	2024/5/31	2024/8/29
1	整體來說，過去7天您覺得如何？	6	1.7	2.7
2	生病所帶來的痛苦/不適對您造成的影響有多大？	8	0	4
3	生病對您身體健康造成的影響有多大？	8	0	5
4	生病對您精神活力造成的影響有多大？	8	0	6
5	生病對您日常活動造成的干擾有多大？	8	0	4
6	生病對您休閒活動造成的干擾有多大？	8	0	5
7	生病對您社交生活造成的干擾有多大？	6	0	4
8	生病對您飲食習慣造成的干擾有多大？	10	0	3
9	生病對您心情造成的影響有多大？	7	0	7
10	生病對您睡眠造成的影響有多大？	8	0	6
Total		54.5	1.7	5.5

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

食道過度警覺及焦慮量表 (EHAS)

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)		1 st HRIM	OP	2 nd HRIM
		↓	↓	↓
		2024/4/2	2024/5/31	2024/8/29
1	我似乎無法忘記我的症狀	0	0	0
2	我很難享受生活，因為我無法擺脫喉嚨/胸部/食道的不適	4	0	0
3	這些症狀很可怕，我覺得它們讓我不知所措	4	0	0
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	3	0	0
5	我經常會擔心喉嚨/胸部/食道的問題	2	0	1
6	這些症狀很可怕，我認為它們永遠不會改善	0	0	0
7	關於減輕症狀，我毫無辦法	0	0	0
8	當我喉嚨/胸部/食道不適時，我會感到害怕	0	0	0
9	我焦急地希望這些症狀消失	4	0	0
Symptom-specific anxiety total score (1-9)		17	0	1
10	我很快就會注意到我的食道症狀的位置或範圍的變化	0	0	0
11	我會意識到我的食道有突然或暫時的變化	3	0	0
12	即使我忙於另一件事，我也會注意到我的症狀	0	0	0
13	我會專注於食道的感覺	4	0	0
14	我對心灼熱或胸痛等食道的感覺非常敏感	2	0	0
15	我會一直追蹤我症狀的程度	4	0	0
Esophageal hypervigilance (10-15)		13	0	0

Follow-up

	2024/4/2	2024/5/31	2024/8/29
用藥/治療		HM with Dor	
治療效果(0-100%)	0%	80%	70%
主訴症狀VAS程度(0-10/10)	10		5
RSI總分 (0-45,<13)	5	7	13
RDQ總分 (0-40,<12)	6	10	10
GERDyzer總分 (0-70)	54.5	1.7	5.5
EHAS anxiety (0-36)	17	0	1
EHAS hypervigilance (0-36)	13	0	0
Eckardt總分 (0-12)	2	1	1

Discussion


Clinical Journal of Gastroenterology (2023) 16:317–324

<https://doi.org/10.1007/s12328-023-01765-2>

CASE REPORT



Optimal surgical approaches for esophageal epiphrenic diverticulum: literature review and our experience

Yuta Sato¹ · Yoshihiro Tanaka¹  · Shinya Ohno¹ · Masahide Endo¹ · Naoki Okumura¹ · Takao Takahashi¹ · Nobuhisa Matsuhashi¹

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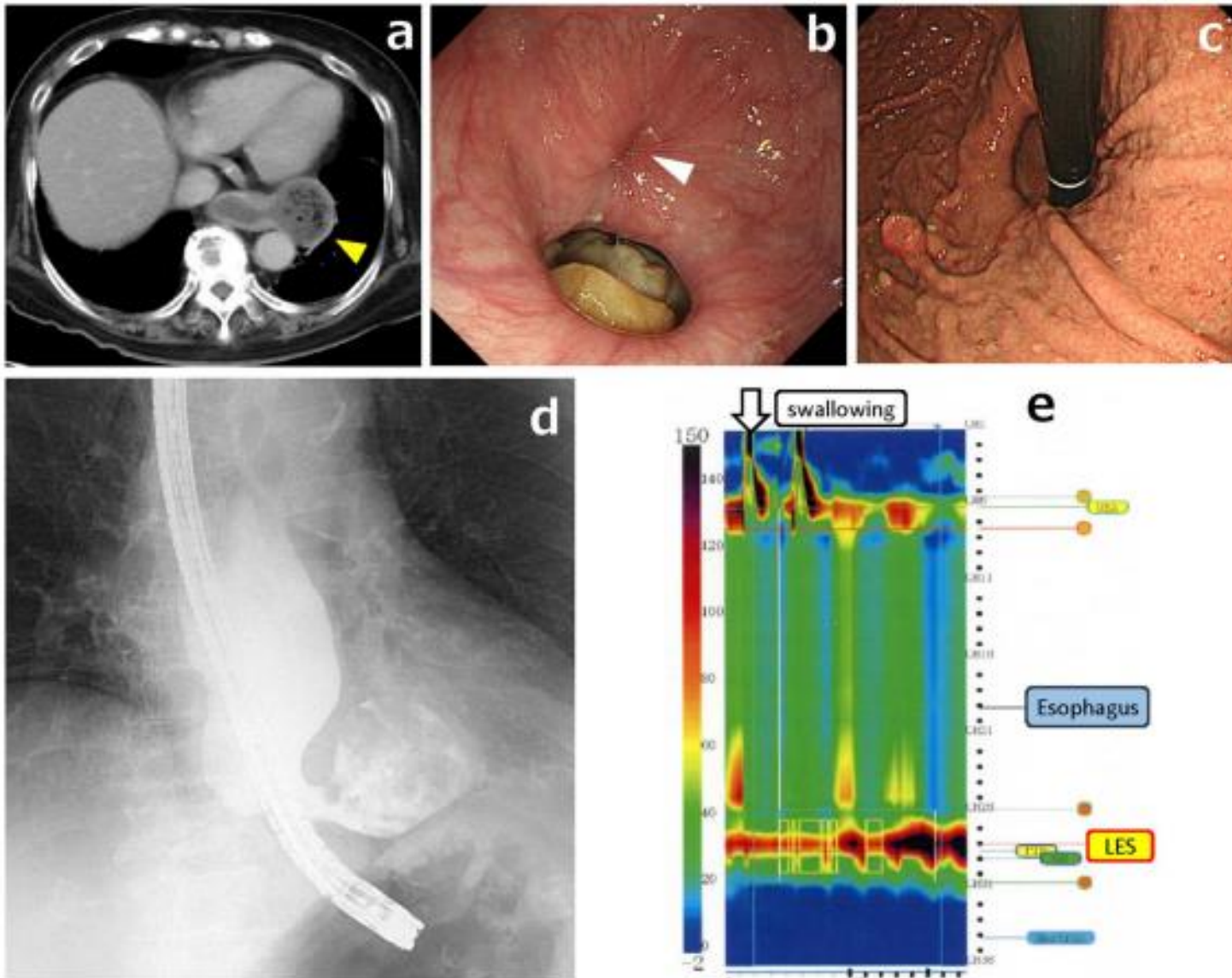


Fig. 1 Results of preoperative examination. **a** Computed tomography revealed the epiphrenic diverticulum (ED) in the left thoracic cavity (*yellow arrowhead*). **b** Upper gastrointestinal endoscopy revealed the ED orifice near the esophagogastric junction (*white arrowhead*) and a food residue reservoir. **c** Paraesophageal hernia. **d** Barium esopha-

gram revealed the ED of approximately 7.5 cm in size in the lower thoracic esophagus. **e** Esophageal manometry revealed a median integrated relaxation pressure of 54.6 mmHg, which was indicative of failure of lower esophageal sphincter (LES) relaxation, leading to a diagnosis of achalasia

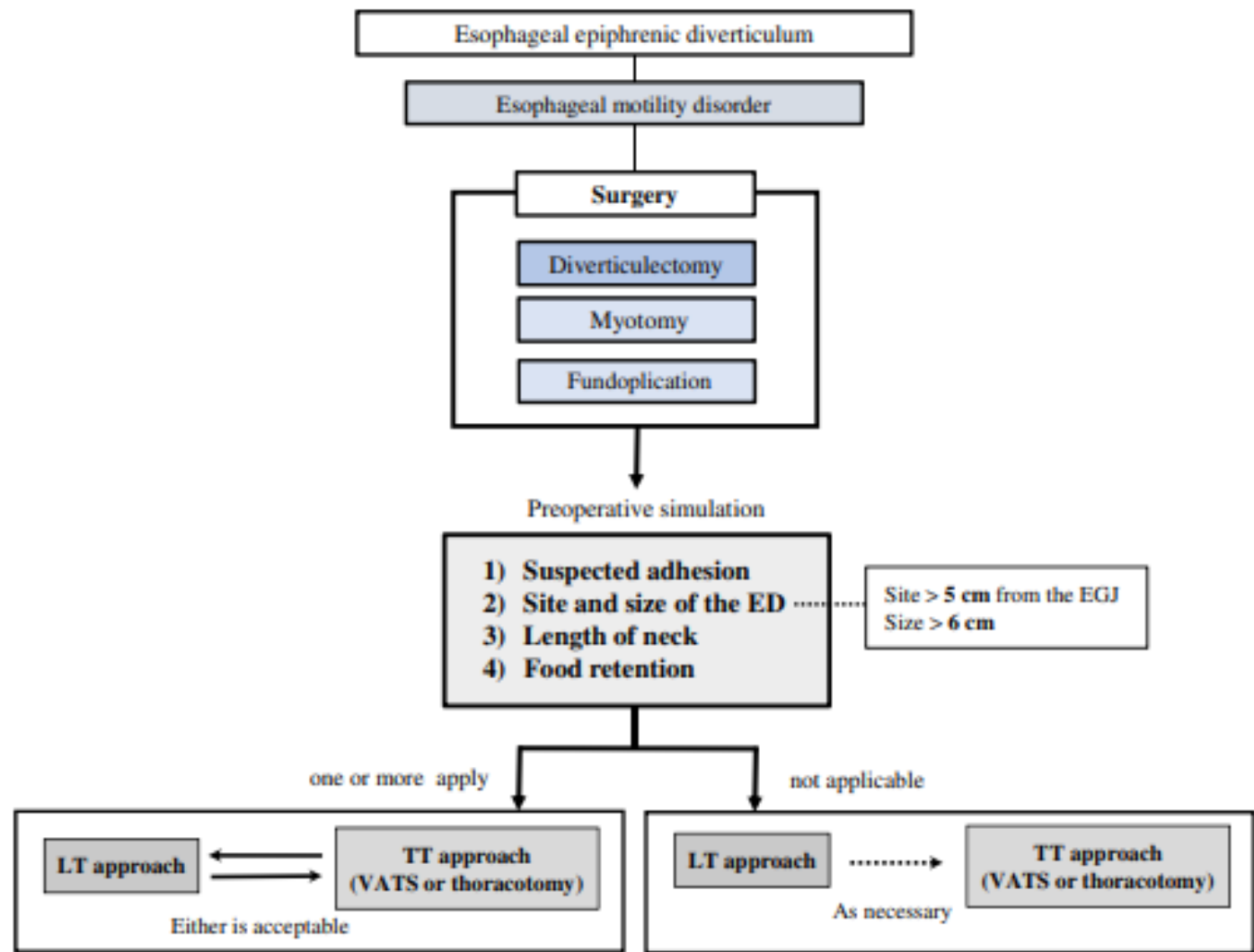


Fig. 5 Our flowchart to identify the characteristics of epiphrenic diverticulum cases that require the TT approach based on a literature review. *ED* epiphrenic diverticulum, *EGJ* esophagogastric junction,

LT laparoscopic transhiatal, *TT* transthoracic, *VATS* video-assisted thoracoscopic surgery

討論

1. 此類複雜病例經驗相對較少，並探討了Dor胃底摺疊術在平衡賁門鬆緊度上的挑戰。
2. 建議未來可考慮導入FLIP等先進工具以提升手術精確度。