ENT combine meeting: Utility of High-Resolution Pharyngeal Manometry (HRPM)

Yen-Ching Wang, MD

Division Of Gastroenterology and Hepatology,
Taichung Veterans General Hospital.
nobitakun13@gmail.com
June 21, 2025

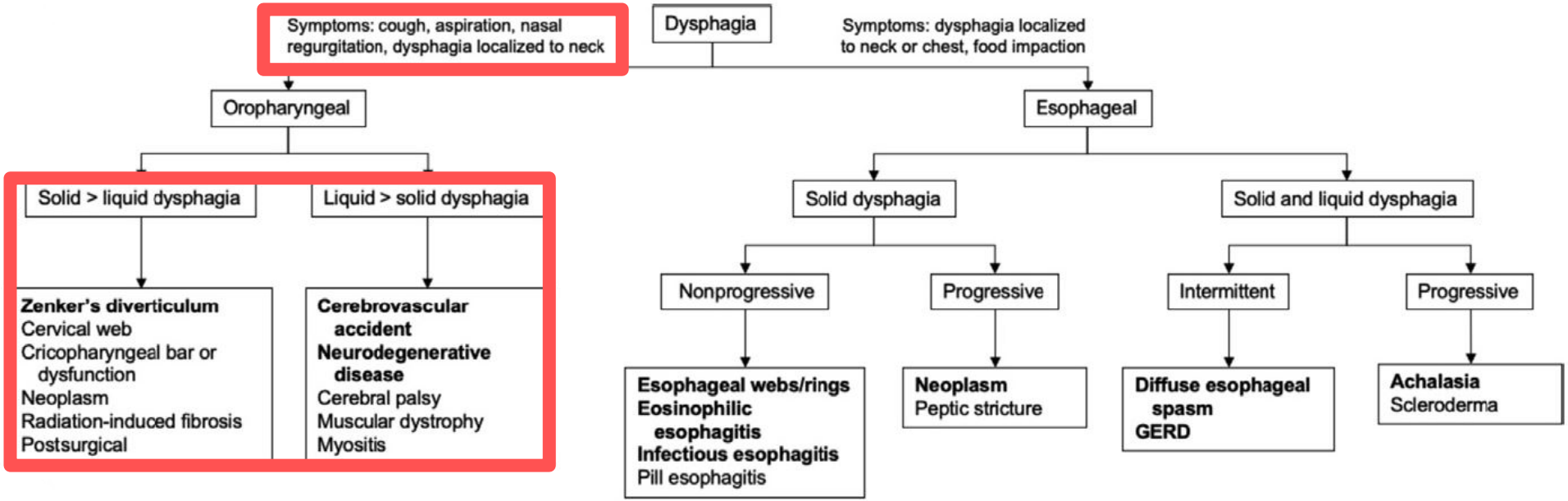
Key points for today

1. Before testing: etiology do matters

2. Breif update from Leuven Consensus (for P-HRM-I)
   - Utility / Diagnostic algorithm

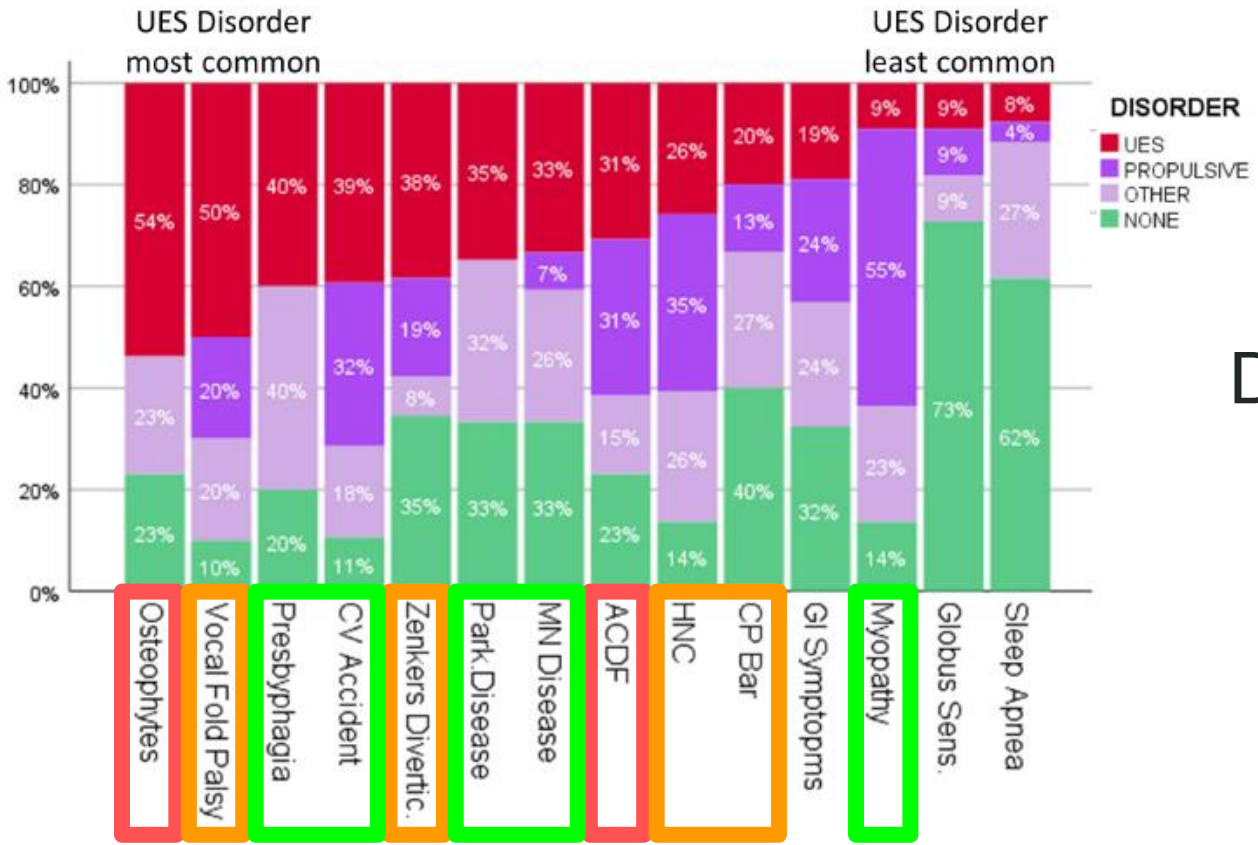
3. Case demonstration & QA

History taking is most important



McCarty EB, et al. Med Clin North Am. 2021

(A) Prevalence of UES Disorders in Patients with Common Etiology



Degenerative?

Omari T et al. Neurogastroenterol Motil. 2022 (Q1-2, IF3.0)

Defining Pharyngeal and Upper Esophageal Sphincter Disorders on High-Resolution Manometry-Impedance: The Leuven Consensus

Taher I. Omari[1] | Julia C. F. Maclean[2] | Charles Cock[3] | Timothy M. McCulloch[4] | Nogah Nativ-Zeltzer[5] | Ashli K. O'Rourke[6] | Michal M. Szczesniak[2,7] | Peter I. Wu[7,8] | Jacqueline Allen[9] | Yoichiro Aoyagi[10] | Howell Henrian G. Bayona[11] | Silvia Carrión[12,13] | Michelle R. Ciucci[4] | Kate Davidson[6] | Shumon I. Dhar[14] | Shaheen Hamdy[15] | Rebecca Howell[16] | Corrine Jones[17] | Molly A. Knigge[18] | An Moonen[19] | Gregory N. Postma[20] | Jo Puntil-Sheltman[21] | Anais Rameau[22] | Julie Regan[23] | Mistyka Schar[3] | Nathalie Rommel[24,25]

[1]College of Medicine and Public Health, Flinders University, Adelaide, South Australia, Australia | [2]St George & Sutherland Clinical School, UNSW Medicine, Sydney, Australia | [3]Department of Gastroenterology & Hepatology, Flinders Medical Centre, Adelaide, South Australia, Australia | [4]Surgery-Otolaryngology Head & Neck Surgery, University of Wisconsin-Madison, Madison, USA | [5]Faculty of Medical and Health Sciences, Tel Aviv University, Tel Aviv, Israel | [6]Department of Otolaryngology, Medical University of South Carolina, Charleston, South Carolina, USA | [7]University of New South Wales, Sydney, Australia | [8]Gastroenterology & Hepatology, St George Hospital, Sydney, Australia | [9]Department of Surgery, University of Auckland, Auckland, New Zealand | [10]Department of Rehabilitation Medicine, Graduate School of Medicine, Nippon Medical School, Tokyo, Japan | [11]Graduate School of Health Sciences, Fujita Health University, Aichi, Japan | [12]Gastrointestinal Physiology Laboratory, Hospital de Mataró, Consorci Sanitari del Maresme, Mataró, Spain | [13]Centro de Investigación Biomédica en Red en Enfermedades Hepáticas y Digestivas (CIBEREHD), Instituto de Salud Carlos III, Madrid, Spain | [14]Department of Otolaryngology-Head & Neck Surgery, Division of Laryngology, UT Southwestern Medical Center, Dallas, USA | [15]School of Medical Sciences, Faculty of Biology, Medicine and Health, University of Manchester, Manchester, UK | [16]University of Cincinnati Medical Centre, Cincinnati, USA | [17]Speech, Language, & Hearing Sciences, Moody College of Communication, the University of Texas, Austin, USA | [18]UW Health System, Madison, USA | [19]Department of Gastroenterology and Hepatology, UZ Leuven, Leuven, Belgium | [20]Department of Otolaryngology, Medical College of Georgia at Augusta University, Augusta, USA | [21]St.George Regional, Hospital/Intermountain Health, St. George, USA | [22]Sean Parker Institute for the Voice, Department of Otolaryngology - Head and Neck Surgery, Weill Cornell Medicine, New York, New York, USA | [23]Department of Clinical Speech & Language Studies, Trinity College Dublin, Dublin, Ireland | [24]University of Leuven, Faculty of Medicine, Dept Neurosciences, Experimental Otorhinolaryngology, Deglutology, Leuven, Belgium | [25]Dept Gasteroenterology (Neurogastroenterology & Motility), University Hospitals Leuven, Leuven, Belgium

Omari TI, et al. Neurogastroenterol Motil. 2025

This document summarizes the final recommendations of the International Pharyngeal HRM Working Group, which include:

1. A defined Swallow Challenge Protocol
2. Criteria for diagnosing UES Dysfunction
3. Criteria for diagnosing Pharyngeal Contractile Dysfunction

There are three important caveats to the recommendations:

1. Complementary instrumental investigations for visualization of swallow function (as described in Section 3 below) are an essential adjunct as they may identify abnormalities such as altered bolus transit and/or airway protection not identified by manometric assessment. Therefore, if not previously performed, they should be performed simultaneously or scheduled prior to the time of P-HRM-I assessment.
2. Patients without dysfunction based on these recommendations cannot be considered to have "normal" swallowing function, and abnormalities of the esophageal phase of swallow should also be considered.
3. At this stage, guidance for clinical intervention decisions is not provided. P-HRM-I can measure change following interventions (see *Indications*); however, the Working Group did not consider whether therapeutic or surgical interventions based on these recommendations may be effective.

Key potints from the consensus

Omari TI, et al. Neurogastroenterol Motil. 2025

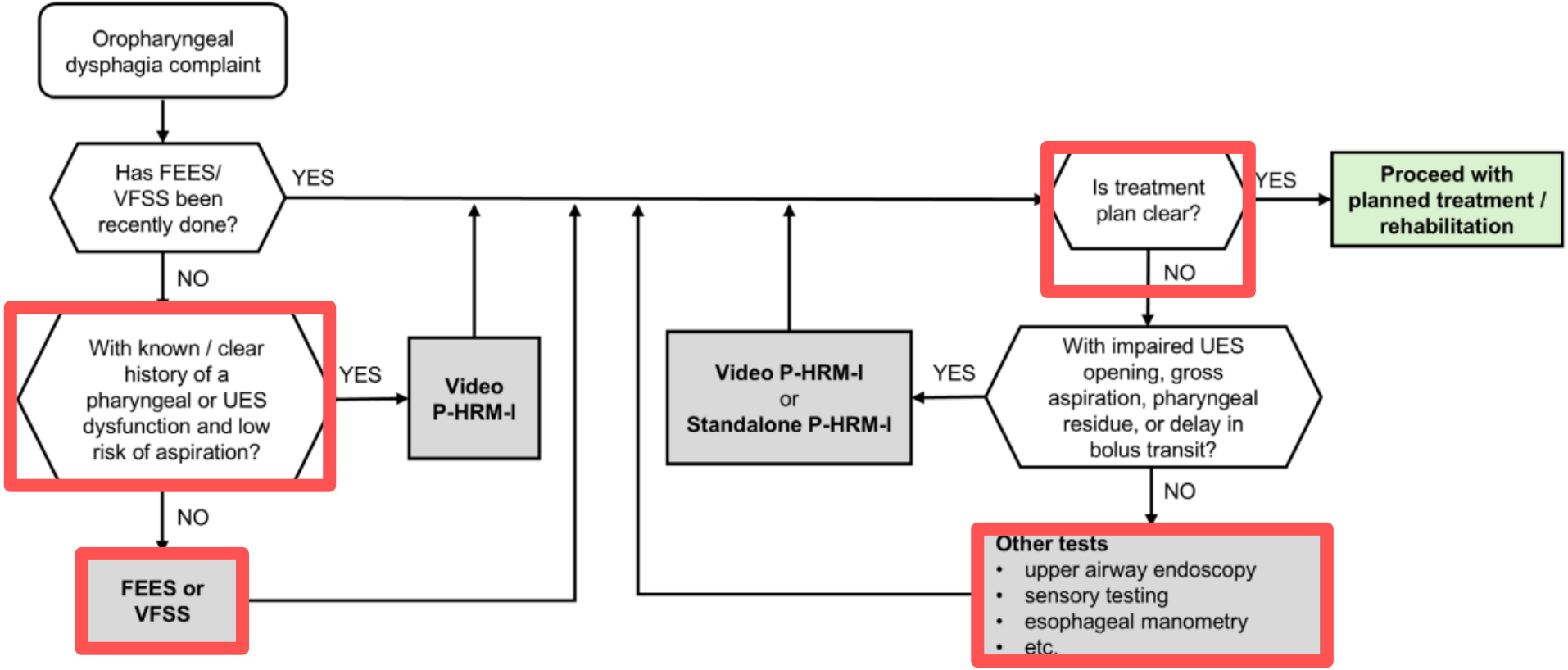
TABLE 1 | Suggested indications and contraindications for P-HRM-I.

	Do P-HRM-I	Do NOT do P-HRM-I
Strongly recommended	• When suspecting UES Dysfunction based on history or other instrumental tests (VFSS/FEES) • When quantification of propulsive and restrictive forces is needed to guide treatment decisions or to determine baseline swallowing function • To measure change following interventions (e.g., myotomy, botulinum toxin injection, dilatation) or as objective biofeedback during rehabilitative treatment	• Known significant nasal obstruction • History of trauma to the nasal cavity, sinonasal surgery, recent clinically significant epistaxis, skull base or mid-facial fractures • High risk of bleeding
Suggested	• When VFSS is difficult or cannot be performed (e.g., patient cannot be transported to VFSS, contrast allergy) • To rule out any swallowing dysfunction in the context of possible functional dysphagia • To quantify the progression of a degenerative or neuromuscular disorder • To monitor objective changes to swallowing function over time • To identify subtle changes in swallowing when previous instrumental assessments are deemed normal or do not provide explanation for symptoms	• Inability to comprehend or follow instructions or agitation • Inability to tolerate manometry catheter due to discomfort or gagging • Severe restriction (e.g., stricture) of pharyngoesophageal segment* • High aspiration risk that cannot be mitigated by controlling bolus size, compensatory techniques*

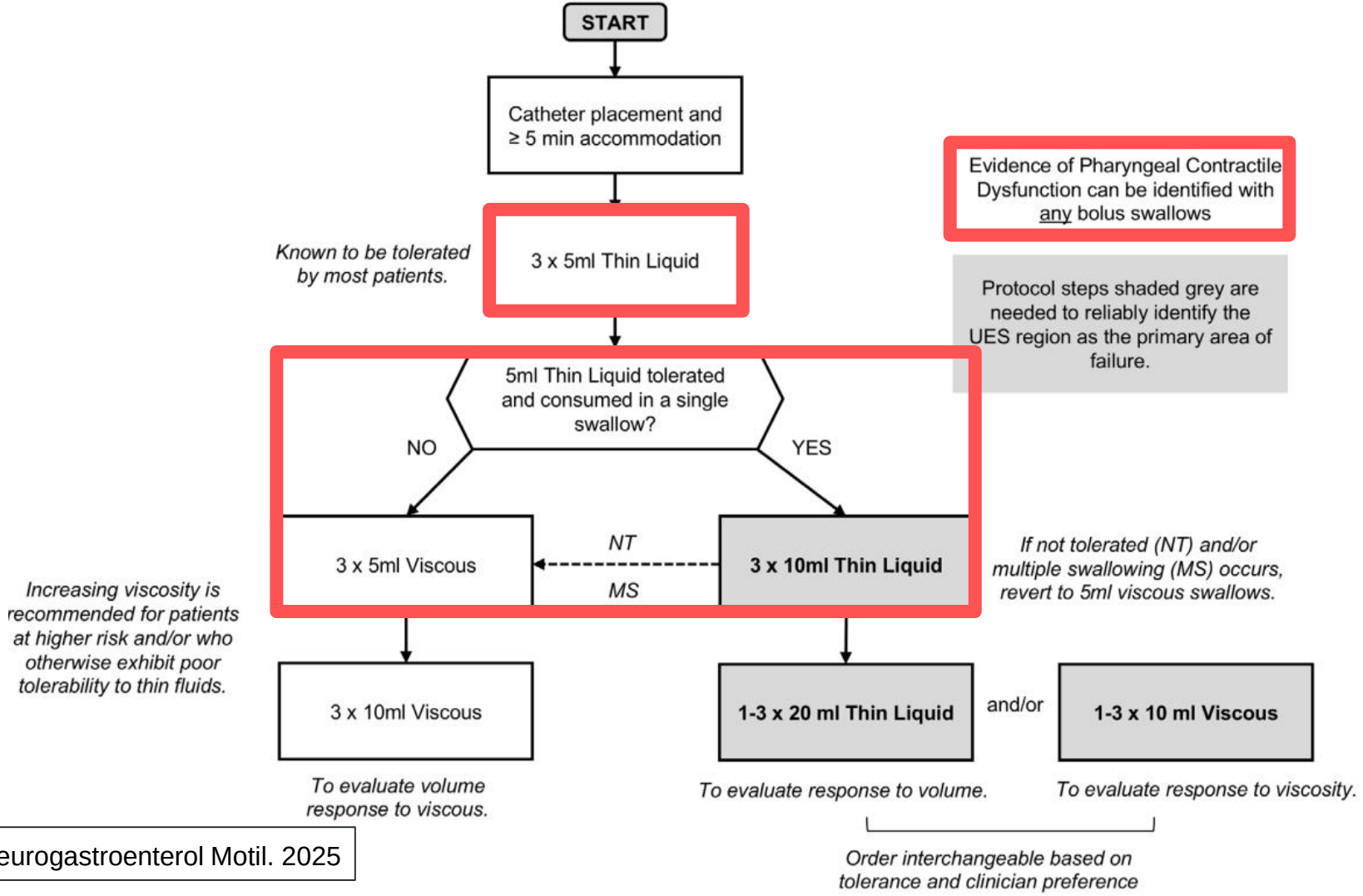
Contra-indication

Omari TI, et al. Neurogastroenterol Motil. 2025

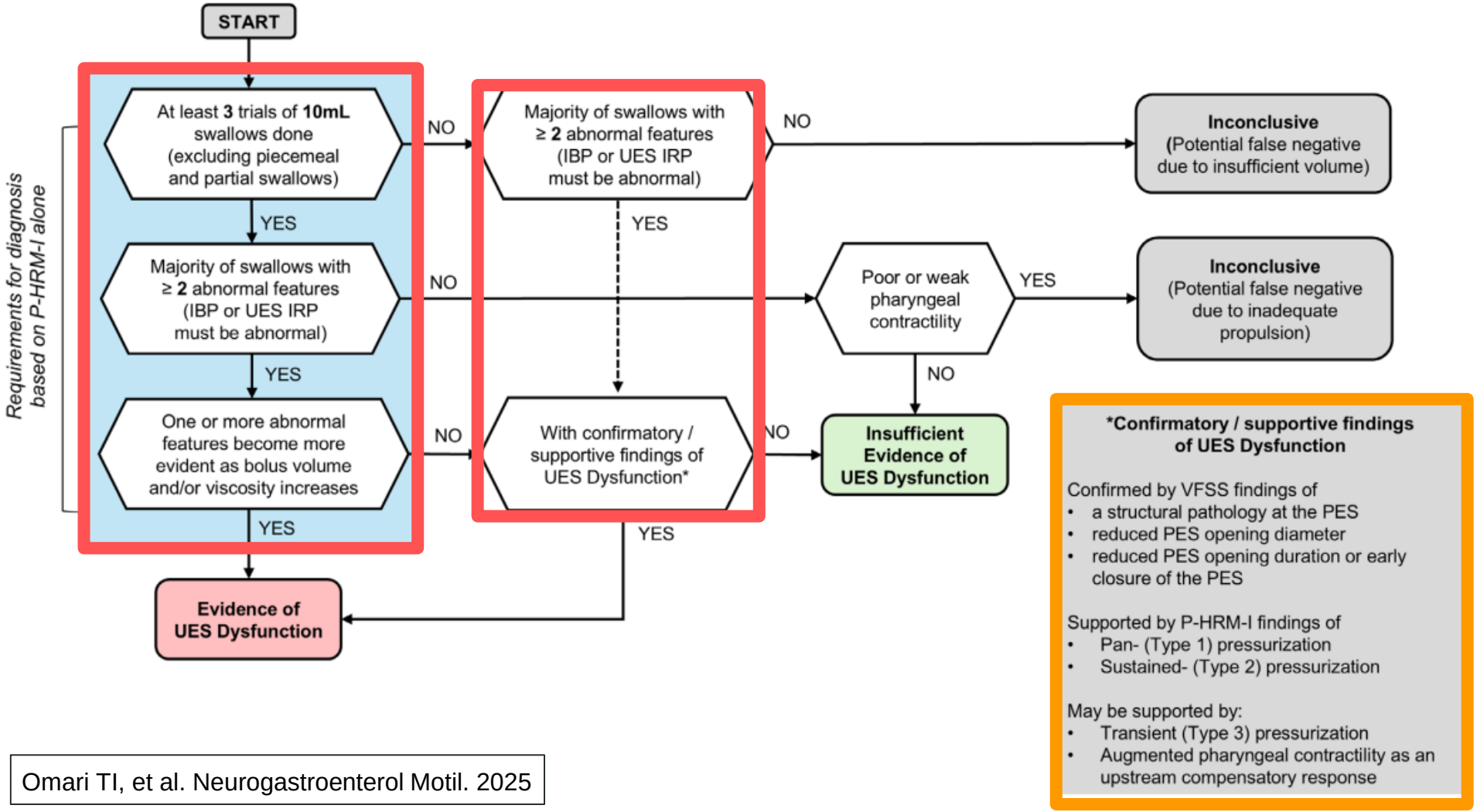
Note: *Standalone manometry is not recommended in these circumstances, however, may be deemed safe to perform with concurrent direct vision/guidance (x-ray/flexible endoscopy) to ensure safety.



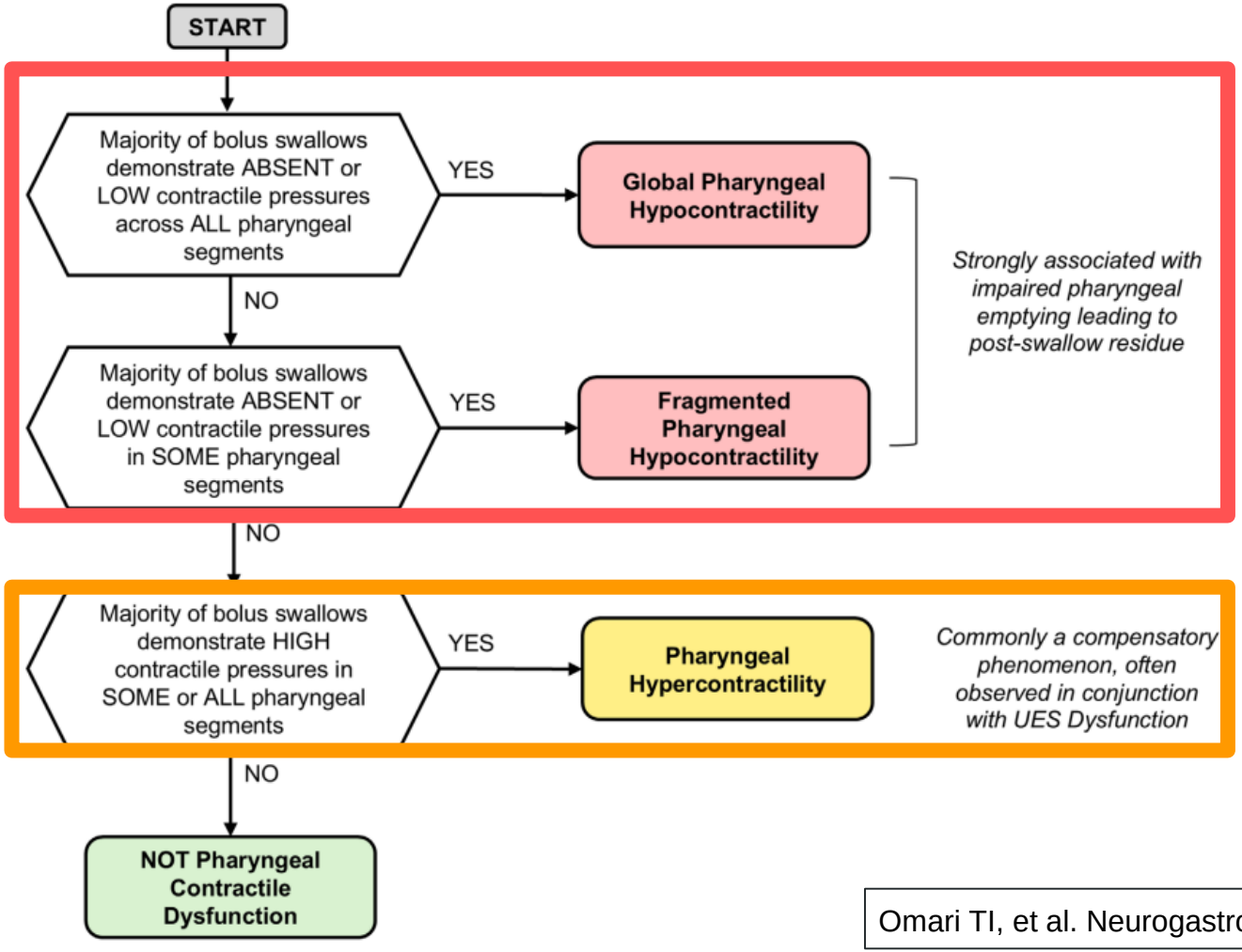
Omari TI, et al. Neurogastroenterol Motil. 2025



Omari TI, et al. Neurogastroenterol Motil. 2025

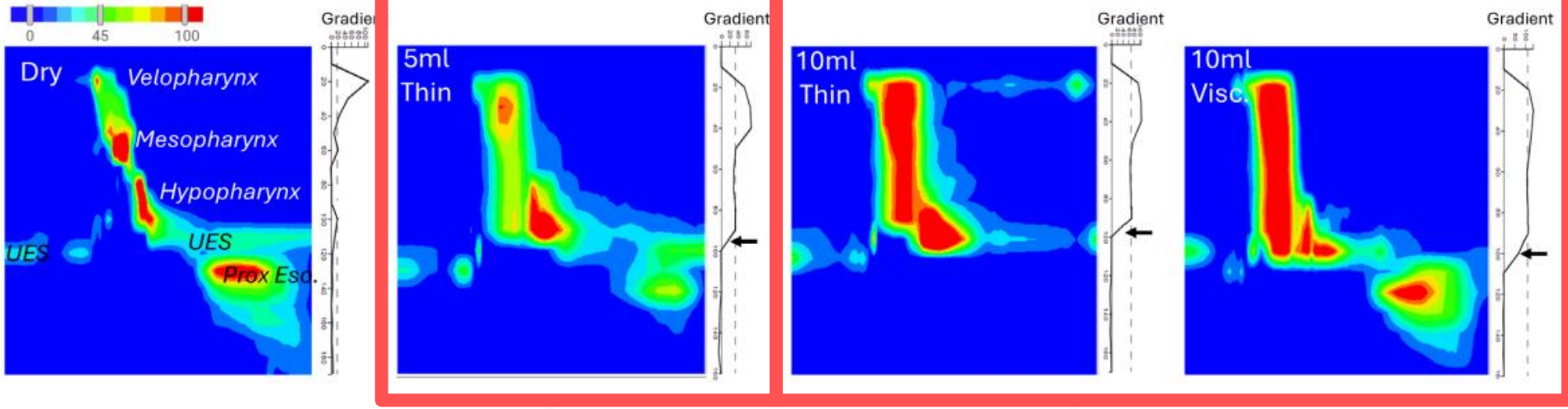


Omari TI, et al. Neurogastroenterol Motil. 2025



Omari TI, et al. Neurogastroenterol Motil. 2025

FIGURE 8 | Diagnosis of pharyngeal contractile dysfunction. A diagnosis requires that the majority of bolus swallows of any volume demonstrate ABSENT or LOW, or HIGH contractile pressures in one or more pharyngeal segments.



UES Metric	Challenge		
	5ml Thin	*10ml Thin*	*10ml Visc.*
IBP (mmHg)	**19**	**21↑**	**98↑**
UES IRP (mmHg)	**25**	**34↑**	**63↑**
UES Max.Ad. (mS)	**3.1**	**3.5**	**3.8**
UES RT (s)	0.66	0.69	0.63

Pharyngeal Metric	Challenge		
	5ml Thin	*10ml Thin*	*10ml Visc.*
VCI (mmHg.cm.s)	59	74	64
MCI (mmHg.cm.s)	197	**223↑**	202
HPCI (mmHg.cm.s)	102	140	114
HPeakP (mmHg)	104	112	112

Omari TI, et al. Neurogastroenterol Motil. 2025

81 y/o male 蕭〇弘 (2025 Janunary 9th to April 7th)

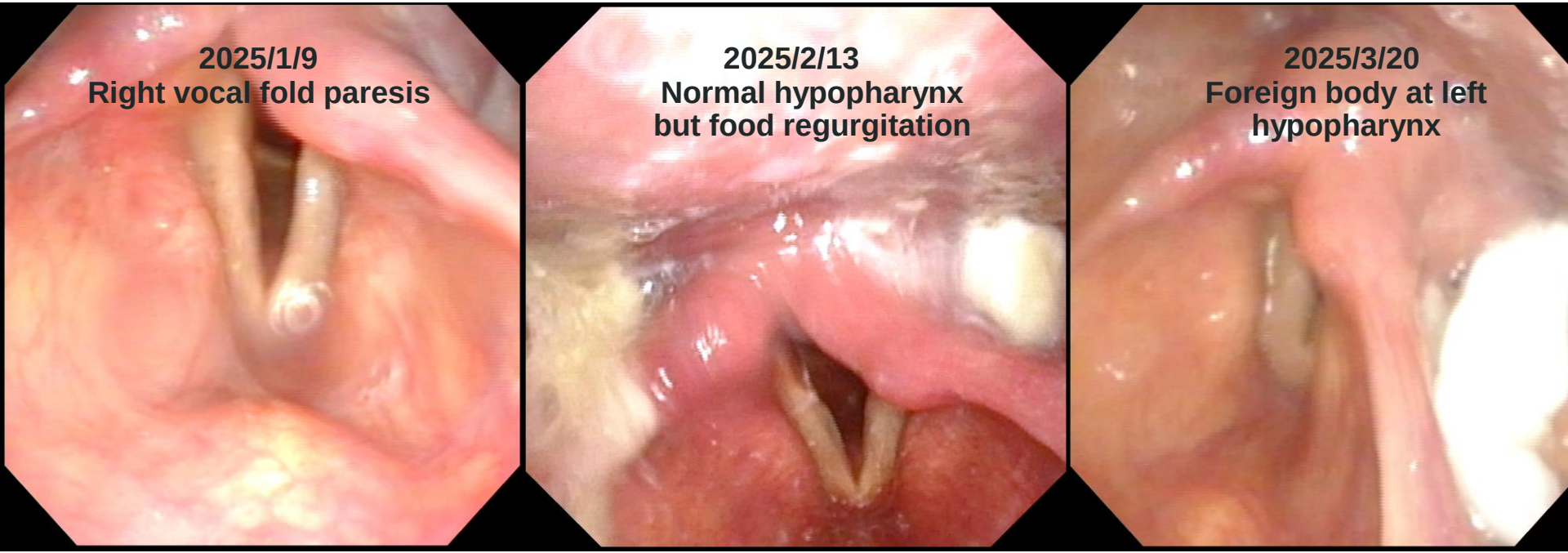
[**ENT**] Chronic dysphagia, poor appetite, chronic cough without choking, and 20 kg weight loss over 3–4 months. (2025/1/9)

- Hx of hypopharyngeal CA s/p ELM laser 10 yrs ago / Afib under drug
- Hx of left vertebral artery stenosis, with brain CT, TCCS, and carotid ultrasound were all normal (2024/12), on NEUR drug

SinphadoL tab 25mg G	28	1	TAB	BID	PO	56	TAB	☑
60mg Lixiana f.c. tab 危	28	1	TAB	QD	PO	28	TAB	☑
Edarbi tab 40mg	28	1	TAB	QD	PO	28	TAB	☑
Lendormin tab 0.25mg ! 跌	28	1	TAB	HS	PO	28	TAB	☑
Allegra tab 60mg	28	1	TAB	HS	PO	28	TAB	☑
TrynoL tab 25mg G 跌	28	1	TAB	HS	PO	28	TAB	☑
Zapline f.c. tab 50mg G 跌	28	1	TAB	HS	PO	28	TAB	☑

- Fiberoptic exams*3 + Speech therapy & Swallowing therapy (2025/3/20)

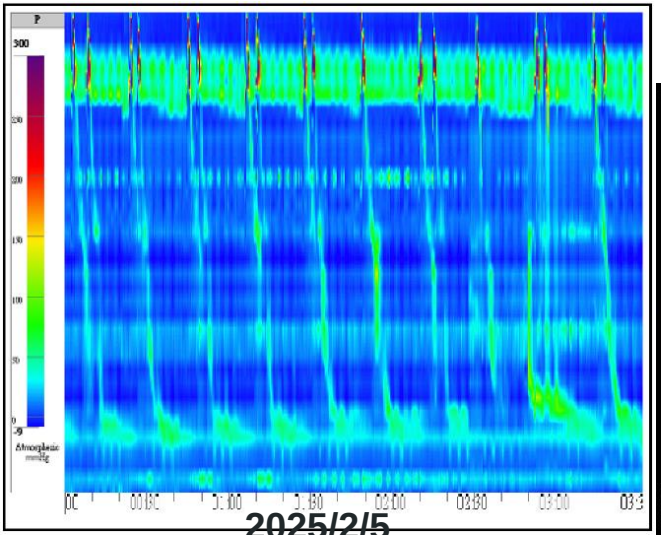
Fiberoptic Exams



From other aspects (lacking VFSS)

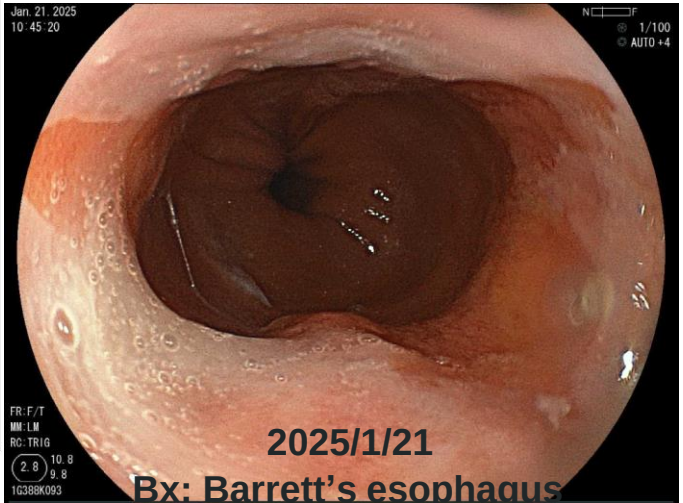
[**GI**] EGD, Esophagography, HRIM + HRPM

- Eckardt Score 7/12, limited improvement
- Consider PEG but patient hesitantate (2025/2/24)



2025/2/5

Normal esophageal motility

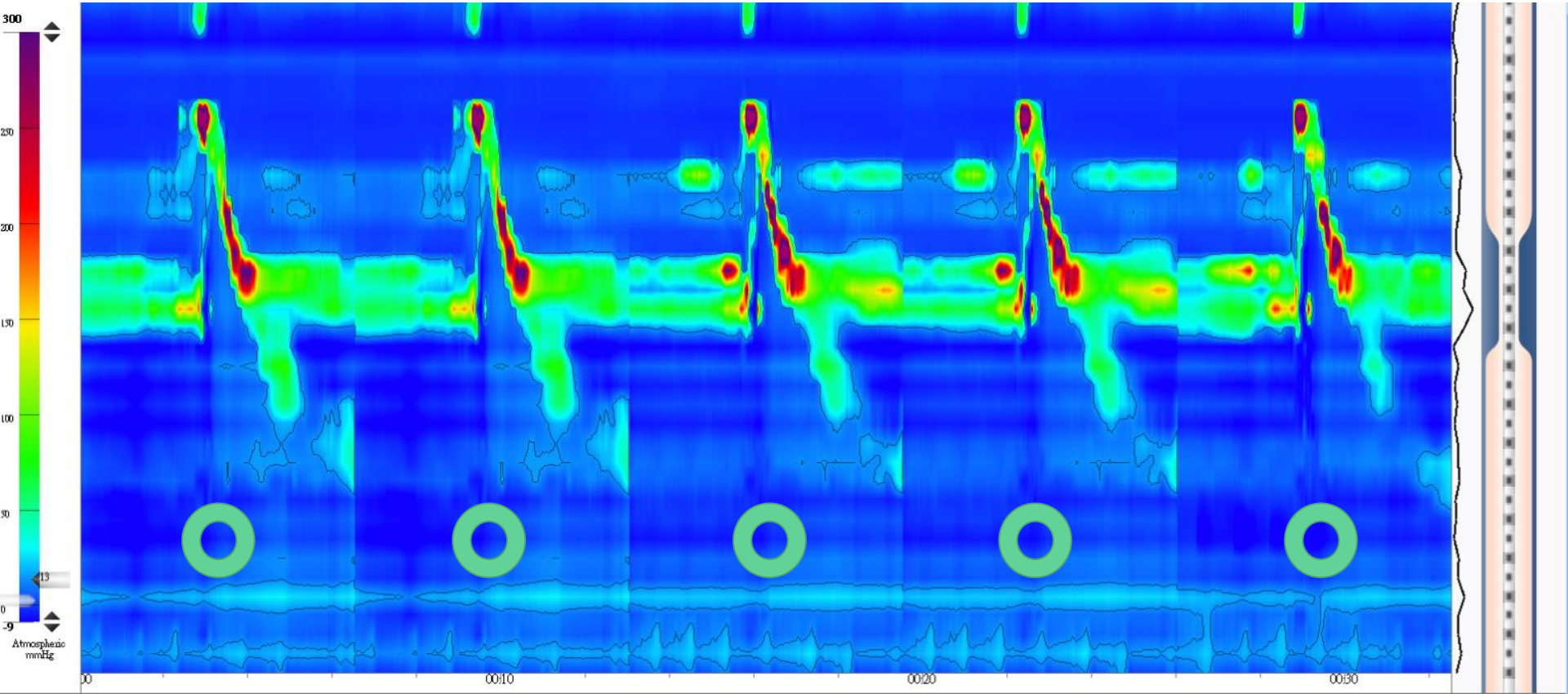


2025/1/21

Bx: Barrett's esophagus

Tracheobronchial aspiration

HRPM: 5cc thin (IDDSI level 0)



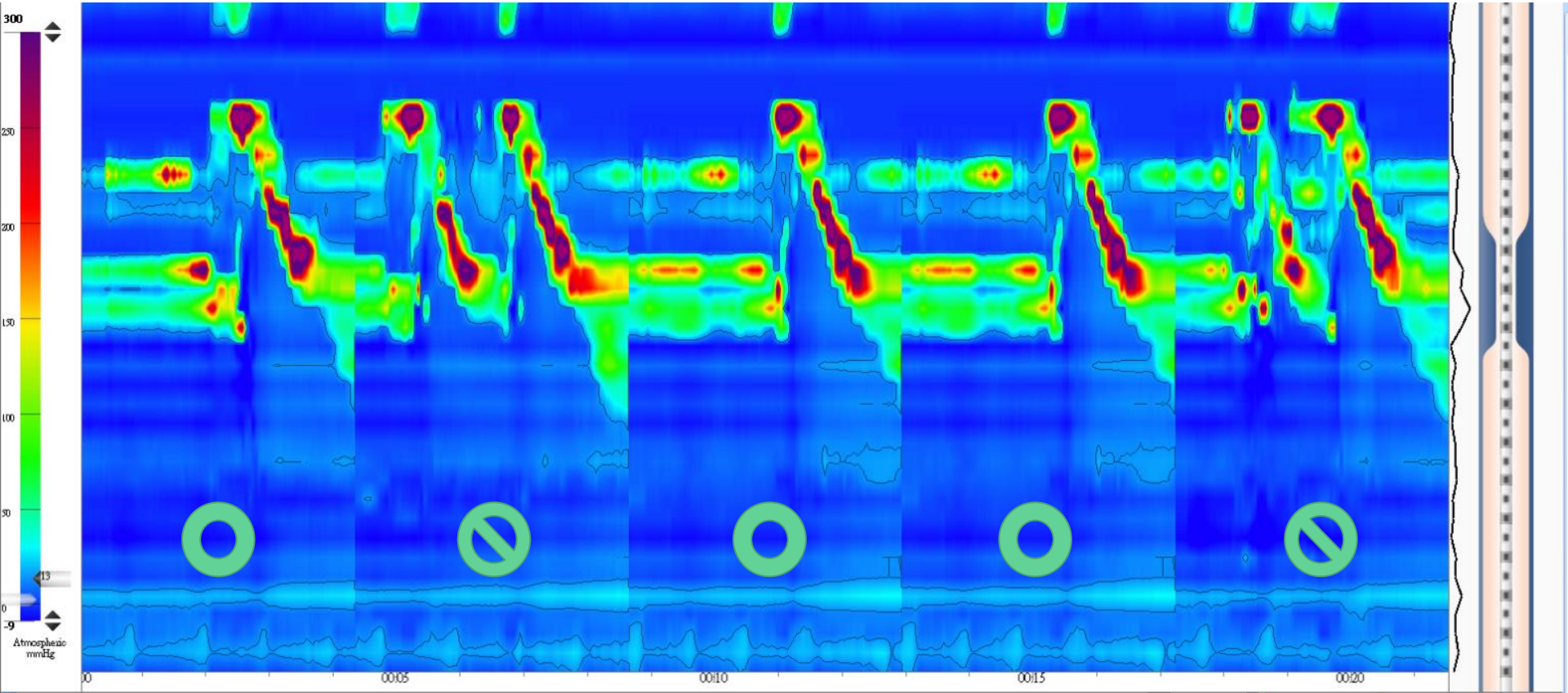
H-IBP (mmHg)	IRP 0.2 s (mmHg)	UES Max Admittance (mS)	UES Relaxation Time (s)
17.51	7	2.87	0.6
17.51	7	2.87	0.6
49.43	3	2.90	0.6
49.43	3	2.90	0.6
17.87	1	3.08	0.6
30.35 ▲	**4**	**2.93** ▼	**0.6**

VCI (mmHg.s.cm)	MCI (mmHg.s.cm)	HCI (mmHg.s.cm)
237	48	164
237	48	164
209	58	261
209	58	261
208	54	213
220	**53**	**212** ▲

5cc thin

c/w UES dysfunction
w/ pharyngeal compensatory phenomonen

HRPM: 10cc thin (IDDSI level 0)



H-IBP (mmHg)	IRP 0.2 s (mmHg)	UES Max Admittance (mS)	UES Relaxation Time (s)
5.00	6	4.08	0.7
[redacted]			
37.07	3	3.58	0.6
37.07	3	3.58	0.6
[redacted]			
24.98	**5**	**3.38**	**0.6**

VCI (mmHg.s.cm)	MCI (mmHg.s.cm)	HCI (mmHg.s.cm)
328	73	352
[redacted]		
281	84	310
281	84	310
[redacted]		
281	**81**	**334**

10cc thin

c/w UES dysfunction
w/ pharyngeal compensatory phenomonen

Summary & Future direction

- Introduction of the newly developed Leuven Consensus (through a multidisciplinary collaboration) for the definition of **pharyngeal** and **upper esophageal sphincter disorders**.
  - Guidemence for clinical intervention **NOT** provided yet
- Utilization the consensus in our practice
  - Protocol and report format need further refinement
- Clinical gaps remains:
  - Normal value for Taiwan population? (Swallow Gateway)
  - VFSS standardization and Video-HRM-I applicability?
  - Cross-talk between FEES?