Apport de la technologie Endoflip™dans la prise en charge des troubles moteurs de l'œsophage.

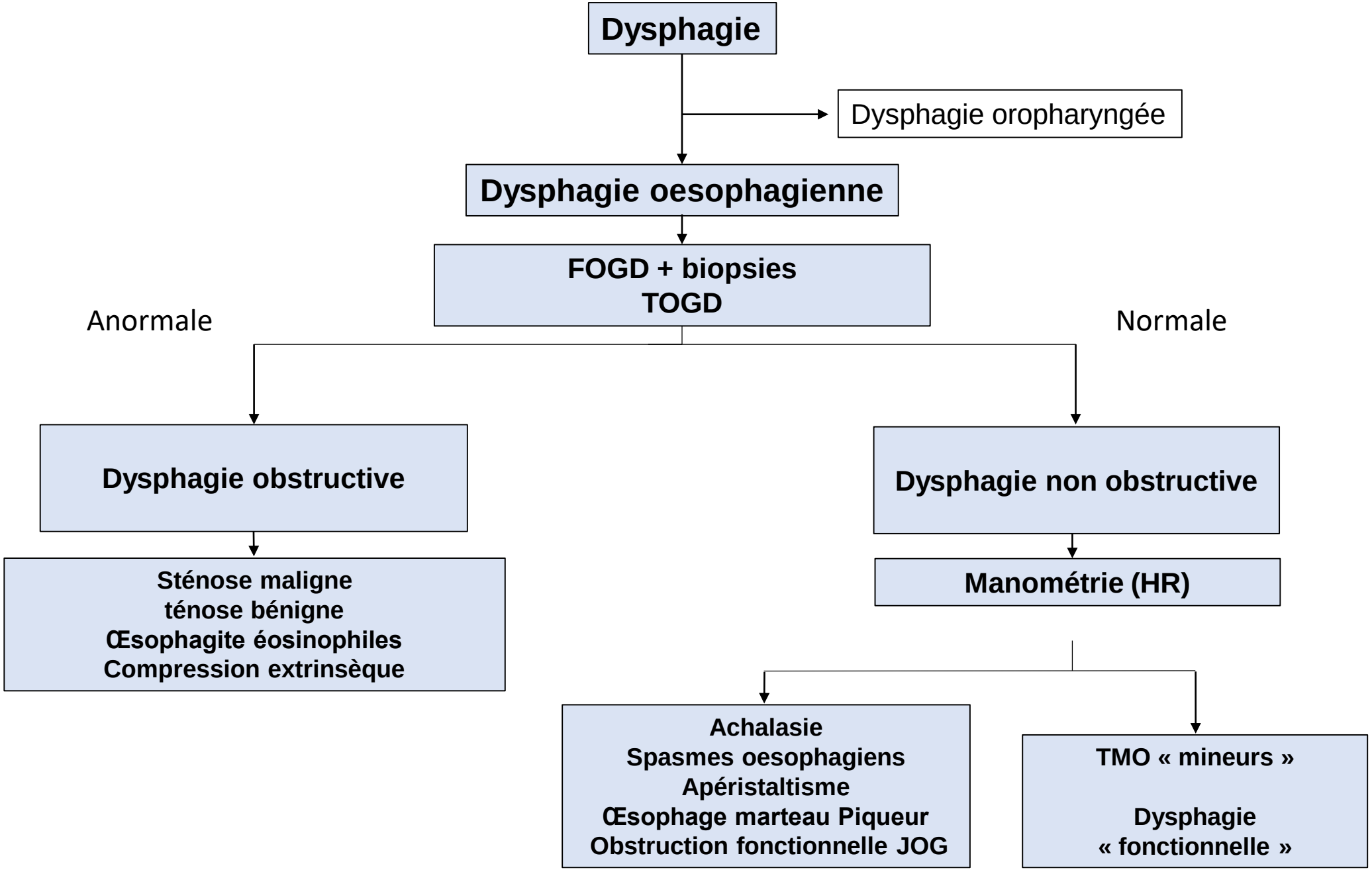
Frank ZERBIB

Hôpital Haut Lévêque

Bordeaux - France

Liens d’intérêts

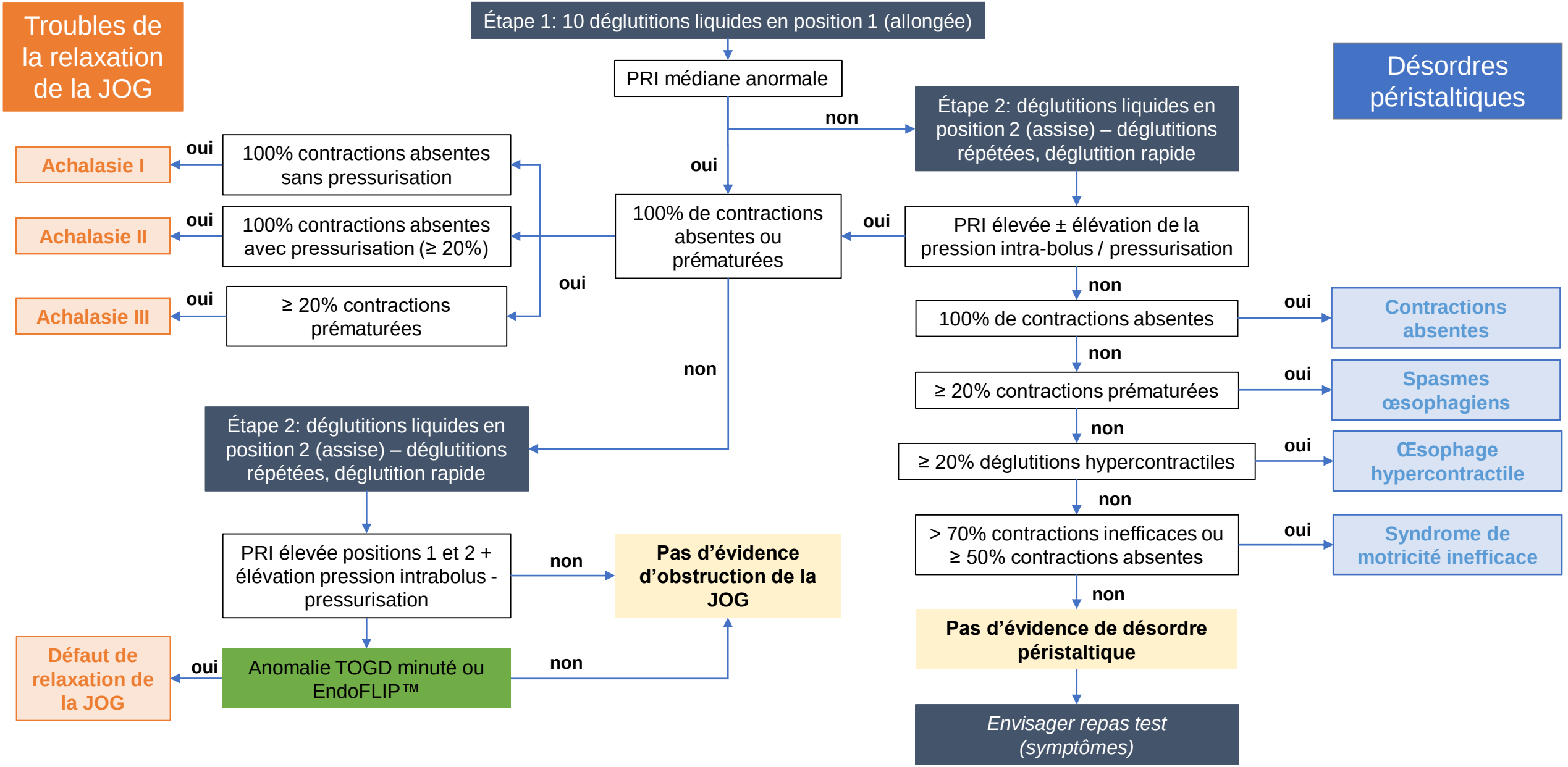
Medtronic



Zerbib and Omari, Nature Review GH, 2015

Manométrie haute résolution

Classification de Chicago 4.0



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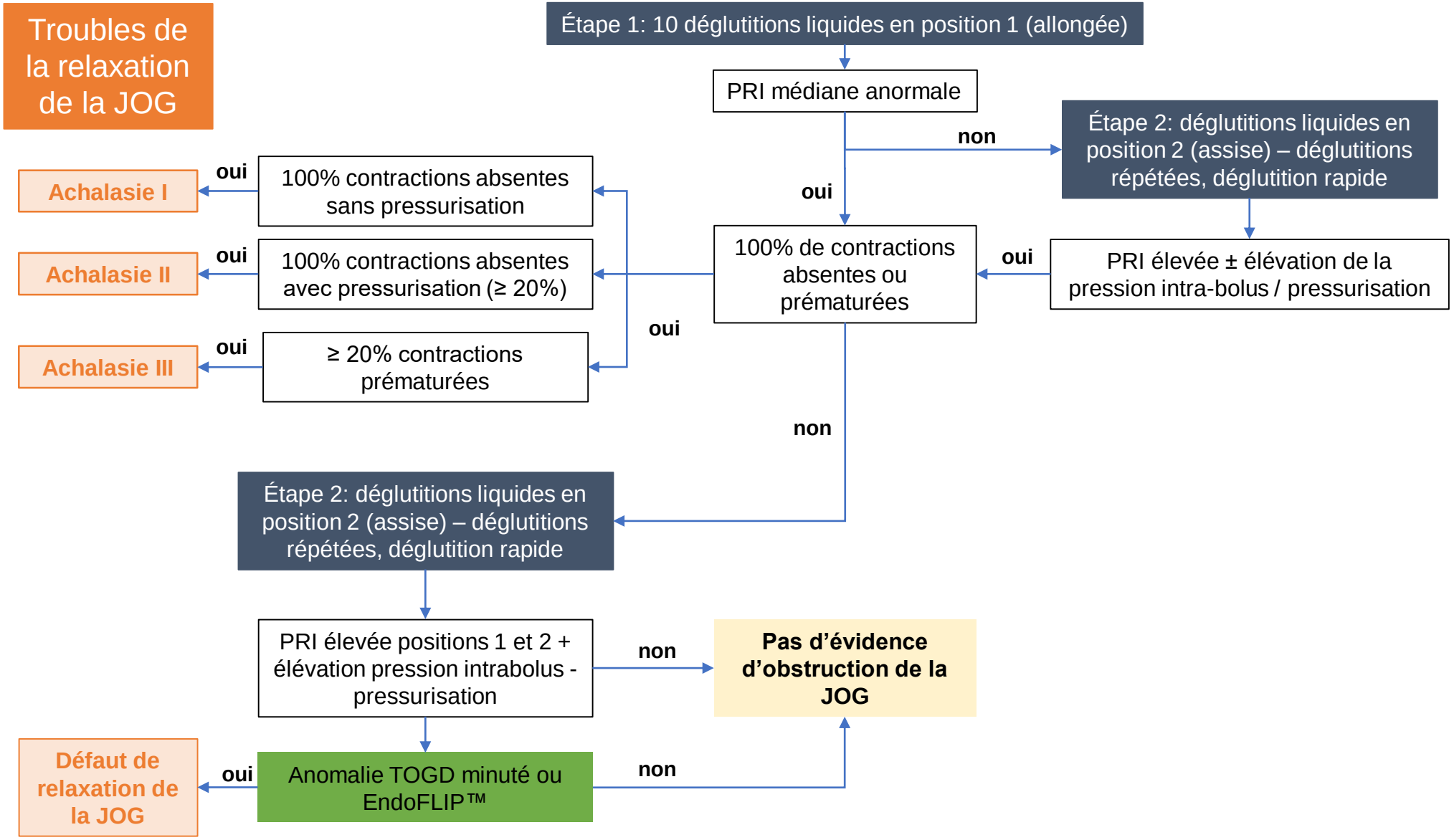

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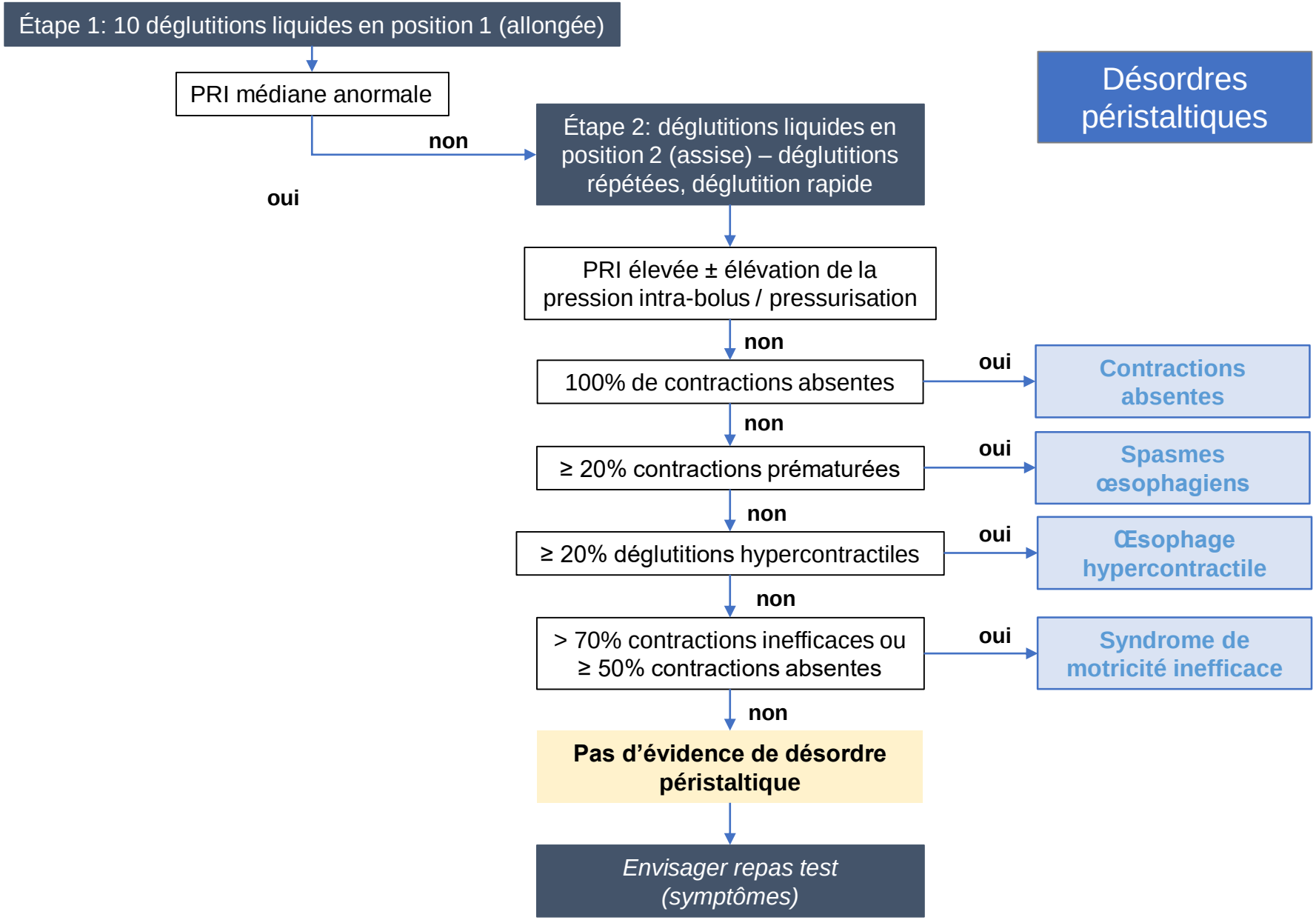
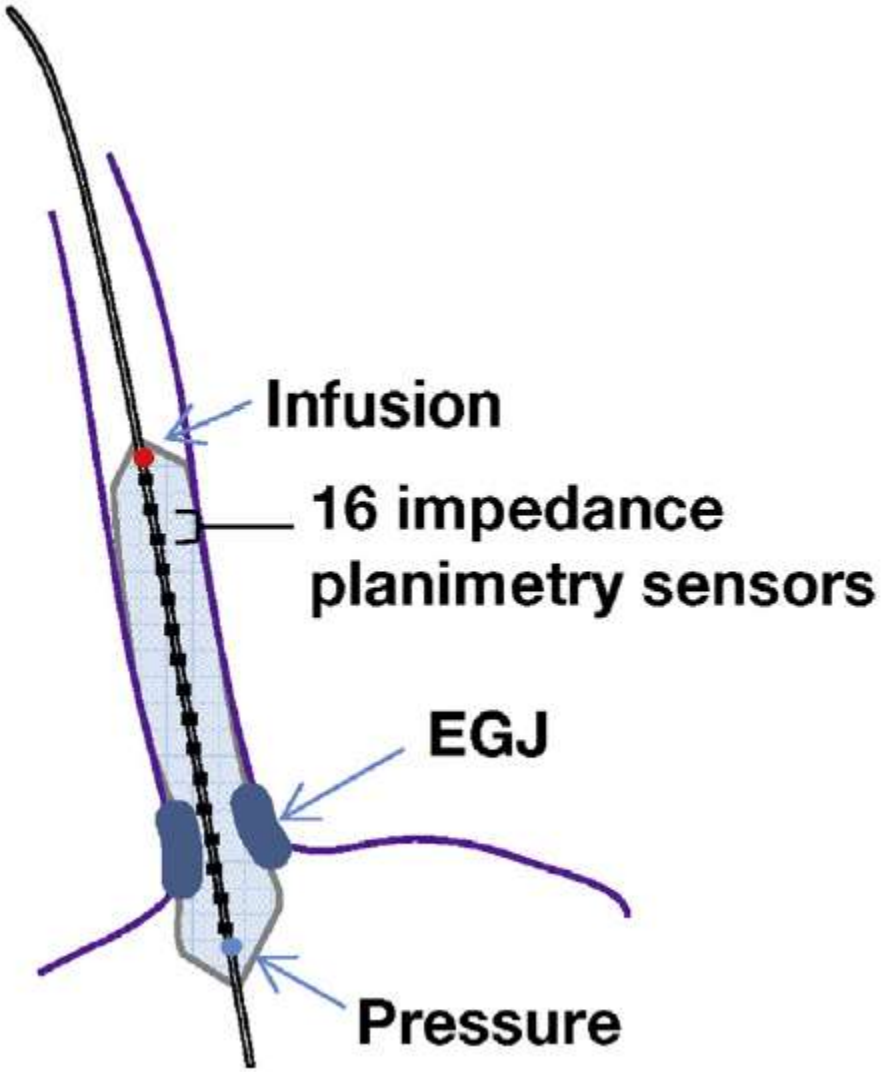
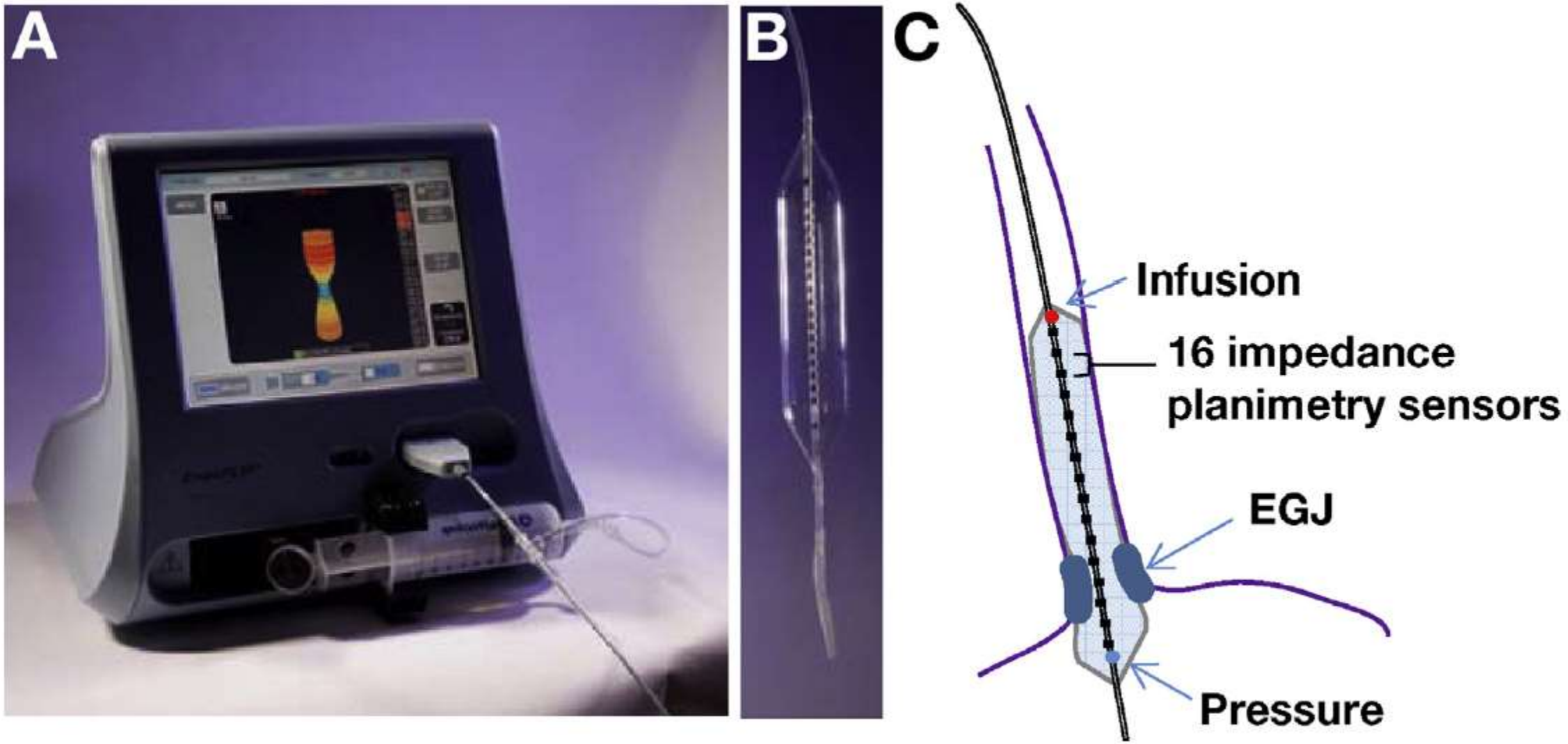


Impedance planimétrie (EndoFlip°)

Cathéter muni d'électrodes qui mesurent l'impédance entre elles.
Ces mesures permettent de calculer **le diamètre** et **la forme tridimensionnelle** de la lumière digestive

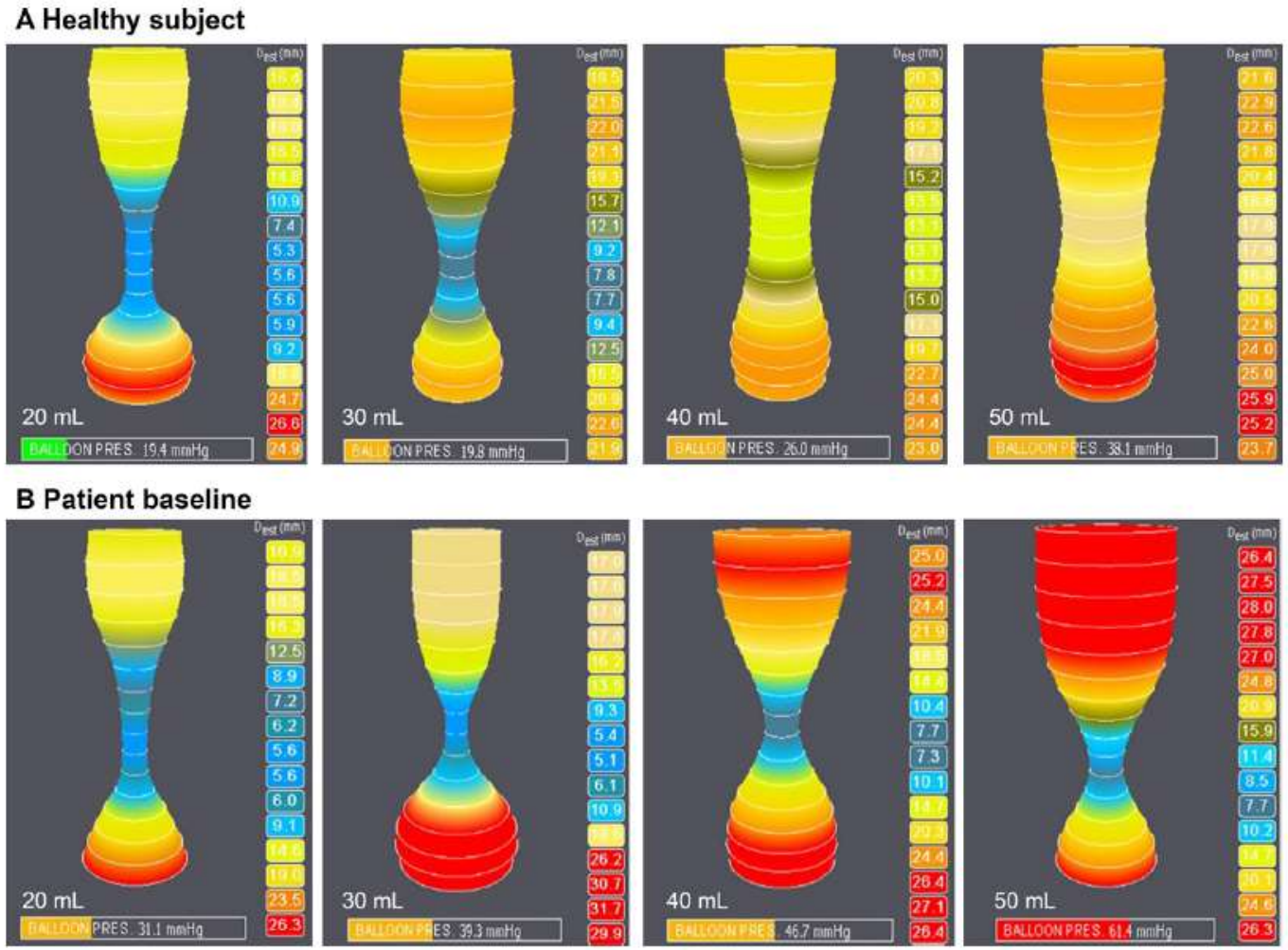


Impedance planimétrie (EndoFlip°)



Impedance planimetrie (EndoFlip°)

Distensibilité oesophagienne



Ponds et al NGM 2017

Impedance planimetrie (EndoFlip°)

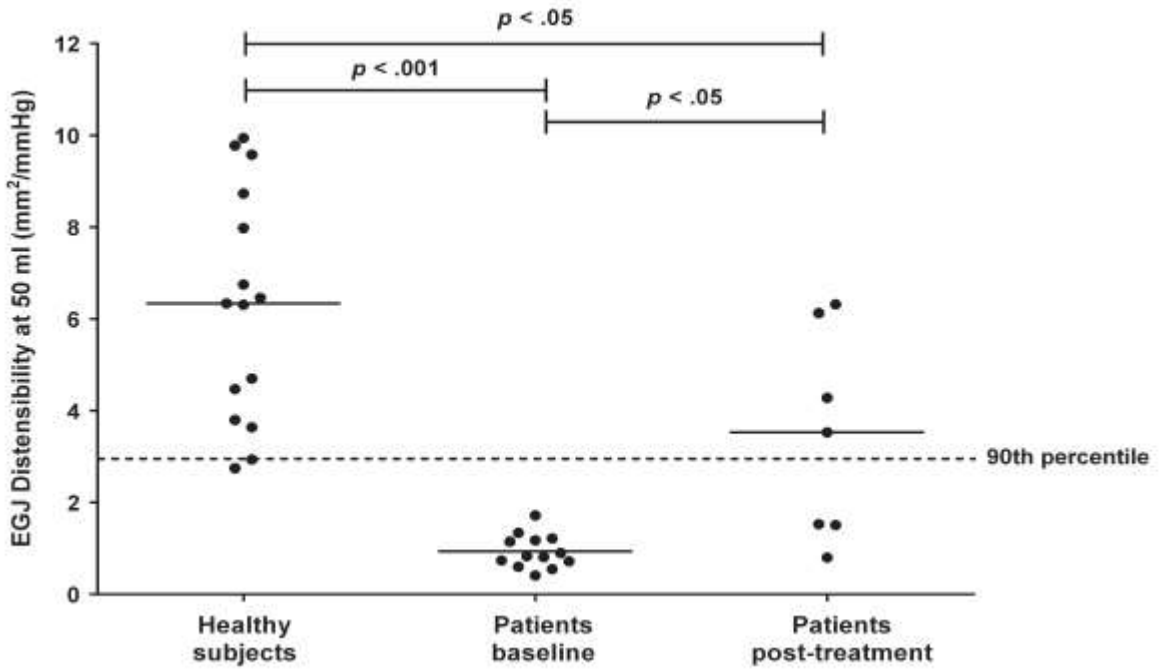
Assessment of EGJ distensibility

Achalasia

Identify achalasia patients with normal IRP

Correlation with symptoms post-treatment outcome

Intraoperative measurements ?

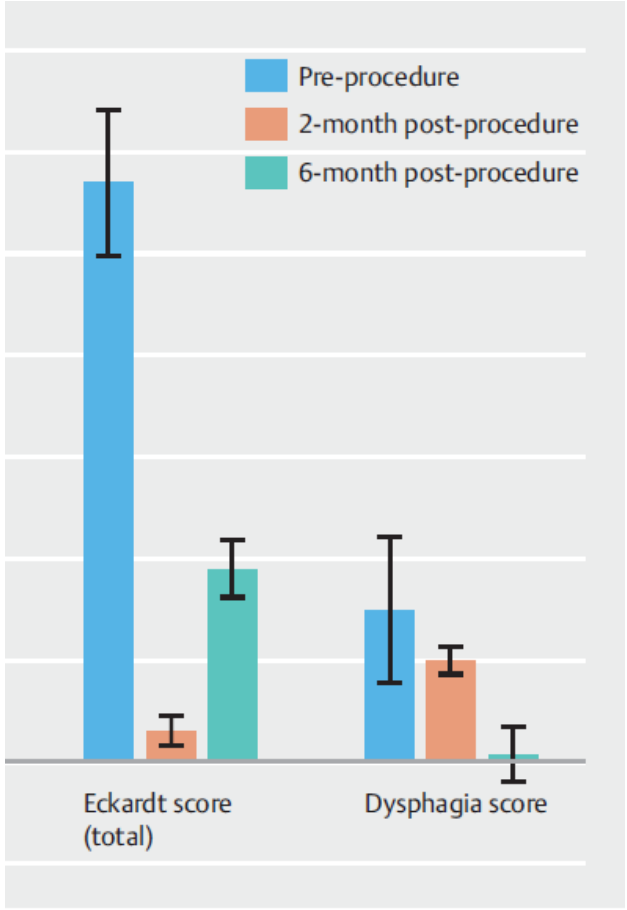


Ponds et al NGM 2017

Impedance planimetrie (EndoFlip°)

Assessment of EGJ distensibility

EGJOO



Reduced EGJ-DI is one of the requested adjunctive test for a conclusive diagnosis

15 patients with EGJOO treated by POEM based on HRM and EndoFlip

Ichkhanian EIO 2020

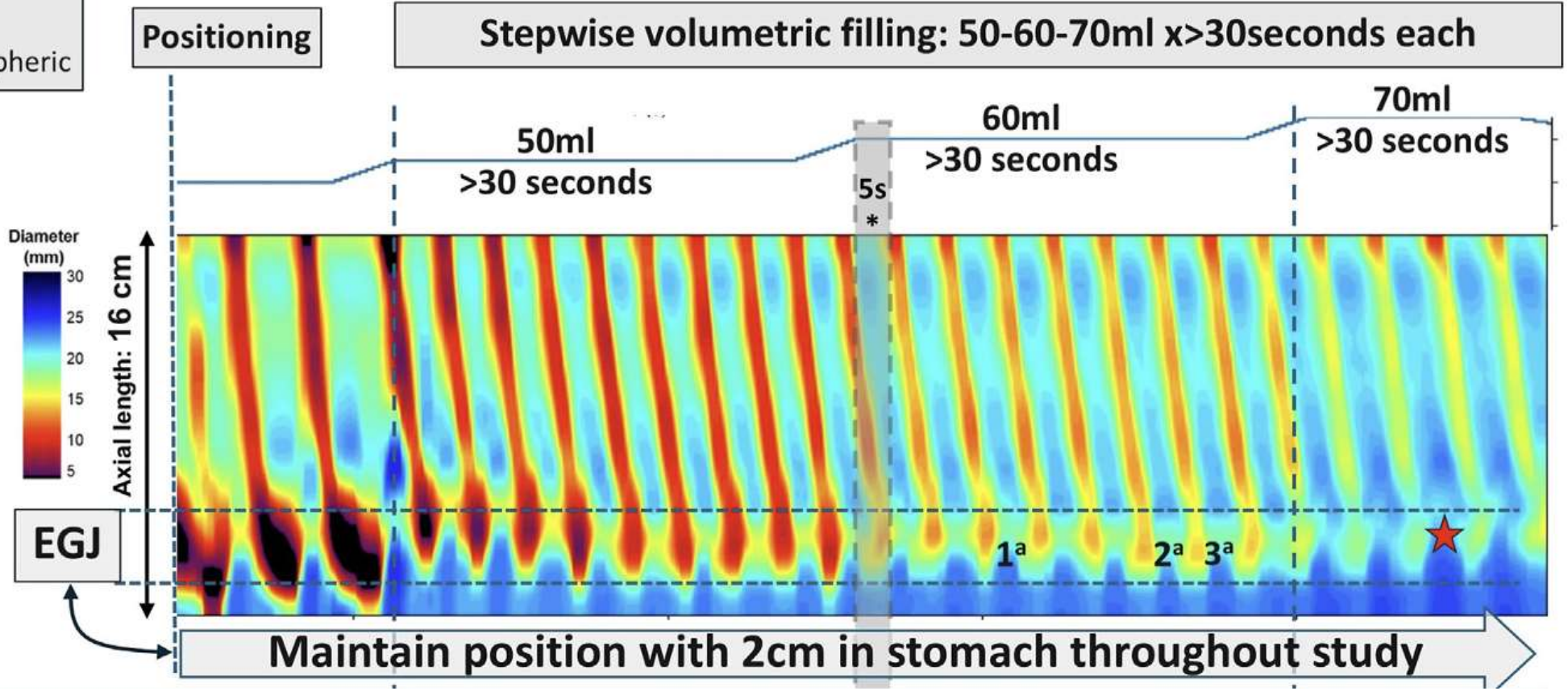

9.0
2.2
29.5

Prior to FLIP placement:

- High-quality endoscopy
- **Use 16cm FLIP**
- Filter setting to “off”
- Reference pressure to atmospheric

FILL VOLUME

FLIP topography



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FILL VOLUME

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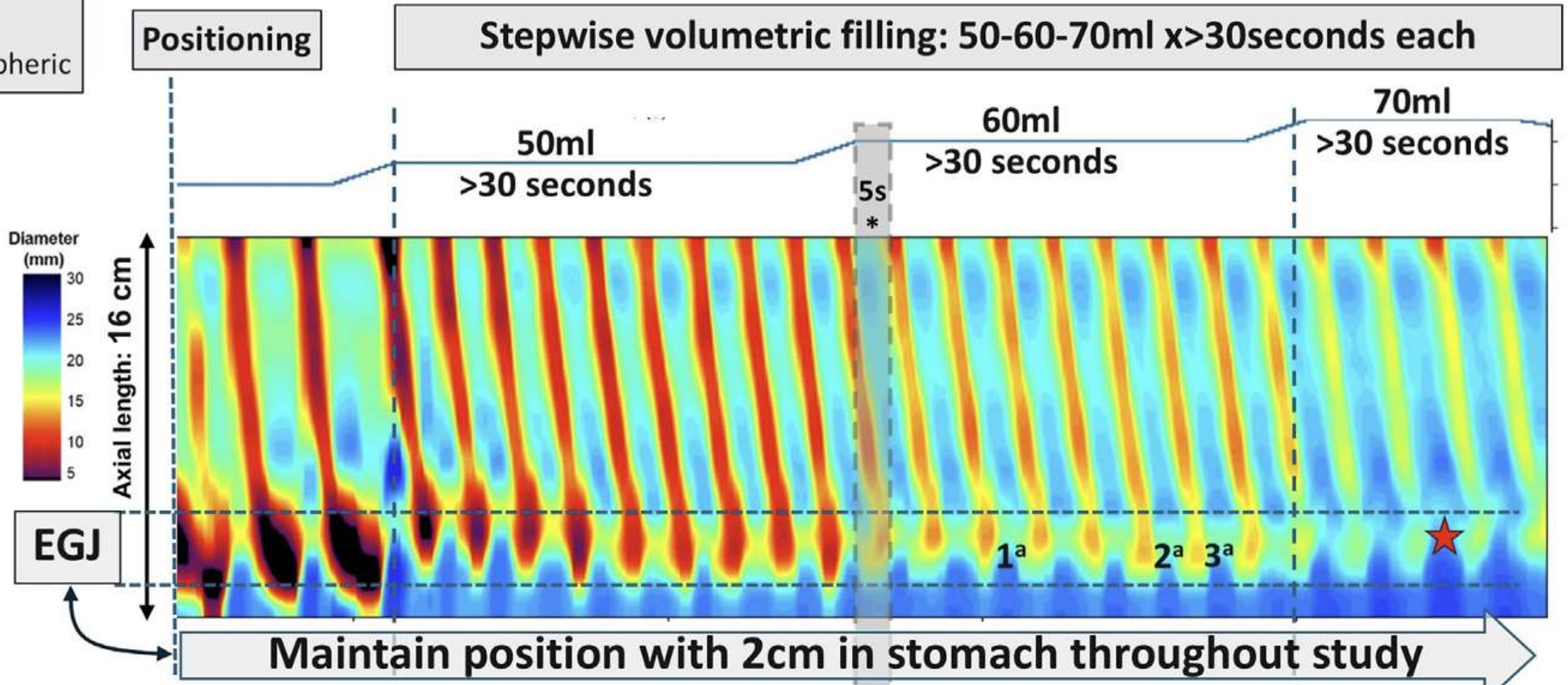


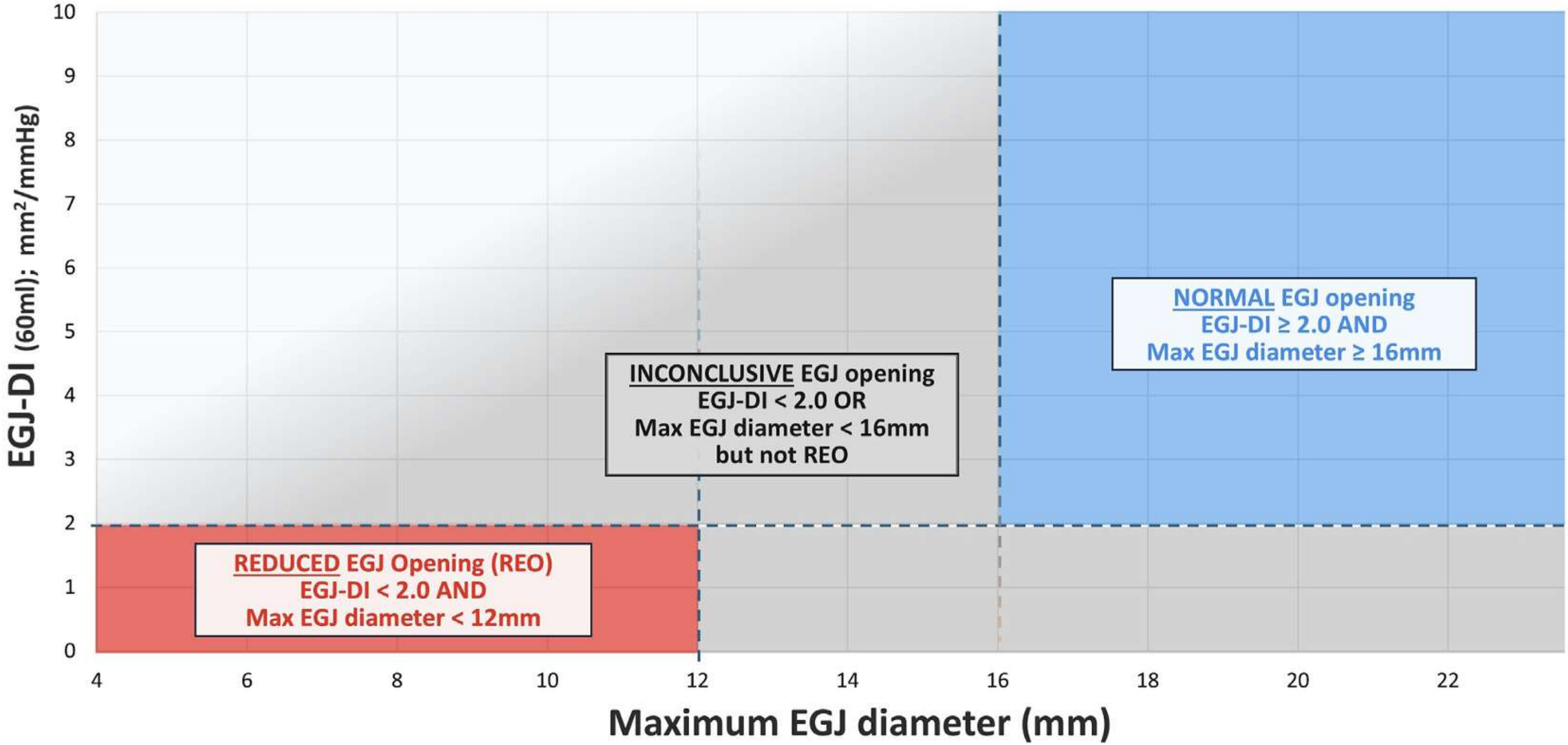
Interpretation / Key metrics

- **EGJ-DI: 60ml[a]**
- **Pressure: 60 ml[a]**
- **Maximum EGJ diameter: 70ml**
- **Contractile response pattern: 50-70ml**

Gastroenterology 2025;■:1–14

A Standardized Approach to Performing and Interpreting Functional Lumen Imaging Probe Panometry for Esophageal Motility Disorders: The Dallas Consensus

Dustin A. Carlson,[1] John E. Pandolfino,[1] Rena Yadlapati,[2] Marcelo F. Vela,[3] Stuart J. Spechler,[4] Felice H. Schnoll-Sussman,[5] Kristle Lynch,[6] Adriana Lazarescu,[7] Abraham Khan,[8] Philip Katz,[5] Anand S. Jain,[9] C. Prakash Gyawali,[10] Milli Gupta,[11] Jose M. Garza,[12] Ronnie Fass,[13] John O. Clarke,[14] Reena V. Chokshi,[15] Joan Chen,[16] Karthik Ravi,[17] Walter W. Chan,[18,19] Shahnaz Sultan,[20,21] and Vani J. A. Konda[4]



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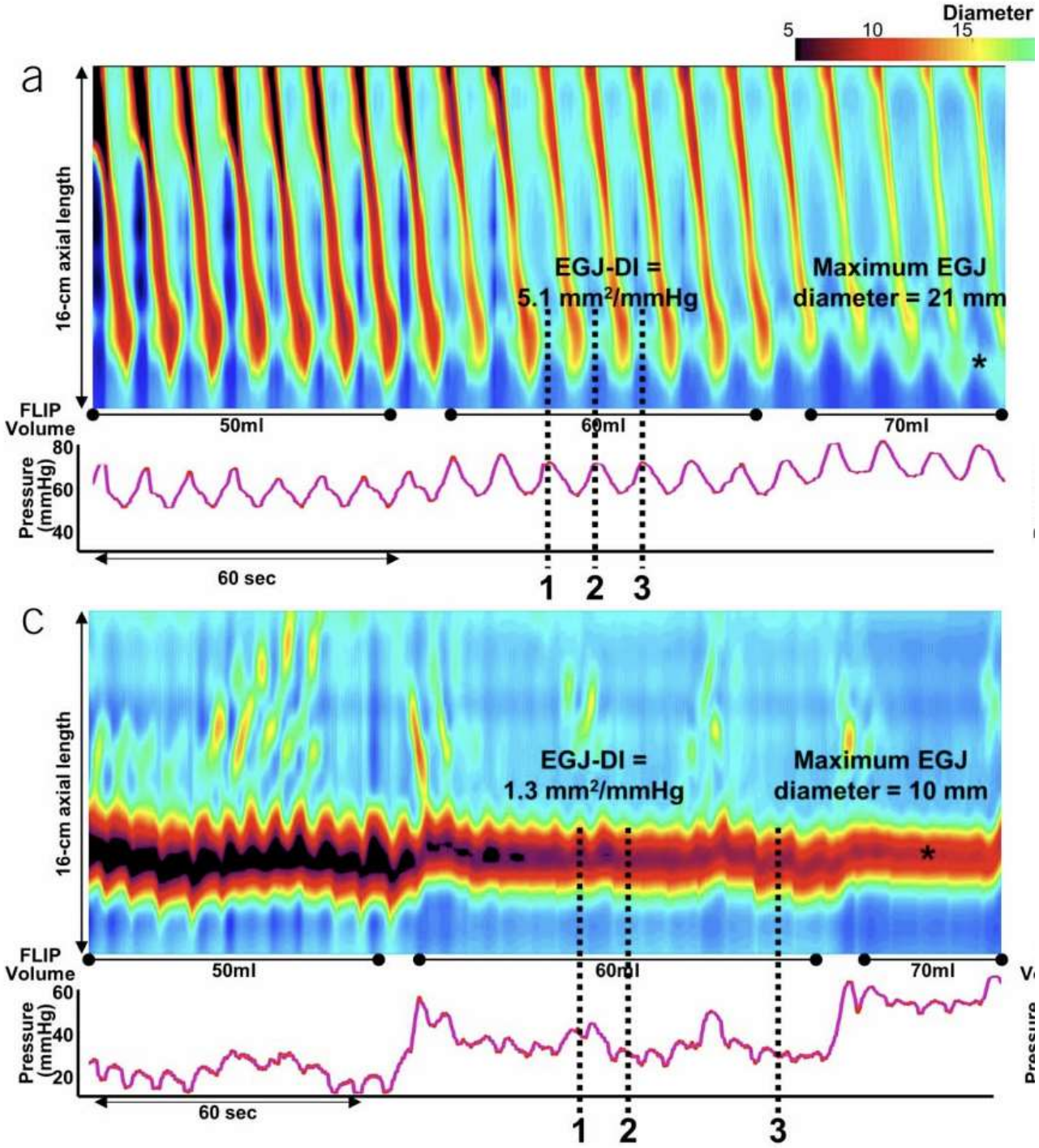
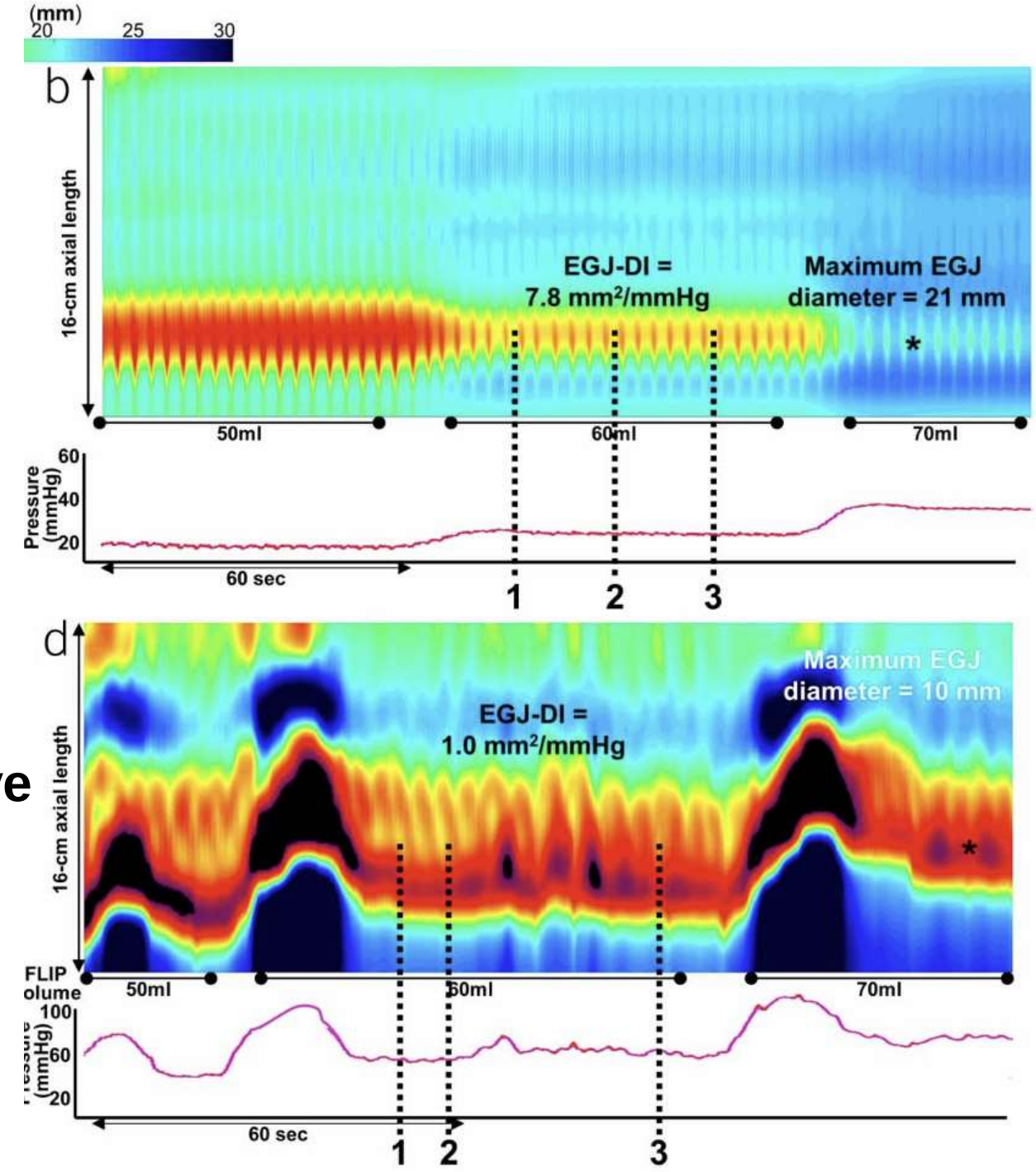


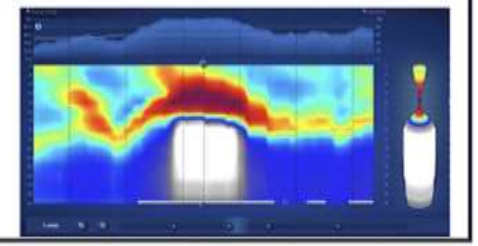
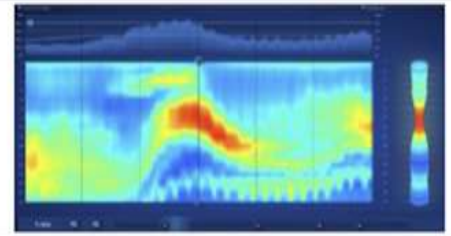
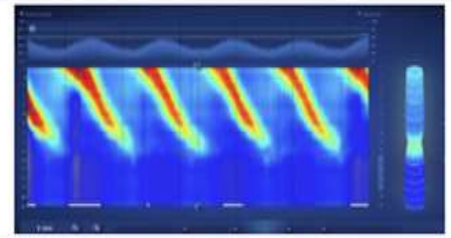
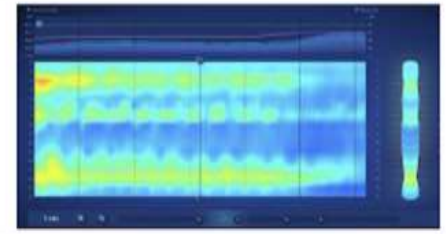
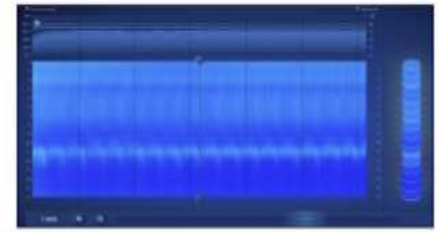
Normal : « la règle des 6 »
6 contractions
6 cm
6 par minutes (plus ou moins 3)
(HRM normale)

Réponse contractile altérée/faible
Défaut d'ouverture de la JOG
(HRM : achalasie type II)

Réponse contractile faible/absente
(Hypo contractilité)
ouverture normale de la JOG
(HRM : apéristaltisme)

Réponse contractile spastique/occlusive
Défaut d'ouverture de la JOG
(HRM : achalasie de type III)

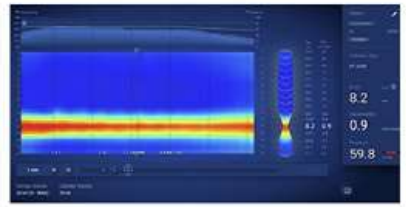


Category	Morphology	Cadence	Vigor	Key Patterns	Example
Spastic Contractile Response	Retrograde Horizontal	Irregular Sporadic	Consider with Pressure increase of >35 mmHg	SOC's sLESc's	
Disordered Contractile Response	Variable	Variable	>40 mmHg at 60 at EGJ-DI Consider with Pressure increase of >35 mmHg		
Normal Contractile Response	Antegrade	Repetitive or Inconsistent Normal Rate	Variable	RAC's, Multiple Distinct Antegrade Contractions	
Diminished Contractile Response	Variable	Variable	< 40 mmHg at 60 at EGJ-DI		
Absent Contractile Response	Absent at all fill volumes	N/A	Often < 40 mmHg at 60 at EGJ-DI	Absent Pattern	

A Key Contraction Patterns

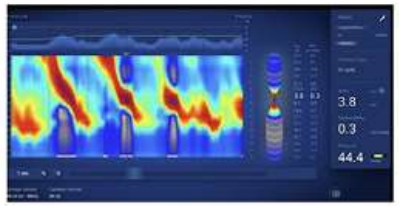
Absent Pattern

No contractions in the body



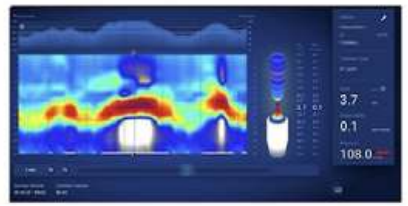
Distinct Antegrade Contraction

Antegrade contractions of ≥6cm of axial length
with an associated pressure increase of
10mmHg or greater



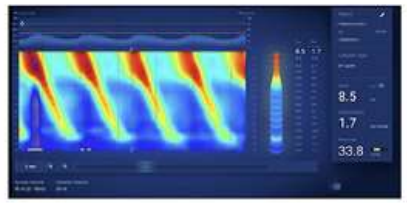
Sustained LES contraction (sLESCs)

A transient reduction in diameter at the LES ,
which lasts longer than 5 seconds,
And an associated increase in FLIP pressure



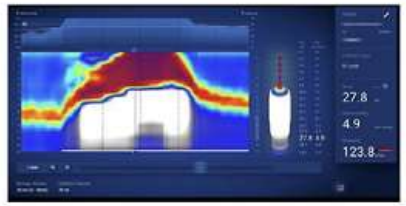
Repetitive Antegrade Contractions (RACs)

≥6 consecutive antegrade contractions
of ≥6 cm in axial length occurring
at 6+/-3 contractions/min at a regular cadence



Sustained occluding contraction (SOC)

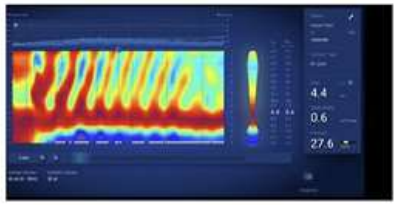
a non-propagating (retrograde or horizontal)
lumen occluding contraction in the body
that persisted for >10 seconds
with FLIP pressure increase of >35 mmHg



B Other Contraction Patterns

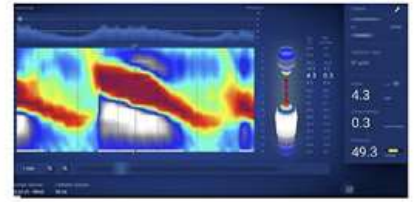
Repetitive Retrograde Contractions (RRCs)

≥6 consecutive retrograde contractions
of ≥6 cm in axial length occurring at a cadence
of >9 contractions per minute.



Vigorous Antegrade Contraction

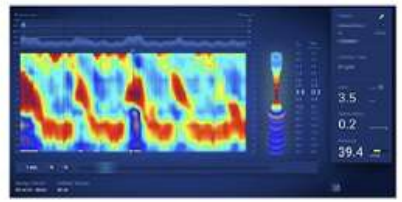
Antegrade contraction
with a consistent width in the body
that correlates with ≥10 s
and a pressure rise >35 mmHg.



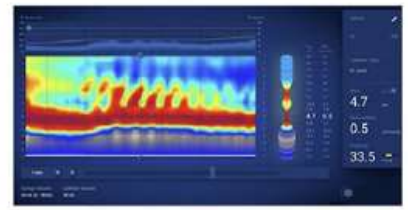
C

Other Contraction Features

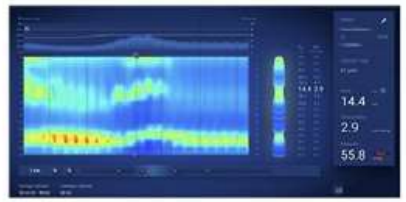
Antegrade Contraction
Diagonal lines of at least 3 cm in axial length from top left to bottom right



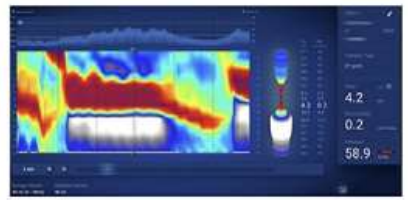
Retrograde Contraction
Diagonal lines of at least 3 cm in axial length from bottom left to top right



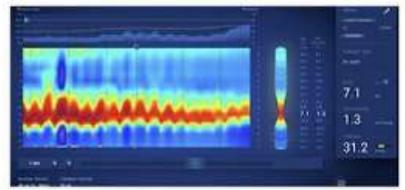
Focal Isolated Contraction
Isolated horizontal activity without apparent axial propagation of low diameter < 3 cm and less than 5 seconds and in the body not contiguous with LES / 'HPZ'



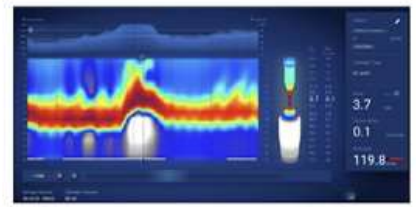
Focal Sustained Contraction
Sustained horizontal activity noted in the body or within the HPZ of >10 seconds with an associated FLIP pressure increase >35 mmHg

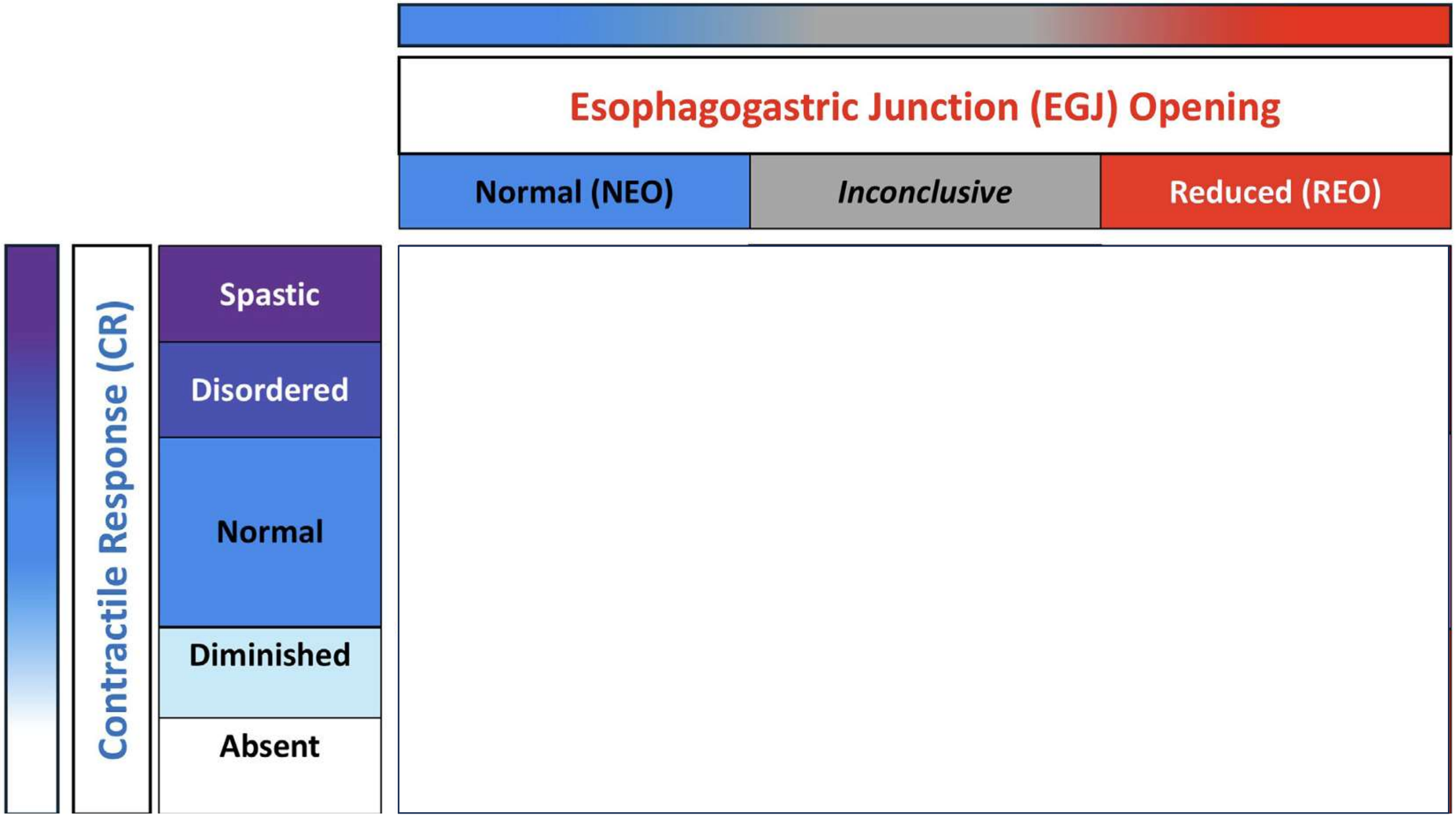


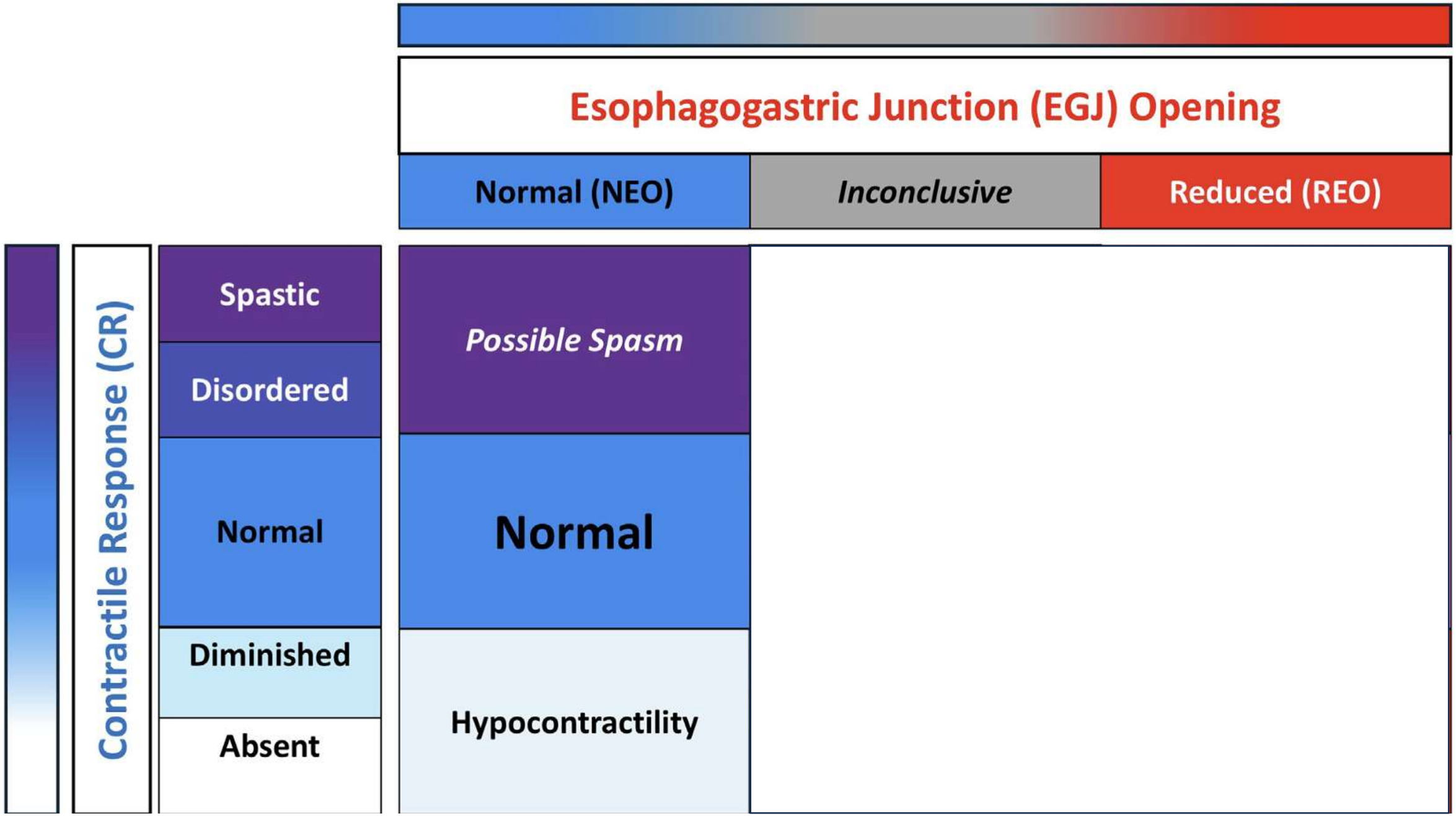
Triangle-shaped Contraction
Isolated horizontal activity without apparent axial propagation of low diameter < 3 cm and less than 5 seconds and in the body not contiguous with LES / 'HPZ'

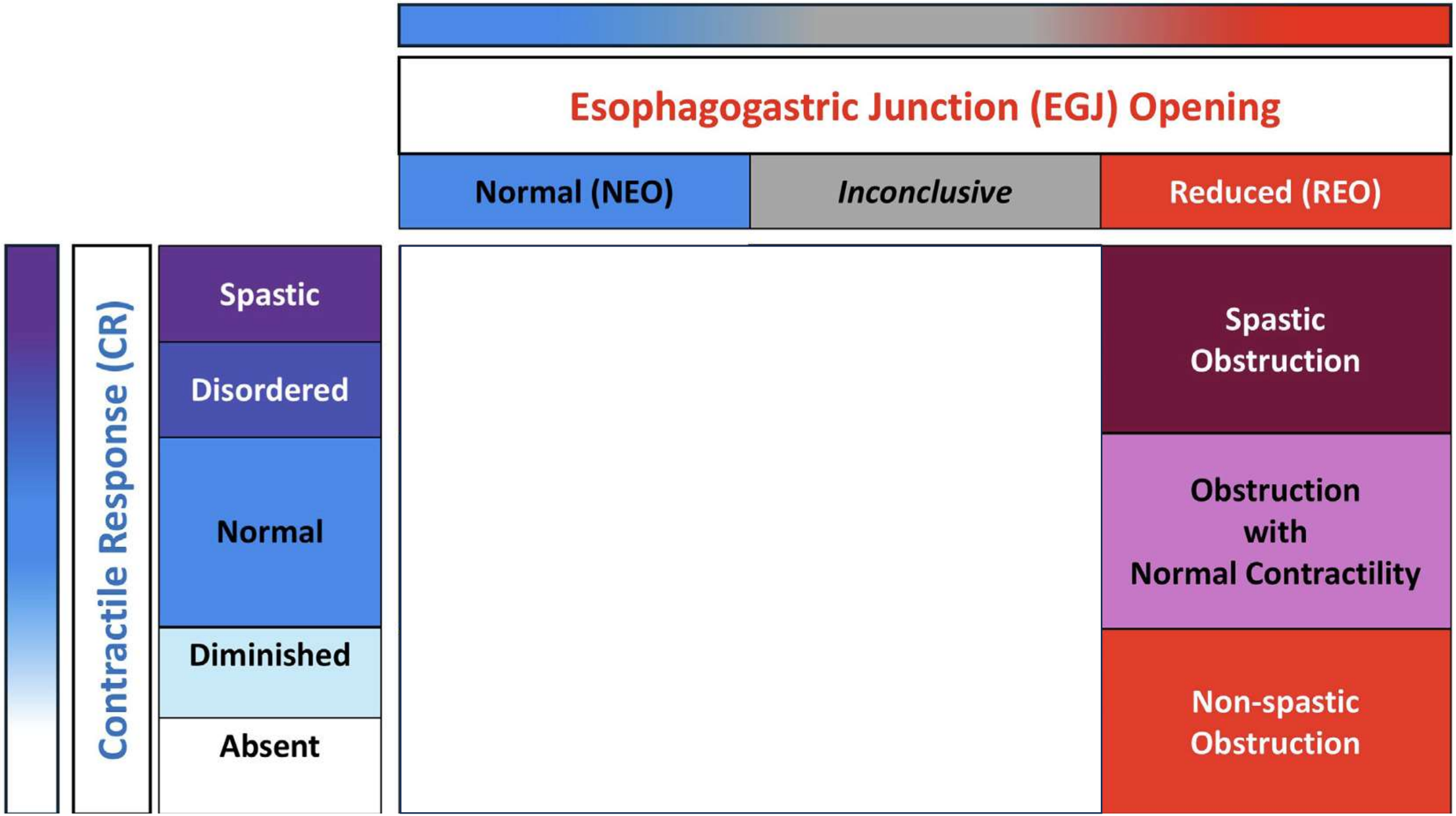


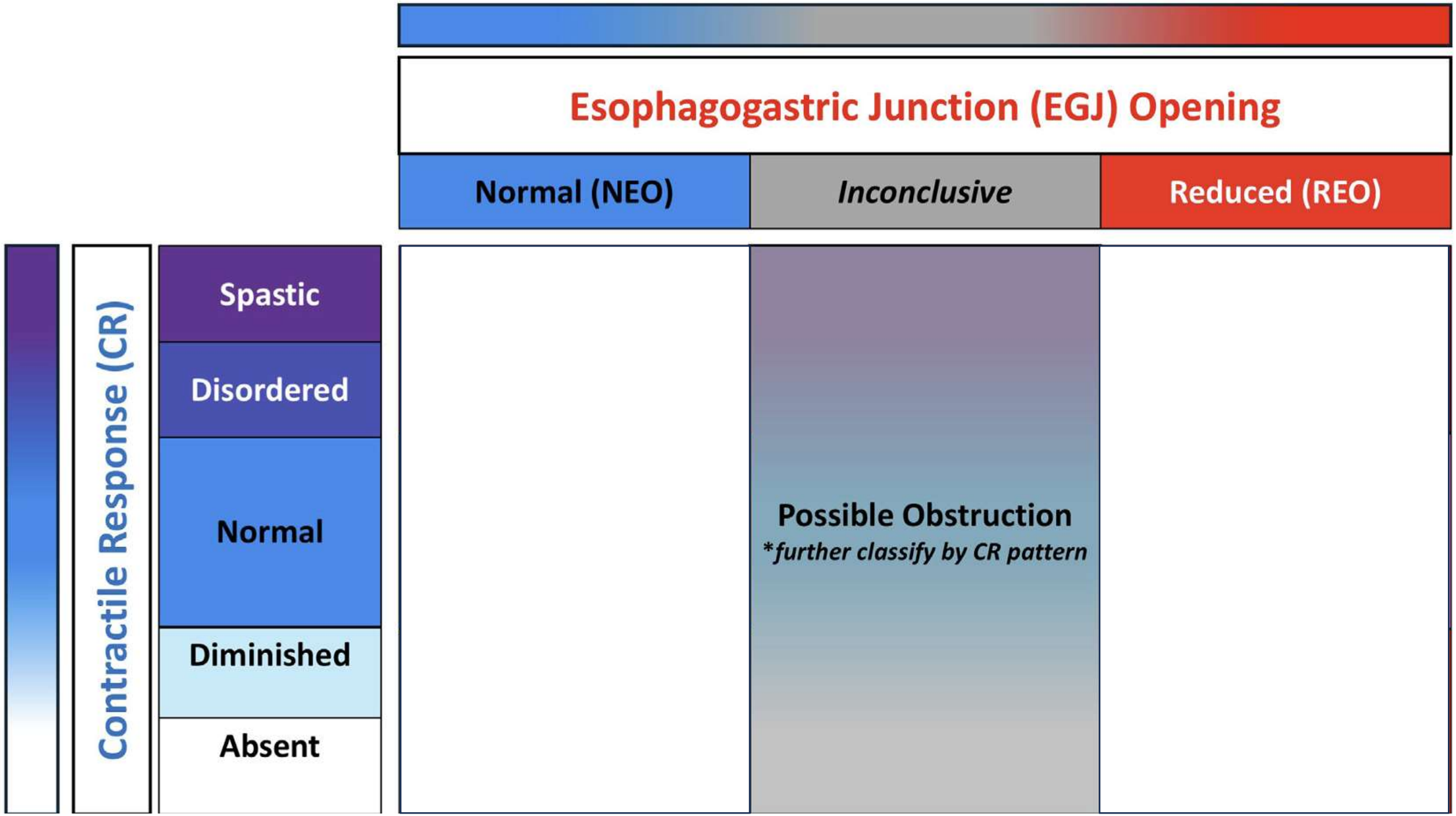
Bridged-Shaped Contraction
mound of retrograde then sustained and then antegrade activity




Esophagogastric Junction (EGJ) Opening
Normal (NEO)
Inconclusive
Reduced (REO)
Contractile Response (CR)
Spastic
Disordered
Normal
Diminished
Absent


Esophagogastric Junction (EGJ) Opening
Normal (NEO)
Inconclusive
Reduced (REO)
Contractile Response (CR)
Spastic
Disordered
Normal
Diminished
Absent
Possible Spasm
Normal
Hypocontractility


Esophagogastric Junction (EGJ) Opening
Normal (NEO)
Inconclusive
Reduced (REO)
Contractile Response (CR)
Spastic
Disordered
Normal
Diminished
Absent
Spastic Obstruction
Obstruction with Normal Contractility
Non-spastic Obstruction


Esophagogastric Junction (EGJ) Opening
Normal (NEO)
Inconclusive
Reduced (REO)
Contractile Response (CR)
Spastic
Disordered
Normal
Diminished
Absent
Possible Obstruction
*further classify by CR pattern

L'EndoFlip peut il remplacer la manométrie ?

Classifying Esophageal Motility by FLIP Panometry: A Study of 722 Subjects With Manometry

Dustin A. Carlson, MD, MS[1], C. Prakash Gyawali, MD, MRCP[2], Abraham Khan, MD[3], Rena Yadlapati, MD, MS[4], Joan Chen, MD, MS[5], Reena V. Chokshi, MD[6], John O. Clarke, MD[7], Jose M. Garza, MD[8], Anand S. Jain, MD[9], Philip Katz, MD[10], Vani Konda, MD[11], Kristle Lynch, MD[12], Felice H. Schnoll-Sussman, MD[10], Stuart J. Spechler, MD[11,13], Marcelo F. Vela, MD, MS[14], Jacqueline E. Prescott, BS[1], Alexandra J. Baumann, DO[1], Erica N. Donnan, MD[1], Wenjun Kou, PhD[1], Peter J. Kahrilas, MD[1] and John E. Pandolfino, MD, MS[1]

Am J Gastroenterol 2021;116:2357–2366. https://doi.org/10.14309/ajg.0000000000001532

L’EndoFlip peut il remplacer la manométrie ?

Endoflip pendant l’endoscopie initiale

ENDOFLIP (CR and OE)	HRM (CC 4.0)
Normal (n=86)	Normal 92%
	IEM / Péristaltisme absent 6%
	Spasmes/hypercontractile 2%

L’EndoFlip peut il remplacer la manométrie ?

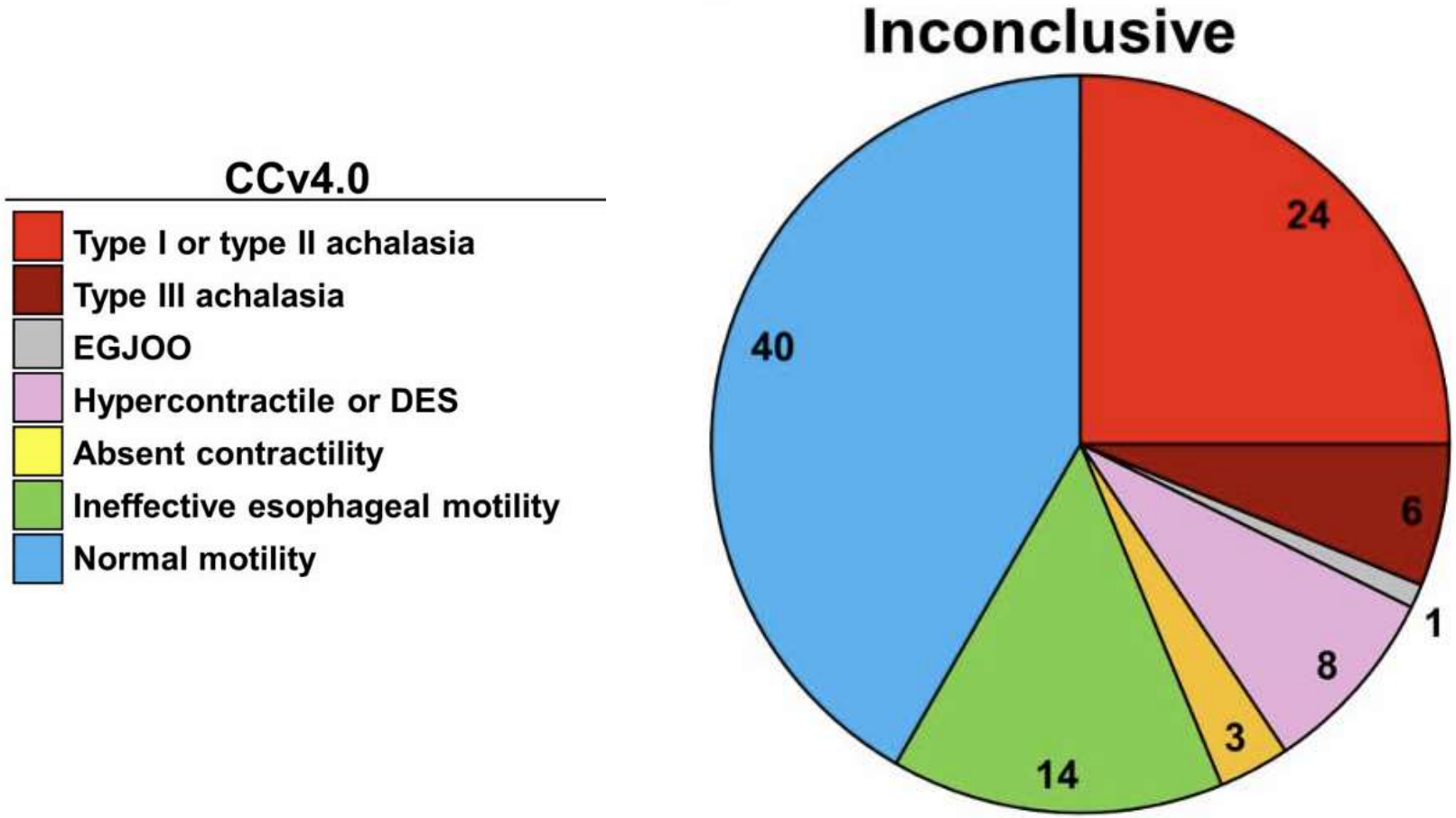
Endoflip pendant l’endoscopie initiale

ENDOFLIP (CR and OE)	HRM (CC 4.0)
Diminution ou absence CR et ROE (n=202)	Achalasie ou EGJOO 92%

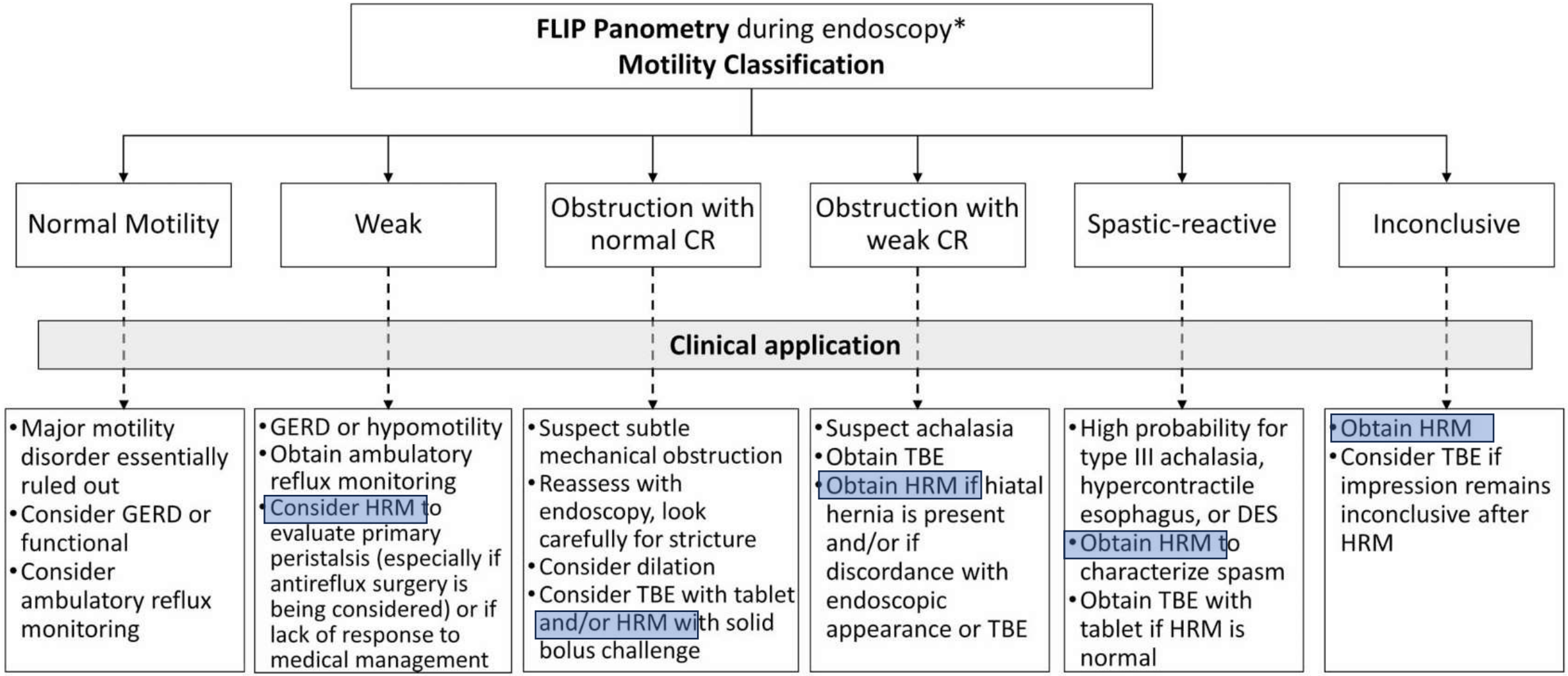
Corrélation avec l’intensité des symptômes
Facteur prédictif de réponse aux traitements

L’EndoFlip peut il remplacer la manométrie ?

Endoflip pendant l’endoscopie initiale



Faire HRM


FLIP Panometry during endoscopy*
Motility Classification
Normal Motility
Weak
Obstruction with normal CR
Obstruction with weak CR
Spastic-reactive
Inconclusive
Clinical application
• Major motility disorder essentially ruled out
• Consider GERD or functional
• Consider ambulatory reflux monitoring
• GERD or hypomotility
• Obtain ambulatory reflux monitoring
• Consider HRM to evaluate primary peristalsis (especially if antireflux surgery is being considered) or if lack of response to medical management
• Suspect subtle mechanical obstruction
• Reassess with endoscopy, look carefully for stricture
• Consider dilation
• Consider TBE with tablet and/or HRM with solid bolus challenge
• Suspect achalasia
• Obtain TBE
• Obtain HRM if hiatal hernia is present and/or if discordance with endoscopic appearance or TBE
• High probability for type III achalasia, hypercontractile esophagus, or DES
• Obtain HRM to characterize spasm
• Obtain TBE with tablet if HRM is normal
• Obtain HRM
• Consider TBE if impression remains inconclusive after HRM

L’EndoFlip peut il remplacer la manométrie ?

Endoflip en cas d’HRM non conclusive

Table 3. FLIP panometry motility classifications among patients with inconclusive CCv4.0/HRM

	Inconclusive CCv4.0 diagnosis				
	Achalasia	EGJOO: borderline TBE[a]	EGJOO: normal TBE	EGJOO: did not complete TBE	Hypercontractile esophagus or DES
n (%)	7 (5)	28 (19)	28 (19)	64 (43)	5 (3)
Age, mean (SD), yr	63 (9)	54 (15)	59 (15)	61 (14)	64 (19)
	n (%)	n (%)	n (%)	n (%)	n (%)
Sex, female	6 (86)	13 (46)	23 (82)	35 (55)	3 (60)
FLIP panometry motility classification					
Normal	0	2 (7)	10 (36)	8 (13)	1 (20)
Weak	0	1 (4)	6 (21)	3 (5)	0
Obstruction with weak	5 (71)	10 (36)	3 (11)	20 (31)	0
Spastic-reactive	0	8 (29)	1 (4)	9 (14)	2 (40)
Inconclusive	2 (29)	7 (25)	8 (29)	24 (38)	2 (40)

Patients with EGJ EGJOO are described further by reason for inconclusive assignment.

CCv4.0, Chicago Classification v4.0; DES, distal esophageal spasm; EGJ, esophagogastric junction; EGJOO, EGJ outflow obstruction; HRM, high-resolution manometry; TBE, timed barium esophagram.

[a]TBE column height >5 cm at 1 min or impaction of barium tablet, but not conclusively abnormal TBE (i.e., 5-minute column height >5 cm or 1-min column height >5 cm and impaction of tablet).

L’EndoFlip autres indications ?

Evaluation de l’obstruction de la JOG après traitement de l’achalasie

- **facteurs prédictifs de réponse à long terme**
- **évaluation des échecs de traitement**
- **évaluation en per-procédure ?**

Mesure de la distensibilité du pylore dans la gastroparésie

- **identifier les patients candidats à une G-POEM**
- **facteurs prédictifs de réponse à long terme**

Evaluation de la distensibilité œsophagienne dans l’EoE

Les messages pour la maison…

L'impédance planimétrie (EndoFlip°) permet l'évaluation de la distensibilité de la JOG et de la réponse contractile à la distension œsophagienne

Elle peut être réalisée dans les suites d'une endoscopie normale

Une évaluation normale en EndoFLip a une très bonne valeur prédictive négative pour le diagnostic de troubles moteurs œsophagiens

Dans les autres situations, une évaluation en HRM est nécessaire/conseillée

En cas d'HRM non conclusive, l'EndoFlip peut apporter des arguments pour le diagnostic d'obstruction de la JOG ou de spasmes

La place de l'EndoFlip dans d'autres situations (Echec de POEM, G-POEM) reste à préciser