G I Motility for GI Fellows

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Goals

- 1.Introduction to GI Motility
- 2. Specific Patients you may see on call
- 3. Motility/IBD time as GI Fellow
- 4. What you need to know to practice

Overview of GI Motility

- Can not separate from
- Physiology
  - Secretion
  - Absorption
- Pathophysiology
  - Inflammation
  - Infection

Introduction

- Indications
  - Region Specific
- Equipment
  - Readily Available
  - Now automated
- Approach
  - Much Like Endoscopy:
  - Understand, then practice

Best way to learn

- Understand
- Watch
- Practice
- Last 10 years:
- 100 sessions with GI Fellows at UMC
- Reviewing their own cases
- Best approach is like EKG or capsule: practice
- Tutorials available on line

Gen Motility

- Before starting:
  - Know Equipment
  - Know Indications
- Review Motility Hx sheet—from GI Lab
- Review any records
- Review Ancillary studies
- Interpretation needs to be orderly
- Reports can be brief

Esophageal Motility

- Esophageal Motility
  - Esp. High Resolution
  - With Impedance
- pH—rarely done alone; Bilitek not used
- pH with impedance
  - Wired
- pH with Bravo
  - wireless

Esophageal Motility

- Main Indications:
  - GERD--refractory
  - Dysphasia
  - Achalasia
- Other indications directed by patient
- Guidelines published—being updated now
- Areas of controversy limited to referral centers
- Recognized E/M codes

Esophageal Motility Testing

- Patient NPO
- Usually by technician in GI Lab
- Newer equipment very similar:
  - Ford, Chevy, Dodge
- Reports are automated
- Can be done on screen or hard copy
- Reports can be downloaded into EMR
- EPIC—report template exists

Basic Areas of EM

- UES
  - Location and Pressures
- LES
  - Location and Pressures
- Body
  - Peristalsis and propagation
  - Pressures

  May be combined with Impedance measures

High Resolution EM

- Multiple pressure sensors
- Can be spaced in different ways
- Can be displayed in different manners
- Can be used with or without impedance
- Has made EM more ‘intuitive’
- Has allowed better understanding of Achasia
- Not clear if Dx’ic accuracy improved

Common EM abnormalities

- Low LES pressure
- High LES pressure
- Hypo-peristalsis of Body
- A-peristalsis of Body
- May be in combination
- Less common:
- Diffuse Spasm

pH Studies-1

- Bravo—simplest
- Gives % time of acid
- Gives Sx correlation
- Can measure for 48 hours
- Does not measure non Acid reflux
- Can be placed with or without endoscopy
- Can not charge for the day of endoscopy

pH Studies-2

- Impedance with pH
- Can measure acid and non-acid GER
- Simultaneous Impedance
- Can show bolus transfer
- Has doubled dx'ic yield of pH
- Wired
- 24 hours

Pelvic Floor Studies

- Sitz Marks for transit
- Defogram—in radiology
- Anal-Rectal Motility (ARM)
- All 3 needed for complete eval
- Anal EMG may help compliment
- GI Lab does the ARM
- Main Indications:
  - Constipation
  - Incontinence

ARM

- In GI Lab
- Best to watch one—one is all needed
- Measures pressures
- Measure sensation
- Voluntary Contractions
- Defecation Simulation
- May be combined with balloon expulsion
- The later a screening test

ARM measures

- Balloon Expulsion as screen
- Pressures on digital exam
- Resting pressures in anal canal
- Contractions
- RAIR (relaxation to air) to pressures
- Sensation to pressures
- Defecation simulation
- Other patient Sx or findings

Common ARM findings

- Poor Balloon expulsion—almost universal
- Weak sphincter tone on digital exam
- Low contraction/duration on squeeze
- Poor RAIR
- Abnormal sensation
- Paradoxical reaction of defecation simulation
- All of these will be on computer/report sheet

Hydrogen Breath Testing (HBT)

- Can use lactose or lactulose
- Patient fasting
- Ingest the sugar of requested choice
- Breath samples q 15 min x 3-4 hours
- Measure H, CO_2, methane
- Very easy to perform
- Values calculated by machine quickly

HBT testing

- Primary—rapid (first hour esp.) rise
- In H→10 PPM from base and sustained
- Elevated (5 PPM) at baseline suggestive
- Of Sugar mal-absorption
- Examine CO2 and Methane as well
- Correlate with hx/presentation
- Common: bacterial overgrowth (BOG)
- Rx of choice: rifaximin (Xifaxin)

Other Motility Testing

- Gastric
- Small Bowel
- Colonic
- Biliary
- Smart Pill
- ANS—full or HRV
- Full Thickness Bx
- Barostat

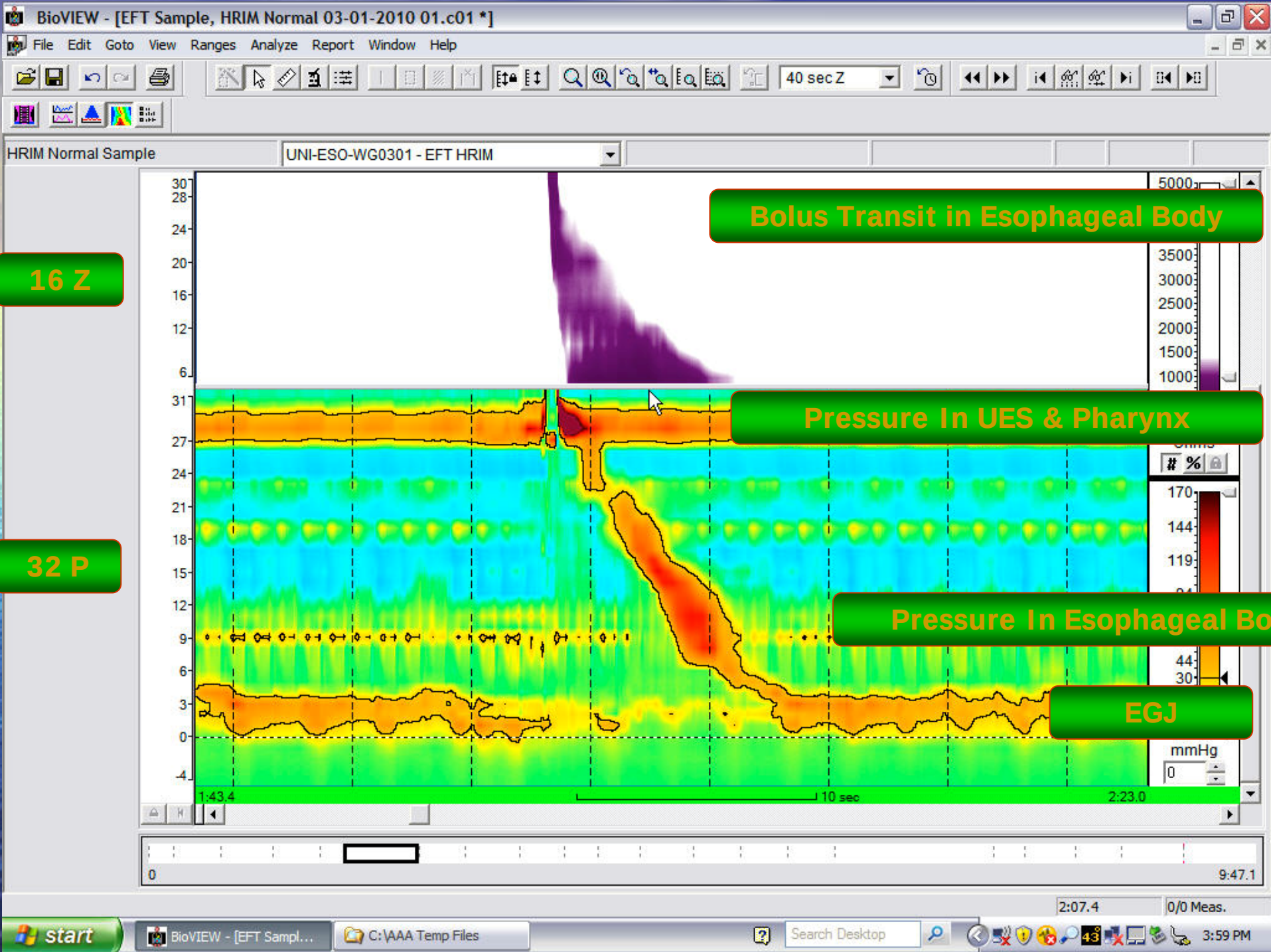
Other Testing--

- Will discuss Gastric with Gp talk
- Rest beyond the scope of most labs
- Have been doing all except barostat here
- UMC has equipment and technicians
- Easy to learn
- Limited time needed
- Reasonable re-imbursement for hosp. and MD

HRiM®

High Resolution Impedance Manometry

HRiM^2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The Significance of Bolus Transit

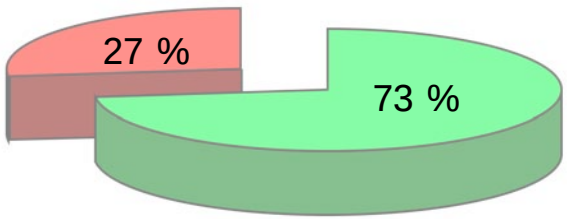
- Bolus transit is the single most important parameter for assessing dysphagia and qualifying patients prior to anti-reflux surgery ...***information that you cannot get with manometry alone***

- Combined impedance/manometry clarifies which patients with manometric abnormalities actually have esophageal function disorders

Bolus Transit Patient Data

Normal Manometry Patients

N=576



Dysphagia Patients

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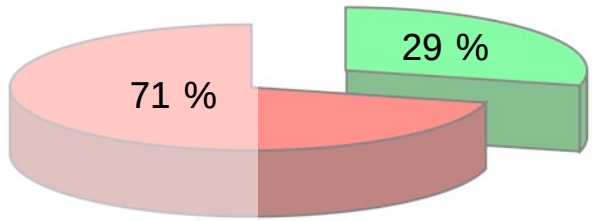


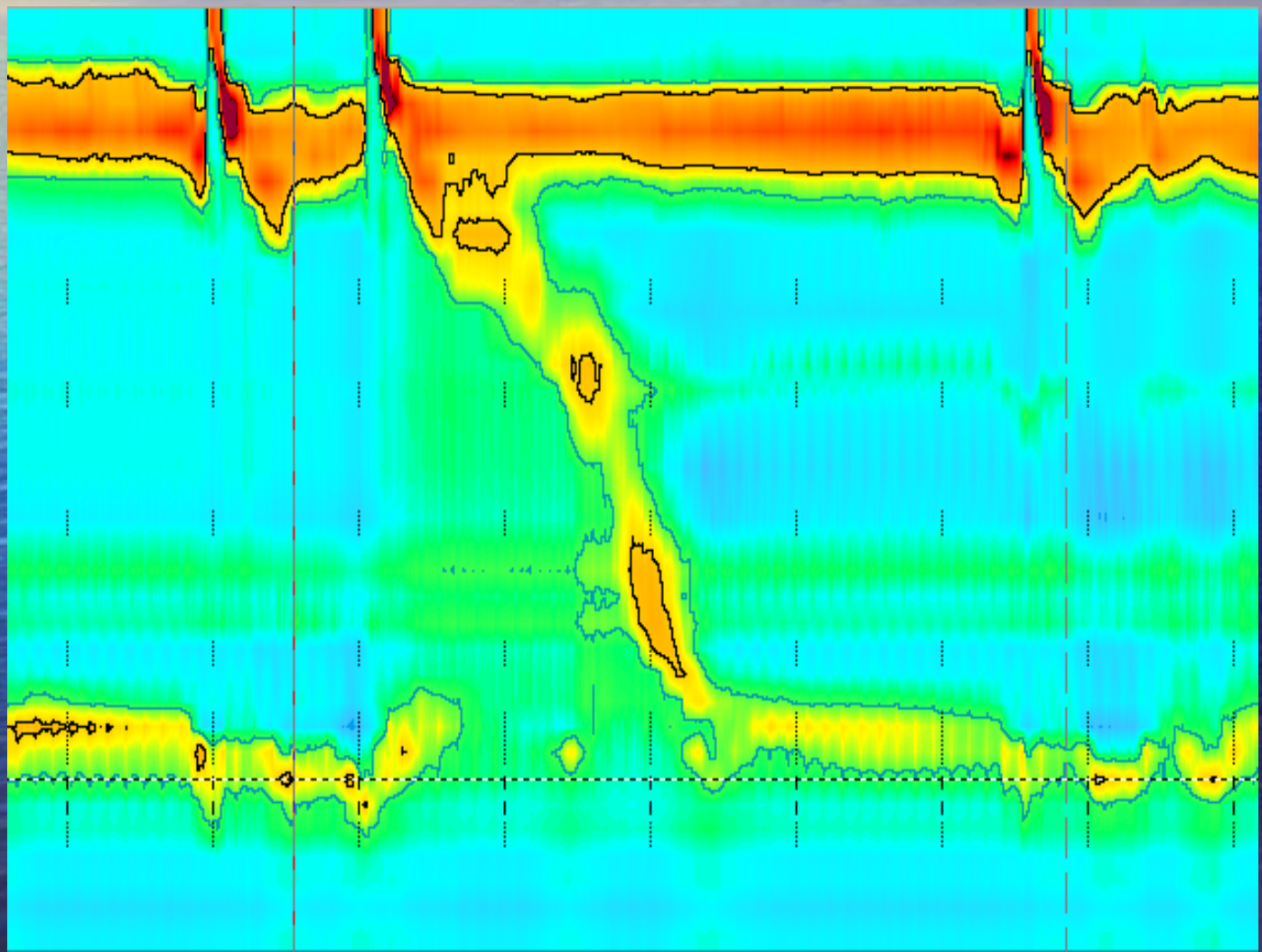
Normal Bolus Transit

Abnormal Bolus Transit

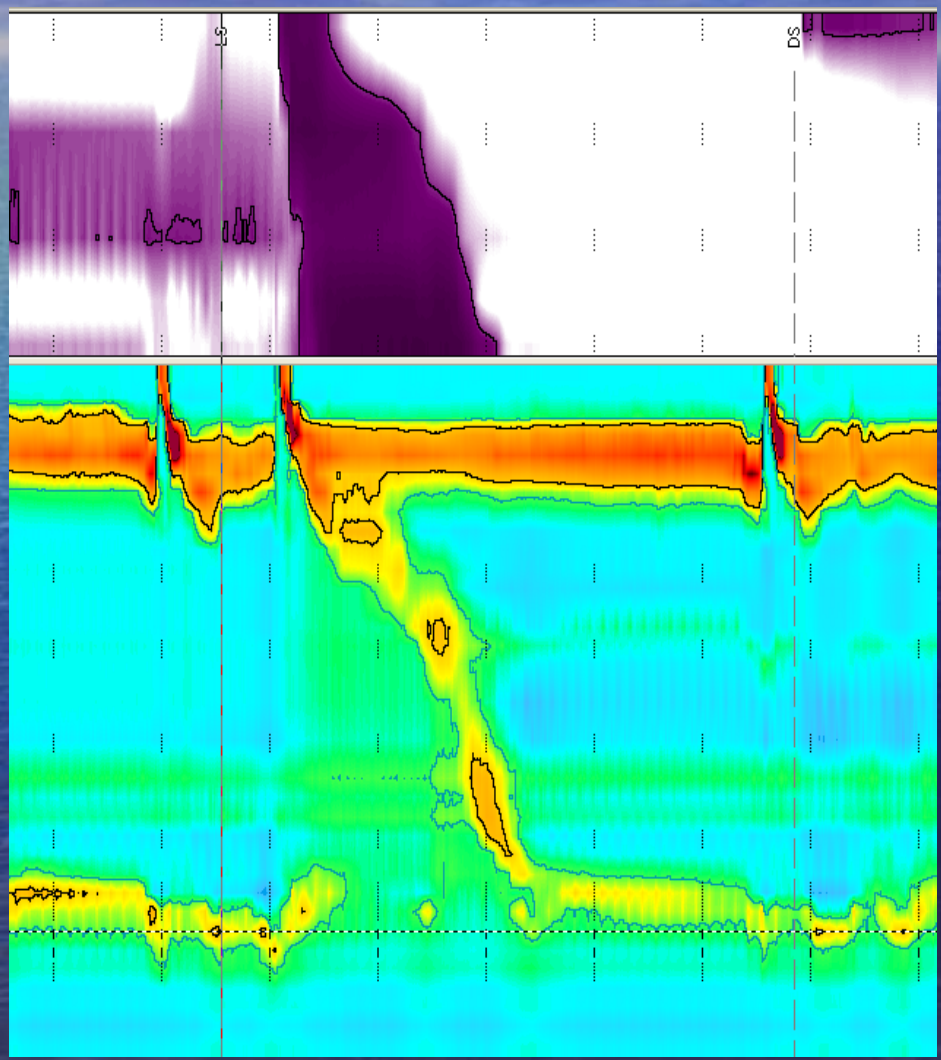
Dysphagia Patients Have Significantly Higher Abnormal Bolus Transit

Impedance Detected Abnormal Bolus Transit in Patients with Normal Esophageal Manometry. Sensitive Indicator of Esophageal Functional Abnormality?; Koya et al; Diseases of the Esophagus (2008) 21, 563–569

Abnormal Manometry...

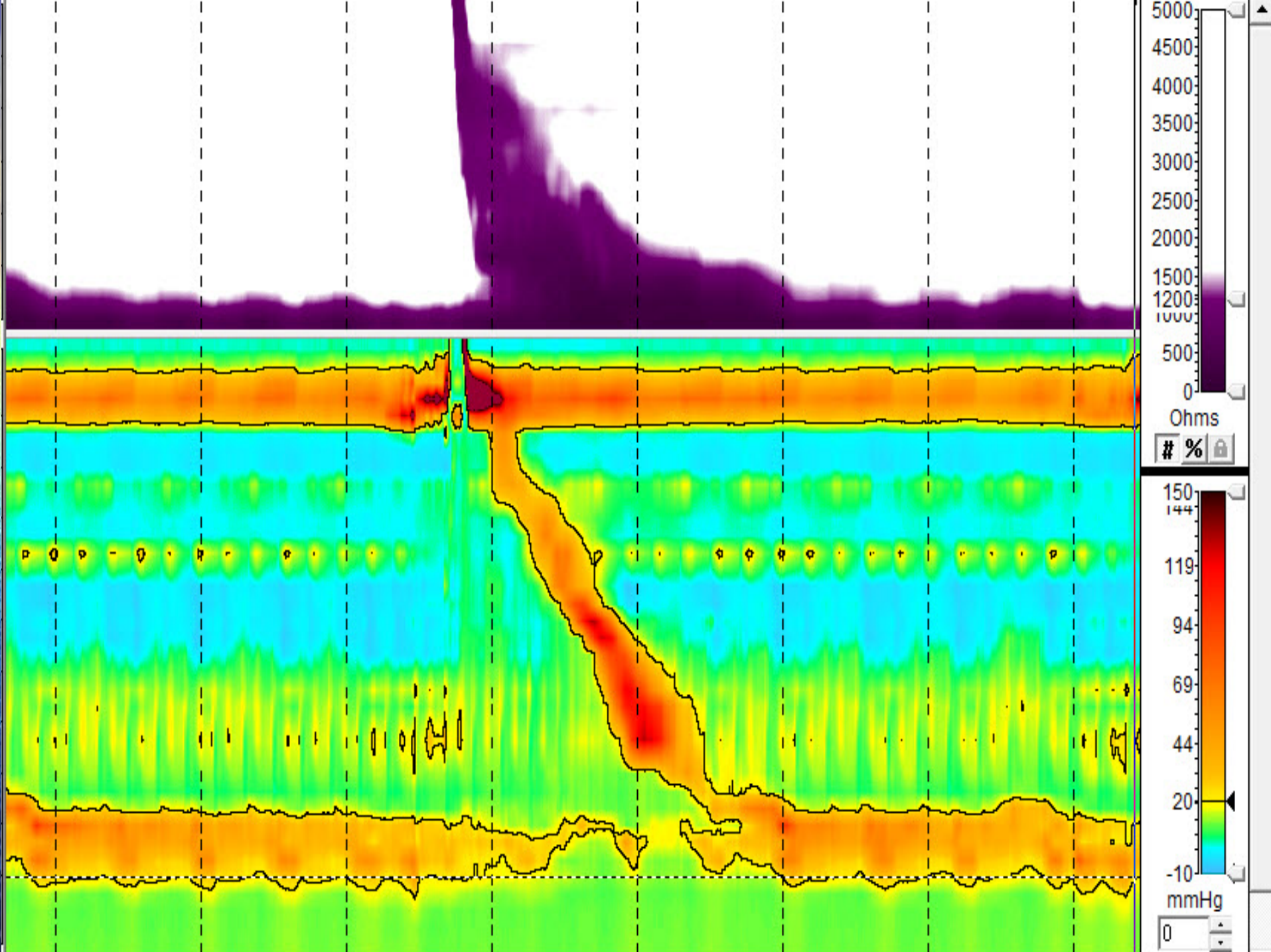


Abnormal Manometry/Normal Bolus Transit



HRiM^2 Clinical Examples


NORMAL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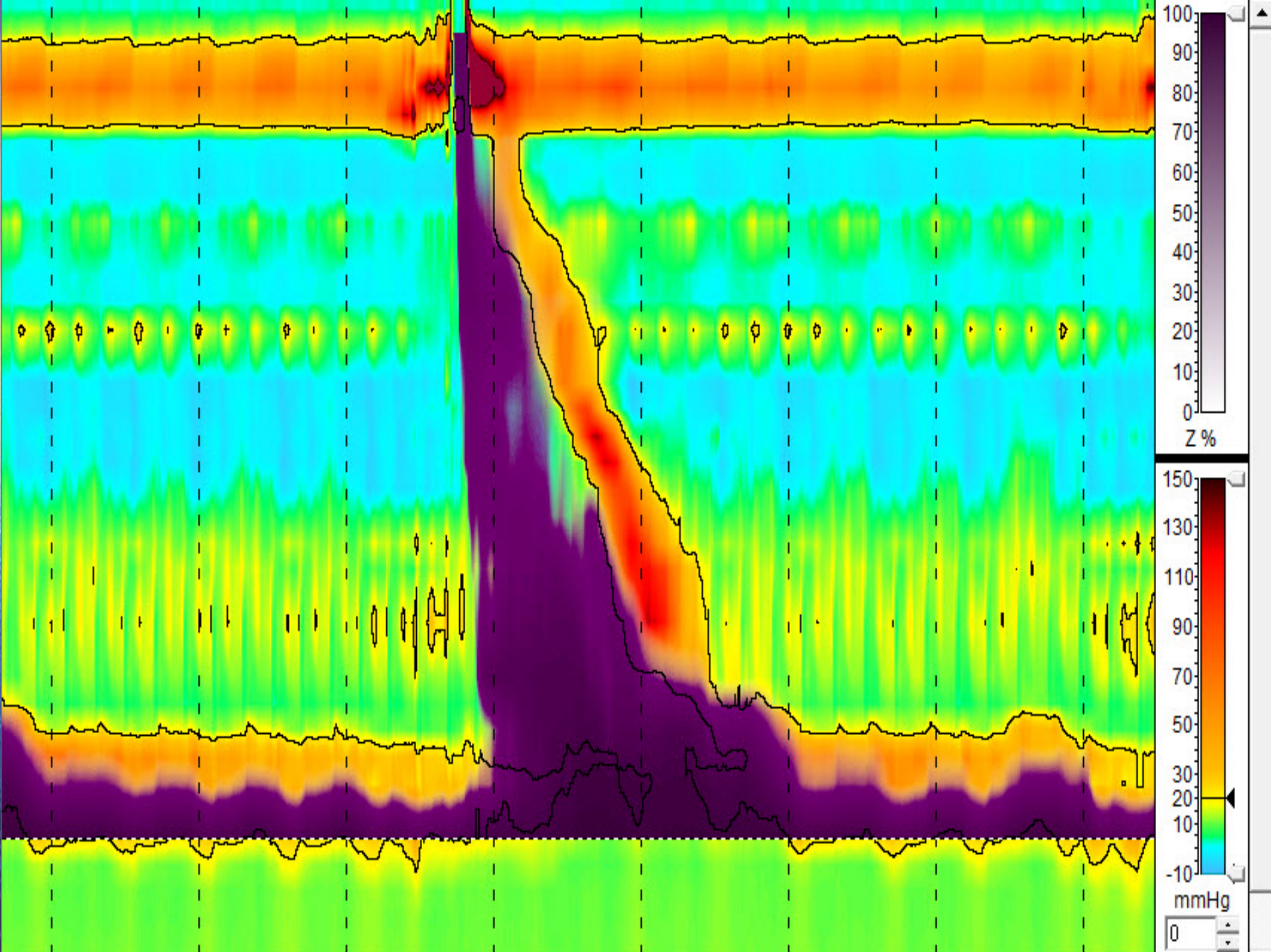
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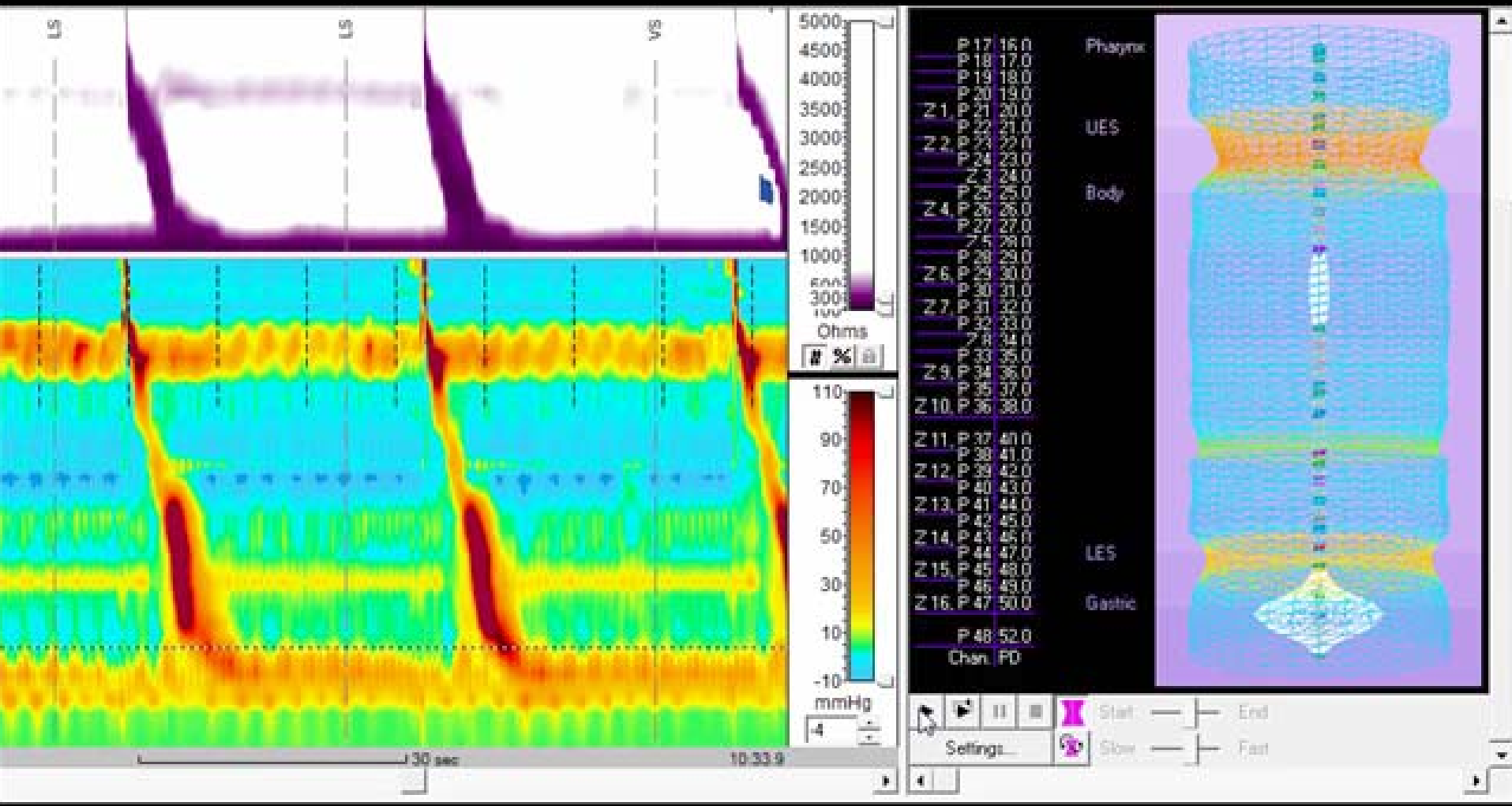
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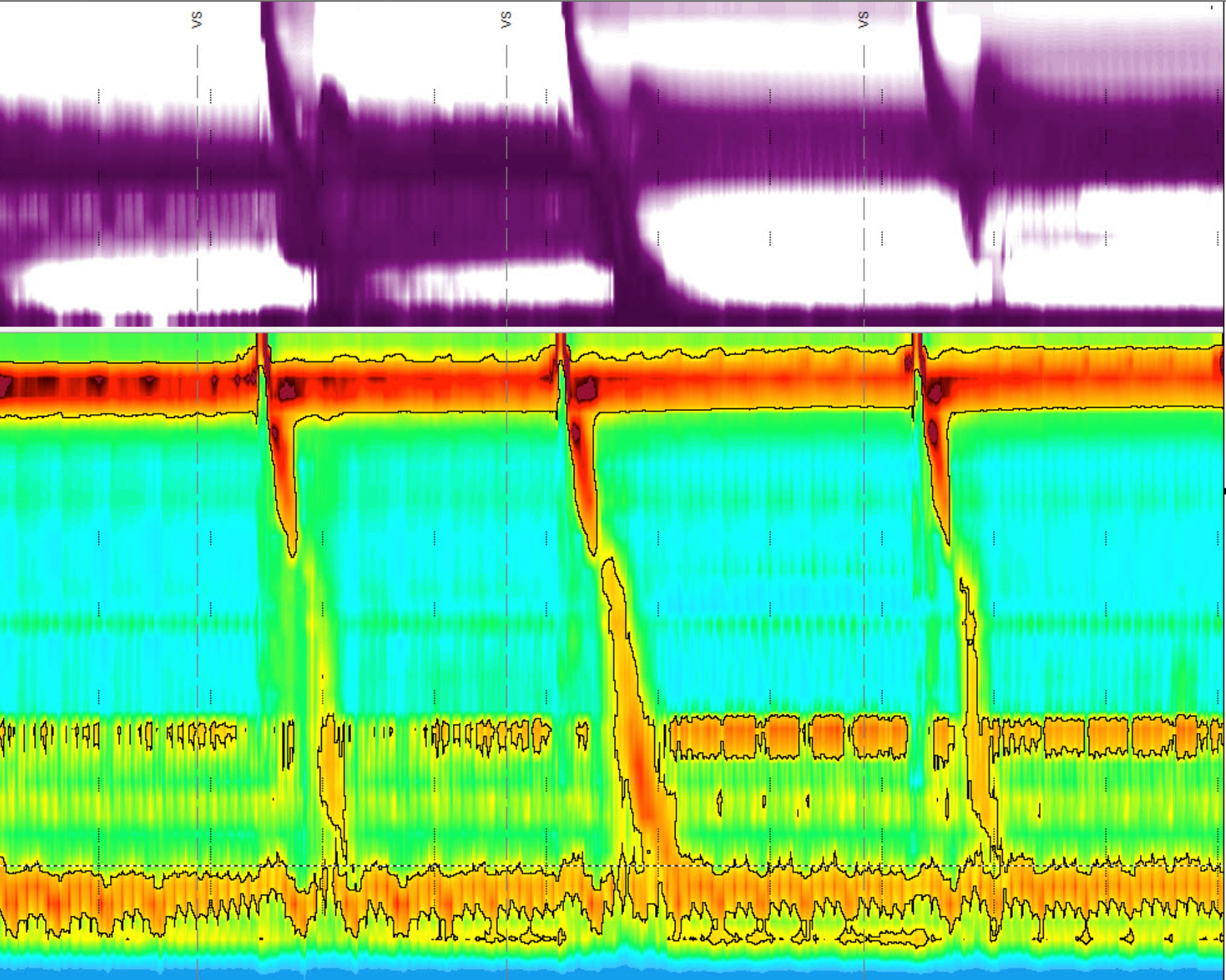
WEAK PERISTALSIS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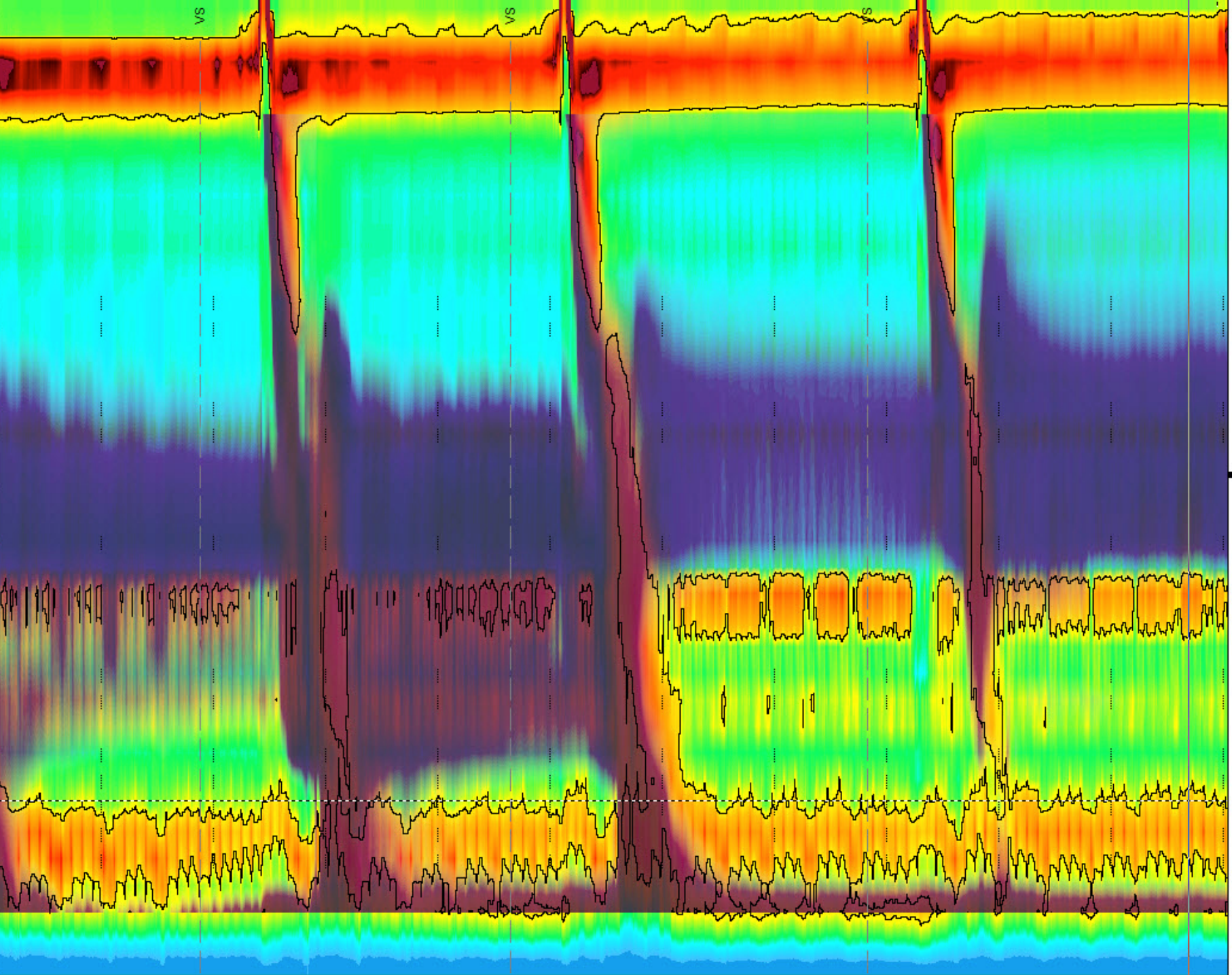
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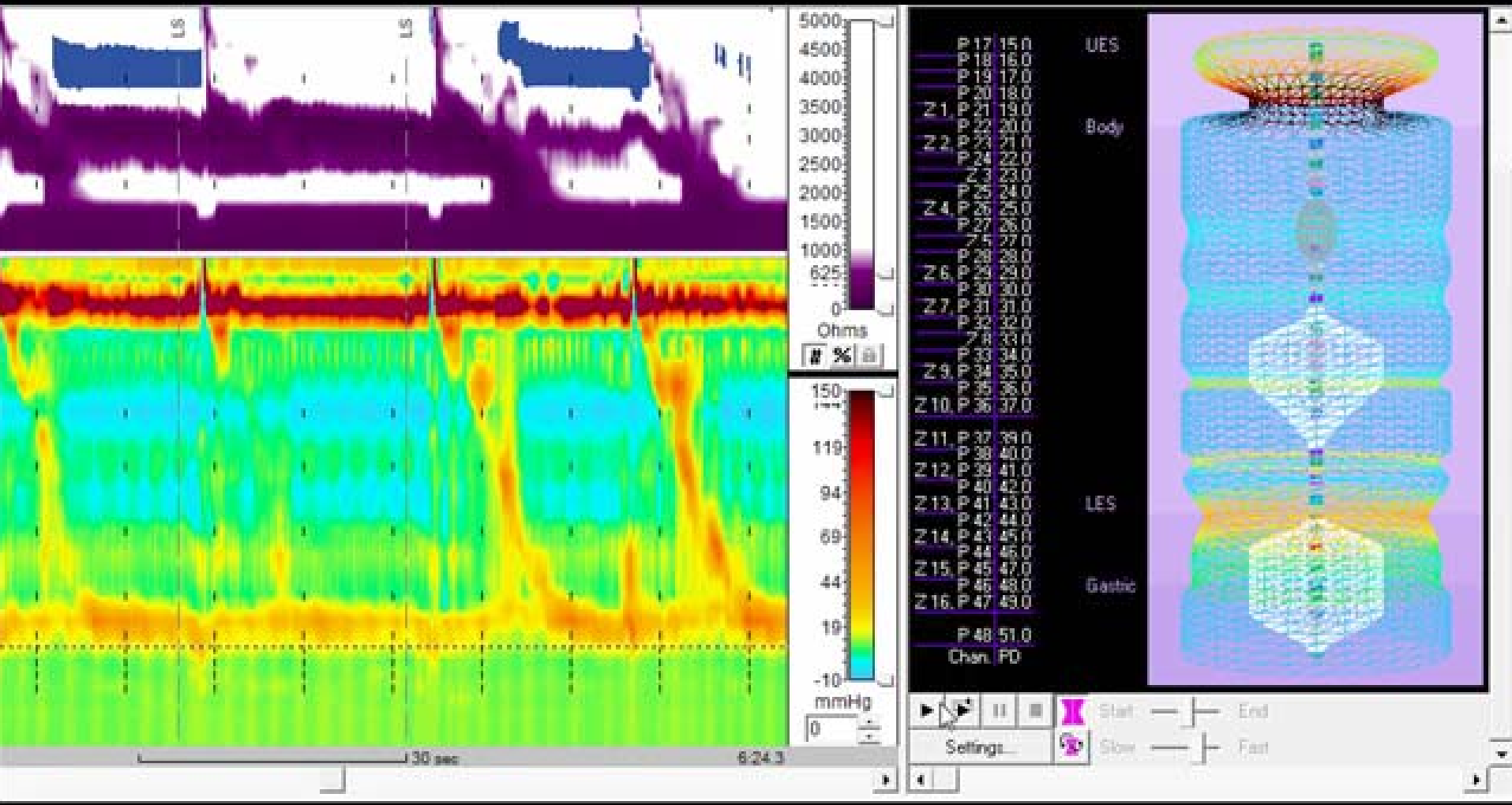
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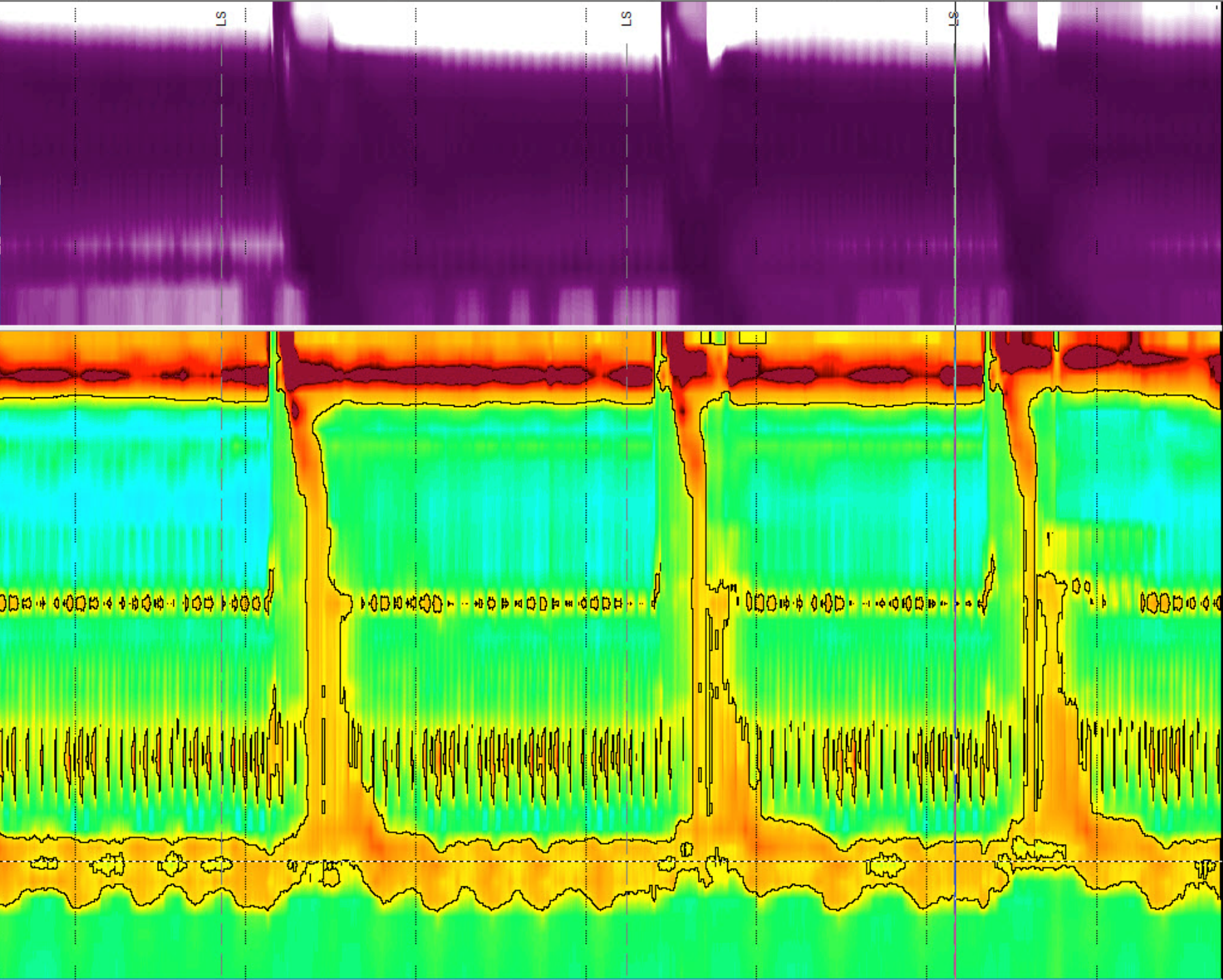
ACHALASIA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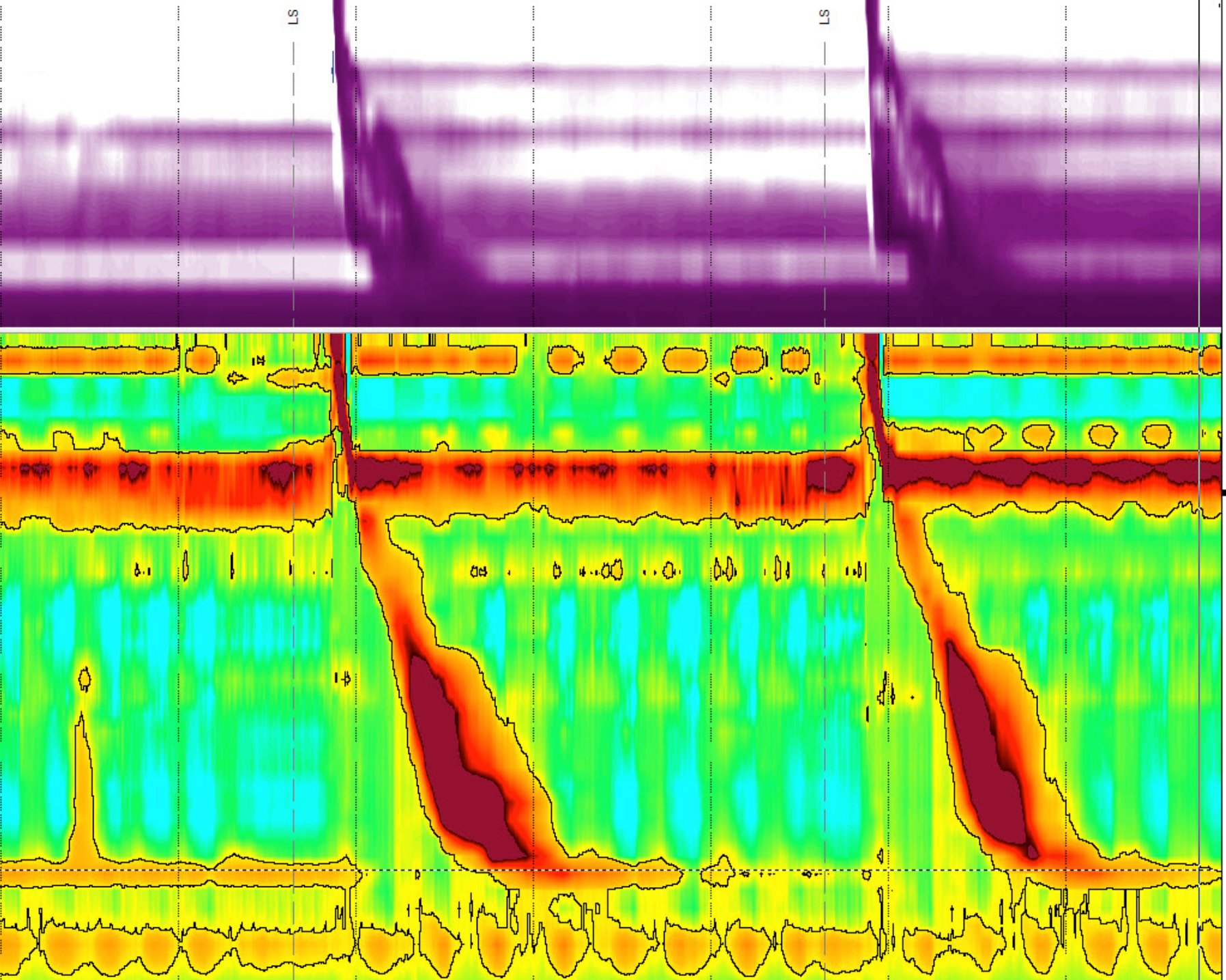
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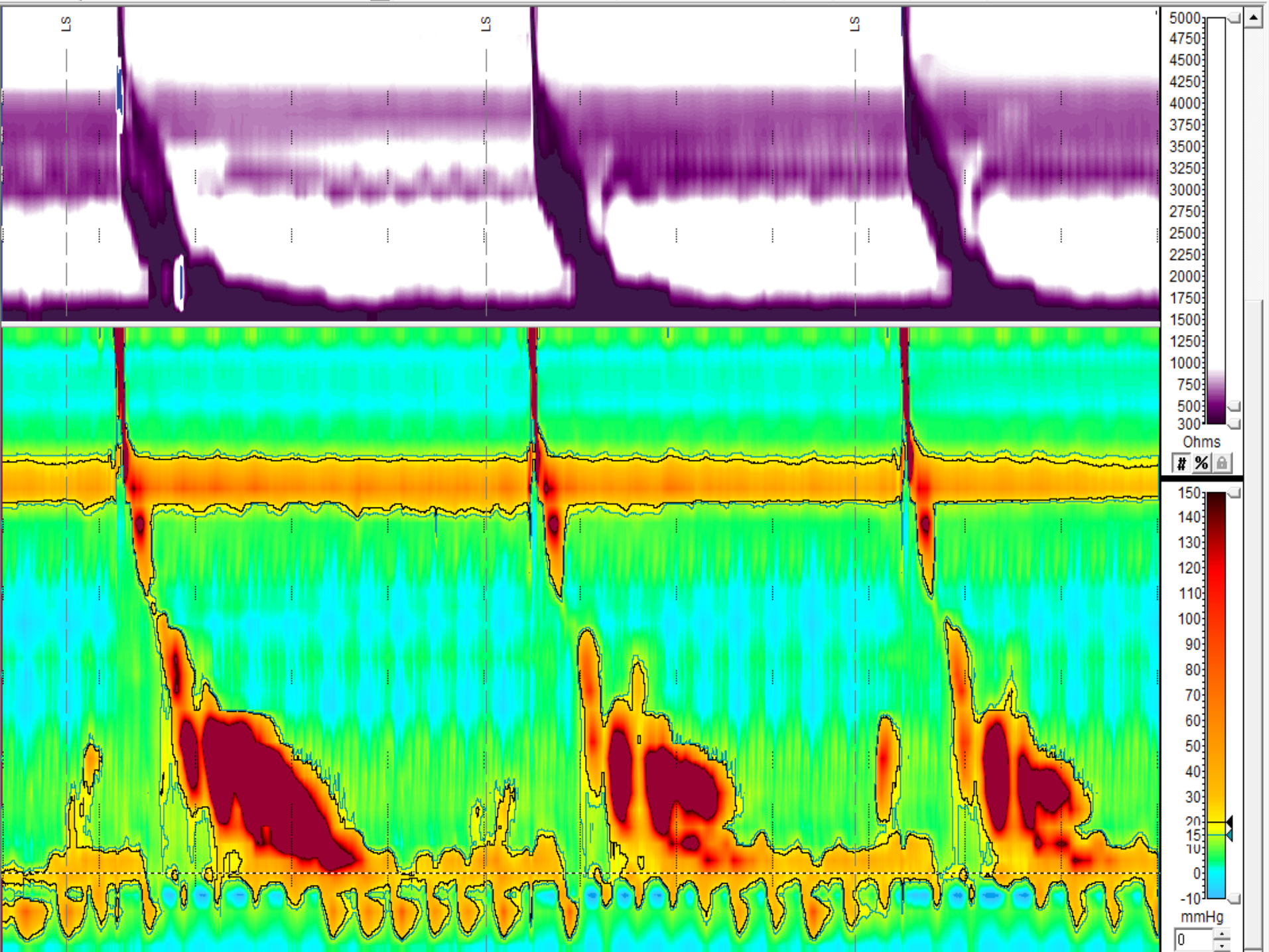
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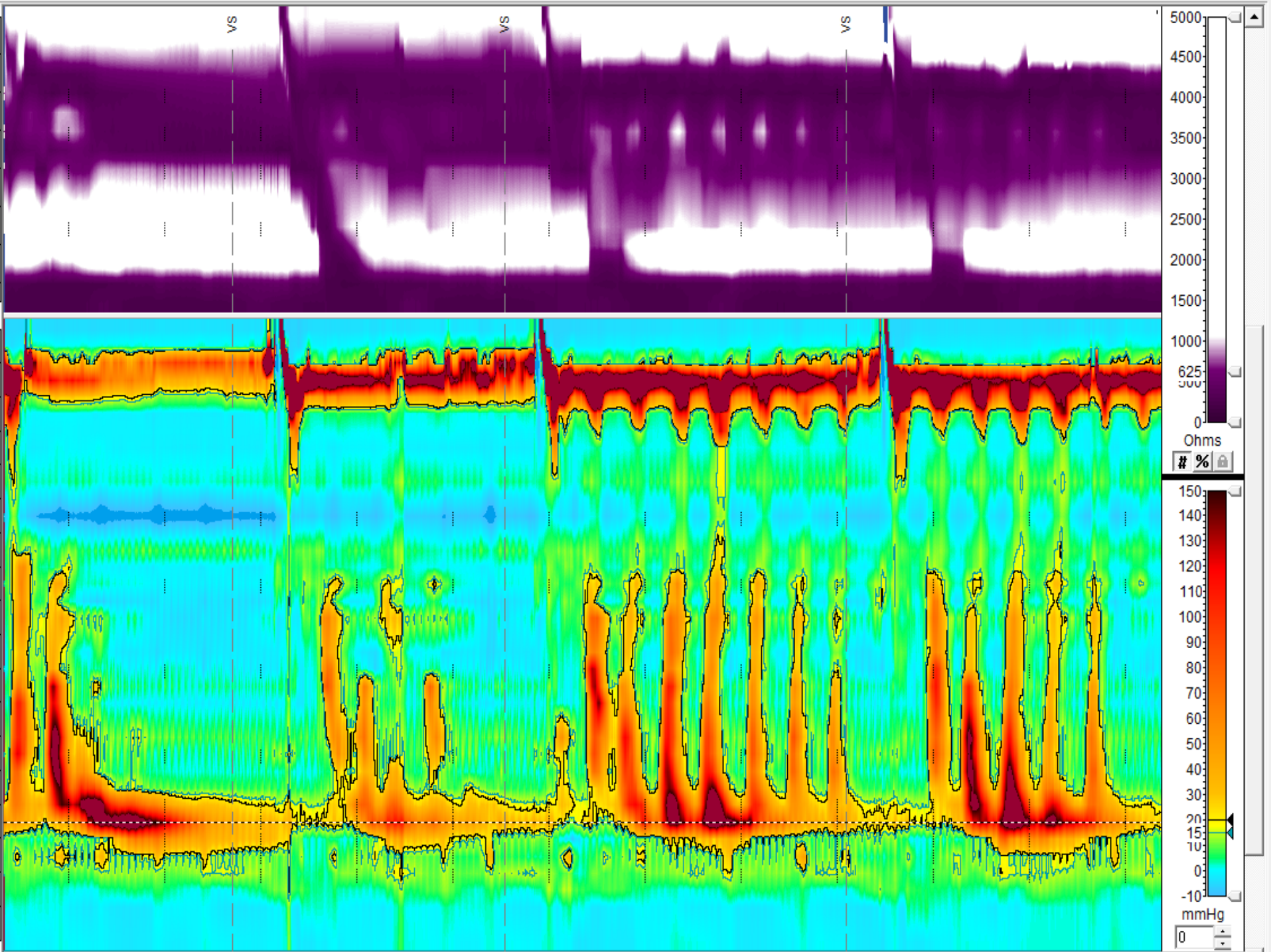
DISTAL ESOPHAGEAL SPASM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Specific Patients Seen on Call

- In Patients with Acute Problems
- In Patients Post Perm GES
- In/Out Patients Post Temp GES
- Out patients in ER—ours or elsewhere
- Patients Calling in with Motility Issues
- Patients wanting appointment, refills or admission

GI Fellow Times for Motility/IBD

- New this year
- Goals are to get comfortable with:
- Patient presentation/evaluation
- Patient testing
- GES and other procedures
- Follow up protocols.
- What will be on exams/practice

What You Need: Boards/Practice

- GI Motility Disorders:
- Know pathology/pathophysiology
- Know basic management
- Know common testing
- Know evolving therapies
- Know that most is common sense

GI Motility Clinic

- 3 Frazier
- 502-540-1420
- Share Point: GI Checkout-- lists
- Share Point: GI Motility—site
- Always welcome—user friendlly
- Conference room
- Free Coffee/tea/water!