BIOFEEDBACK THERAPY IN OBSTRUCTED DEFECATION

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INTRODUCTION

- Pelvic floor is complex system, with passive and active components that :
  - Provide pelvic support
  - Maintain continence
  - Coordinate relaxation during urination and defecation

INTRODUCTION

- Normal defecation requires a series of integrated actions, starting with relaxation of the puborectalis muscles, descent of the pelvic floor with straightening of the anorectal angle, inhibition of segmental colonic peristalsis, contraction of the abdominal wall muscles and finally relaxation of the external anal sphincter with expulsion of feces

CONSTIPATION

- constipation is a common symptom complex that may be classified as slow-transit constipation, obstructed defecation syndrome (ODS), or mixed type

CONSTIPATION

- Obstructed defecation syndrome :
  - It is best defined as normal desire to defecate but inability to satisfactorily evacuate rectum.
  - In other words, it is a pathological condition due to a variety of causes and is characterized by an impaired expulsion of the bolus after calling to defecate
  - It falls under more general term “constipation.”
- ODS is attributed to anatomic changes (rectocele, intussusception, mucosal prolapse, and perineal descent) and/or functional disorders (paradoxical contraction or inadequate relaxation of the pelvic floor muscles during attempted defecation/anismus)

CONSTIPATION

- Anismus is used synonymously in the literature with various terms, including puborectalis dyssynergia, spastic pelvic floor syndrome, and dyssynergic defecation
- Depending on the criteria used for diagnosis, anismus is estimated to account for 15% to 50% of cases of chronic constipation

ROME IV CRITERIA FOR DIAGNOSIS OF CONSTIPATION

1-patient must have experienced at least two of the following symptoms over the preceding three months:

- **Fewer than three spontaneous bowel movements per week**
- **Straining for more than 25% of defecation attempts**
- **Lumpy or hard stools for at least 25% of defecation attempts**
- **Sensation of anorectal obstruction or blockage for at least 25% of defecation attempts**
- **Sensation of incomplete defecation for at least 25% of defecation attempts**
- **Manual maneuvering required to defecate for at least 25% of defecation attempts**

2. Absence of loose stools without laxatives.

3. Inadequate criteria to diagnose constipation-predominant irritable bowel syndrome.

BIOFEEDBACK

"Biofeedback is a form of self-regulation"

It is a complementary and alternative medicine. It provides for patients the ability to monitor previously unperceivable parameters and to eventually develop control over them through training.

- The efficacy of anorectal biofeedback therapy (BFT) in constipation was first reported in 1987 (**Bleijenberg and Kuijpers, 1987).**
- The symptomatic improvement rate has varied between 44% up to 100% in several uncontrolled clinical trials (**Rao, 2011).**
- Biofeedback interventions for *Pelvic floor dyssnergia* are directed at teaching patients to relax their pelvic floor muscles while simultaneously applying a downward intra-abdominal pressure to generate propulsive force (Valsalva maneuver).

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- in the case of ODS it entails either visualization of anorectal and abdominal muscle activity with manometry or electromyography in order to help the patient increase intra-abdominal pressure and relax the anal sphincter musculature during defecation.
- Due to its proven efficacy in ODS in several randomized trials—showing it to be more effective than sham feedback or medical therapy with laxatives and benzodiazepines—it is recommended by several guidelines for the treatment of chronic constipation as a frst-line treatment. Sustained symptom improvement can be achieved in more than 70% of patients

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Who are Eligible ?

- Symptoms of Functional Constipation (Rome III)
- At least 2 criteria must be fulfilled:

✓ Dyssynergic Defecation-Types I, II, or III

✓ Failure/Difficulty Expelling Balloon (> 1minute)

✓ Prolonged colonic transit (> 20% marker retention)

✓ Inability to Expel Barium Paste (>50% retention)

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Goals of Therapy :

A) Teach Diaphragmatic breathing exercise

B) Teach anal sphincter & pelvic floor relaxation

C) Improve Rectal Sensation

D) Eliminate Sensory Delay

E) Improve Recto-anal Coordination

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Advantages:

- Safe and Effective
- Painless And Well Tolerated
- Inexpensive

Disadvantages:

- Not Widely Available
- Learning Curve & Lack of Trained Personnel
- Motivated patient/Therapist
- Need user friendly equipment

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- **Patient Preparation**

- Similar to Anorectal manometry
- Usually no specific prep required
- No diet or drug restrictions
- No sedation
- Place patient on Left lateral for probe insertion and rectal exam
- If patient has stool may require an enema
- Cognition/Vision/motivation important

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Techniques of Biofeedback Therapy • Audio/Visual/Verbal Feedback (Manometry or EMG) • Diaphragmatic Breathing • Anal Relaxation • Condition Sensory Threshold • Recto - anal Coordination • Simulated Defecation Test • Feedback Withdrawal

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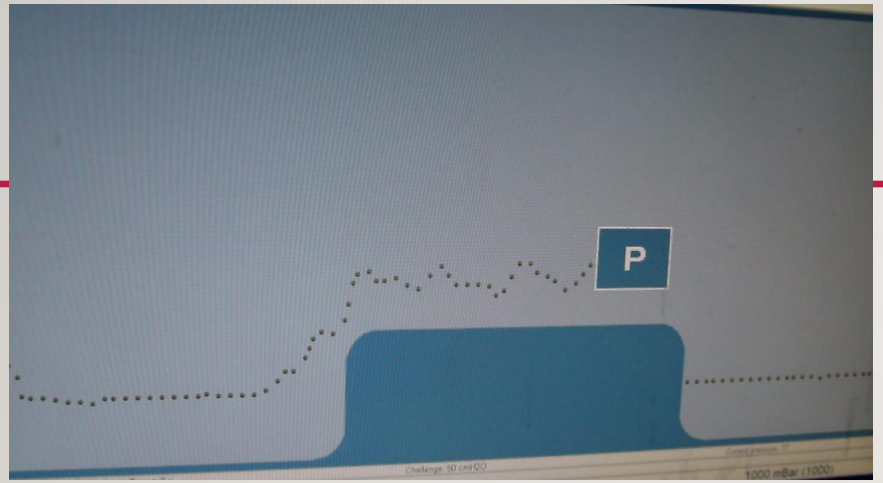
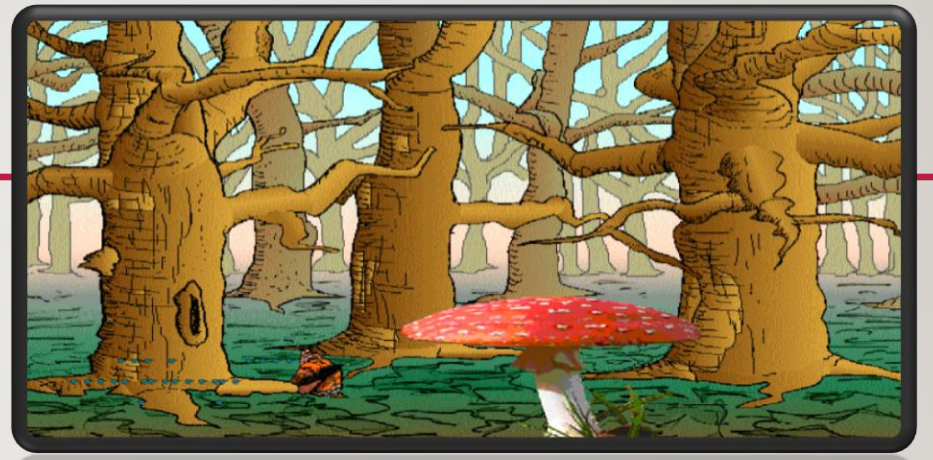
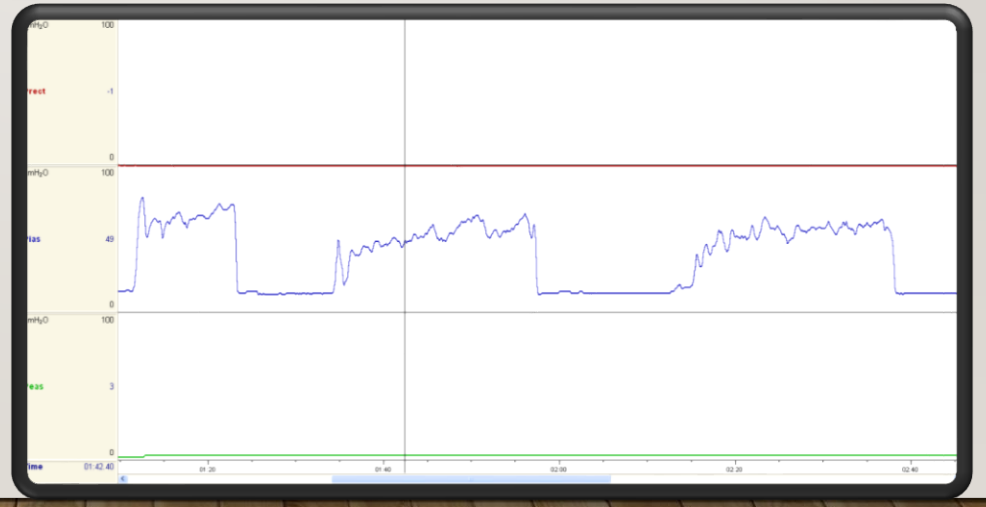
- **Office Biofeedback Therapy - Equipment** • Flexible Catheter: • 2 Pressure Sensors in Anal Canal • Rectal Balloon • Pressure Sensor in Rectum • Balloon or EMG Device • Amplifier/Recorder • Home Devices Courtesy of Rao SS

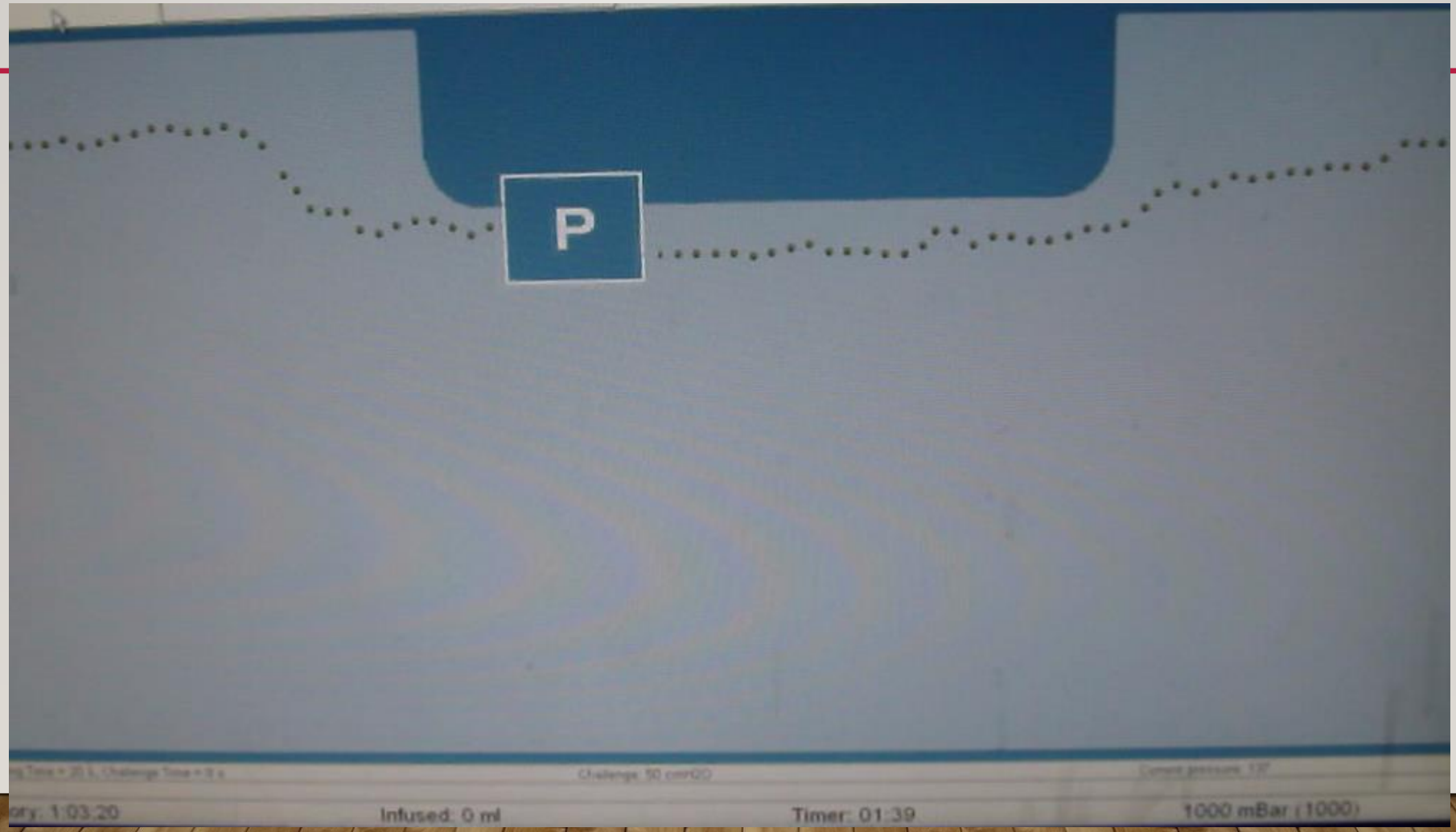
Animation styles:







In constipated patients:



BIOFEEDBACK

series of studies from the St. Mark's group consistently cast doubts on whether biofeedback has specific value in the treatment of functional defecation disorders [11, 17, 18, 32]. These investigators reported similar efficacy of biofeedback treatment in slow transit constipation and in functional defecation disorders suggesting a potential influence of retraining on the autonomic innervation of the colon [11, 17, 18, 32]. In addition, biofeedback was reportedly no more effective than simpler bowel retraining measures in constipation not responsive to standard care [11]

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- Major drawbacks in assessing literature were small sample size, lack of any control group, poor standardization in therapeutic protocols, inclusion criteria, and outcome measures [30].
- However, the majority of uncontrolled studies in constipated adults reported a favorable outcome in about two thirds of patients without reporting side effects [9, 30]

Table 1
Summary of the randomized controlled trials of biofeedback therapy for dyssynergic defecation

	Chiarioni et al[71]	Rao et al[68]	Chiarioni et al[67]	Heymen et al[69]
Trial design	Biofeedback versus polyethylene glycol, 14.6 g	Biofeedback versus standard versus sham biofeedback	Biofeedback for slow transit versus dyssynergia	Biofeedback versus diazepam, 5 mg, versus placebo
Subjects and randomization	104 women 54 biofeedback 55 polyethylene glycol	77 (69 women) 1:1:1 distribution	52 (49 women) 34 dyssynergia 12 slow transit 6 mixed	84 (71 women) 30 biofeedback 30 diazepam 24 placebo
Duration and number of biofeedback sessions	3 months and 1 year, 5 weekly, 30-minute training sessions performed by physician investigator	3 months, biweekly, 1 hour, maximum of six sessions over 3 months, performed by biofeedback nurse therapist	Five weekly 30-minute training sessions, performed by physician investigator	Six biweekly, 1-hour sessions
Primary outcomes	Global improvement of symptoms Worse = 0 No improvement = 1 Mild = 2 Fair = 3 Major improvement = 4	1. Presence of dyssynergia 2. Balloon expulsion time 3. Number of complete spontaneous bowel movements 4. Global satisfaction	Symptom improvement None = 1 Mild = 2 Fair = 3 Major = 4	Global symptom relief
Dyssynergia corrected or symptoms improved	79.6% reported major improvement at 6 and 12 months 81.5% reported major improvement at 24 months	Dyssynergia corrected at 3 months in 79% with biofeedback versus 4% sham and 6% in standard group; CSBM = biofeedback group versus sham or standard, $P < .05$	71% with dyssynergia and 8% with slow transit alone reported fair improvement in symptoms	70% improved with biofeedback compared with 38% with placebo and 30% with diazepam
Conclusions	Biofeedback was superior to laxatives	Biofeedback was superior to sham feedback and standard therapy	Biofeedback benefits dyssynergia and not slow transit constipation	Biofeedback is superior to placebo and diazepam

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- Efficacy of biofeedback therapy The symptomatic improvement rate has varied between 44% and 100% in several uncontrolled clinical trials. When interpreting the outcome of these studies, however, one should exercise caution because the end point for a successful treatment has been poorly defined, and the duration of follow-up and the selection of patients has been quite variable. In the last few years, however, several randomized controlled trials of adults with dyssynergic defecation have been reported and are summarized in Table 1.

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- There are significant methodologic differences between the studies and in the recruitment criteria and in the end points and outcomes. All of these studies have concluded, however, that biofeedback therapy is superior to controlled treatment approaches, such as diet, exercise, and laxatives,68 or use of polyethylene glycol, diazepam, or placebo, balloon defecation therapy, or sham feedback therapy

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- The literature supports the safety profile of biofeedback treatment of constipation not responsive to standard care. Retraining is the safest therapy currently available for refractory constipation due to functional defecation disorders.

(G. Chiarioni 2016)

Thank you