W32: Pelvic floor defecatory dysfunction: Management or cure?

Workshop Chair: Paula Igualada-Martinez, United Kingdom
15 September 2017 09:30 - 12:30

Start	End	Topic	Speakers
09:30	09:35	Introduction to the Workshop	Paula Igualada-Martinez
09:35	09:50	Pathophysiology of PFDD	Alexis Schizas
09:50	10:05	Evaluation and Imaging of PFDD	Alison Hainsworth
10:05	10:20	PFDD in Urogynaecology and Urology Clinics	Heidi Wendell Brown
10:20	10:35	Psychological evaluation of patients with PFDD	Anton Emmanuel
10:35	10:50	Pharmacological treatment of PFDD	Anton Emmanuel
10:50	11:00	Surgical treatment of PFDD	Alexis Schizas
11:00	11:30	Break	None
11:30	11:50	Biofeedback in patients with PFDD	Paula Igualada-Martinez
11:50	12:25	Hands on Training of Rectal Irrigation	Carlene Igbedioh/ Paula Igualada-Martinez
12:25	12:30	Discussion	All

Speaker Powerpoint Slides

Please note that where authorised by the speaker all PowerPoint slides presented at the workshop will be made available after the meeting via the ICS website www.ics.org/2017/programme Please do not film or photograph the slides during the workshop as this is distracting for the speakers.

Aims of Workshop

This workshop will provide an overview of the pathophysiology, evaluation and both conservative (including a practical element) and surgical management of Pelvic floor defecatory dysfunction. This workshop will also cover psychological symptoms and its management in this group of patients as well as how to identify and manage them when presenting to the urogynaecology and/or urology clinics with concomitant pelvic floor symptoms. These disorders affect both women and men and necessitate a multidisciplinary team approach. It is also an opportunity to raise awareness of bowel evacuation difficulties and its relationship with urinary and sexual symptoms in a society that predominantly focuses on urinary incontinence.

Learning Objectives

Aim: The aim of this course is to learn how to evaluate and manage pelvic floor defecatory dysfunction (PFDD).
The objectives for this workshop are:
- To understand the pathophysiology of pelvic floor defecatory dysfunction (PFDD)
- To recognise and classify types of PFDD
- To learn how to evaluate PFDD
- To understand the role of imaging in patients with PFDD
- To understand the impact of PFDD in urinary and sexual function and what to do if patients present to a Urogynaeocology or Urology clinic and when to liaise with the Colorectal team
- To understand the role of biofeedback in the management of PFDD and the use of Rectal Irrigation as part of the management of PFDD
- To understand the pharmacological management of PFDD
- To understand the surgical management of PFDD
- To understand the importance of psychological assessment in the management of PFDD

Learning Outcomes

At the end of the workshop the participants should be able to:
- Identify Pelvic floor disorders that affect defecation
- Understand the assessment of pelvic floor defecatory dysfunction and the necessity before embarking onto any treatment
- Urologists and Urogynaecologists need to be aware of PFDD when these patients present to their clinics with urinary and/or sexual symptoms
- Identify Biofeedback as first line management in patients with PFDD and be able to provide basic advice
- Able to understands the principle of Rectal Irrigation use in patients with PFDD
- Understand the pharmacological treatment of PFDD and how to escalate the different medication of PFDD
- Understand that surgery should be considered for management of PFDD but only when the underlying pathophysiological dysfunction has been
corrected
- Understand the impact of mental health and the relationship to bowel dysfunction and when to refer to a specialist

- At the end of the workshop, the speakers will do a quiz where the participants should be able to demonstrate the newly acquired knowledge

Target Audience
Colorectal Surgeons, Urogynaecologists, Urologists, Nurses, Physiotherapists, Clinical Psychologists

Advanced/Basic
Advanced

Conditions for Learning
This workshop is restricted to 50 delegates due to the practical element.

Suggested Learning before Workshop Attendance
- Review of the anatomy and physiology of the pelvic floor complex, including the pelvic floor muscles, the external and internal anal sphincters and the endopelvic fascia
- Review of the normal bowel function and defecation dynamics

Speaker 1 (Paula Igualada- Martinez)	**Introduction to the Workshop** Defecatory dysfunction of the pelvic floor includes both mechanical and functional anorectal disorders. This workshop will not only evaluate the most up-to-date evidence regarding the recognition of pelvic floor defecatory dysfunction (PFDD), the assessment and treatment of PFDD, but the importance of collaborative work amongst the multidisciplinary team. We hope that you will find this workshop stimulating and that it will add to your clinical practice ensuring a safe and effective assessment and treatment of this group of patients. **Biofeedback** Biofeedback should be the first line management for pelvic floor defecatory dysfunction due to the minimal risk and the higher rate of success with completion of therapy. Biofeedback is based on behavior modification by using "operant conditioning techniques" to restore a normal pattern of defecation. The government principle is that any behavior when reinforced repeatedly can be learned and perfected. Biofeedback retraining usually involves correcting the underlying pelvic floor dyssynergia by teaching patient to defecate effectively using bracing of the abdominal wall muscles and effective relaxation of the pelvic floor muscles with or without attempts to improve rectal sensory perception. There are three main methods of monitoring the function of the anus and providing biofeedback to patients. These methods include electromyography (EMG) biofeedback, manometry biofeedback and balloon sensory training. During biofeedback sessions patients may also be given instruction on gut, rectal and pelvic floor muscle anatomy and function, as well as behavioral advice about frequency and length of toilet visits, posture on the toilet, increasing fiber and fluid intake and physical activity. Pelvic floor muscle rehabilitation has become also an integral part of the treatment of these patients due to the higher incidence of other pelvic floor disorders associated with PFDD such as urinary incontinence and pelvic organ prolapse. As an adjunct to Biofeedback, rectal irrigation has become rapidly an effective intervention in nearly half of the patients with pelvic floor defecatory dysfunction. Although there is some debate in the literature about the degree of effectiveness of biofeedback, success rates range between 30 and 90% and preferred to by patients when compared to chronic laxative use. Poor prognosis of biofeedback includes those patients with eating disorders and untreated mental health disorders and they should be identified during initial evaluation, and referred to a psychologist or psychiatrist. **Take home message:** - Biofeedback and/or conservative measures should be first line management in patients with PFDD - Biofeedback is an established intervention for patients with PFDD that helps 30 to 90% of patients with PFDD

Speaker 2 (Alexis Schizas)	**Pathophysiology of PFDD** PFDD occur in about 18% of the population and have a considerable impact on health costs and quality of life. PFDD encompasses both functional and mechanical causes. Before defaecation occurs the rectum dispense and the somatic sensation leads to a relaxation of the internal anal sphincter and if it is an appropriate time defaecation occurs. If it is not an appropriate time there is voluntary contraction of the external anal sphincter and pelvic floor muscles until the sensation to defecate passes and an appropriate time. In order to defecate the recto-anal angel straightens by squatting and correct defecatory dynamics are required (using the abdominal muscles and diaphragm). Pelvic floor defecatory dysfunction is the difficulty in evacuation of the rectum. It can be classified into several groups: 1. Functional outlet obstruction (Inefficient relaxation of the anal sphincters, Internal anal sphincter, External anal sphincter and pelvic floor muscles, Neurological causes) 2. Mechanical outlet obstruction (Intrarectal intussusception/rectal prolapse, Enterocoele) 3. Defaecatory force and direction (Rectocoele, Perineal descent, Poor propulsive effort) 4. Colorectal Compliance (Mega rectum, Rectal hyposensitivity, Slow transit) Patients with defecatory difficulties complain of symptoms of straining, feeling of incomplete evacuation, pain, digital assistance during defecation and unsuccessful attempts. They may also send an extended time on the toilet, have decreased bowel frequency; complain of post defecation soiling and fragmented defecation. They often complain of concomitant urinary and/or sexual symptoms. **Surgical management of PFDD** Conservative treatment is the initial treatment for defecatory dysfunction and correct defecatory technique is essential following surgery to prevent recurrence of symptoms and pathology. Surgery can assist in correcting anatomical pathology and several surgical procedures are available. 1. Rectal prolapse surgery: - Transvaginal rectocoele repair and levatoplasty - Ventral mesh rectopexy - Stapled transanal resection of rectum 2. Full thickness rectal prolapse - Perineal procedures – Delorme's/ Altemeier's - Abdominal procedures – ventral mesh rectopexy, posterior mesh rectopexy, resection rectopexy, sutured rectopexy. 3. Intussusception - Ventral mesh rectopexy - Stapled transanal resection of rectum 4. Enterocoele - Transvaginal rectocoele repair, enterocele repair and levatoplasty - Ventral mesh rectopexy Complications of surgery must be fully discussed and all patient's symptoms may not be corrected by surgery. Correcting anatomical abnormalities may not necessarily correct symptoms. Unfortunately, surgery can sometimes make pelvic floor symptoms worse. Often rectal anatomical abnormalities are not found in isolation, patient may often have symptoms and pathology in the middle and anterior pelvic floor compartments. A full pelvic floor assessment is required a combined colorectal/urology/urogynaecology approach may be required to achieve the best results for patients. **Take home message** - A clear understanding of pathology is required to make an appropriate decision with each patient if any surgical options are available and which will be the most appropriate for their symptoms.

Speaker 3(Alison Hainsworth)	**Evaluation and Imaging of Pelvic Floor Defaecatory Dysfunction** Pelvic floor defaecatory dysfunction is often associated with anterior and middle pelvic floor dysfunction and is an 'iceberg' syndrome where occult pathologies coexist and if missed will affect outcomes. Robust assessment is required for optimal treatment planning. There is no gold standard assessment tool but a combination of clinical, physiological and radiological tools are used. *Clinical Assessment* Pelvic floor defaecatory dysfunction includes incomplete evacuation, post defaecatory soiling, faecal urgency and incontinence. These may occur in those with malignancy which must be excluded first. Incomplete evacuation, incontinence, constipation and symptoms attributable to anterior and middle compartmental dysfunction often co-exist and so it is difficult to diagnose pathology based on symptoms alone. The association between symptoms and anatomical abnormalities is not absolute. Treatment aims to reduce the 'bother' of symptoms and therefore a series of standardised questionnaires exist to objectively measure 'bother', quality of life and treatment outcomes. The obstructed defaecation syndrome (ODS) score is the only scoring system designed specifically for use with patients with pure outlet obstruction. Examination includes digital rectal examination and vaginal examination. *Anorectal Physiology* The function of the anal canal and rectum is assessed by a catheter and includes rest and squeeze pressures; vectograms; first, urge and maximal sensation; rectal compliance and balloon evacuation. There is conflicting evidence on the association of rectal compliance with obstructive defaecation. Some demonstrate normal compliance and sensation in all subjects (with/ without a rectocoele) whilst others show reduced rectal compliance and impaired sensation. *Defaecation Proctography* Defaecation proctography is a dynamic investigation of rectal emptying involving the voluntary expulsion of barium paste recorded on cineradiography or fluororadiography. It is regarded as gold standard for the morphological assessment of posterior compartment pelvic floor disorders with the advantages of assessing defaecatory dynamics. It provides structural and functional assessment of; rectocoele, intussusception, rectal prolapse, enterocoele, sigmoidocoele, perineal decent and the anorectal angle along with anismus and evacuation. Pathological findings in asymptomatic volunteers has thrown into question proctographic parameters. *Defaecation MRI* Numerous techniques for MR defaecography are described including the use of closed configuration magnets in the supine position or vertically open configuration magnets in the sitting position. MRI can distinguish between enterocoele, sigmoidocoele and peritoneocoele without additional contrast but supine imaging underestimates pathology and open configuration magnets are inaccessible. *Integrated Total Pelvic Floor Ultrasound (endoanal, transvaginal, transperineal)* Endoanal, transvaginal and transperineal ultrasound are routinely used for anterior and middle compartmental assessment and the integrity of the anal sphincters. Its' use in the assessment of enterocoele, rectocoele, intussusception, rectal prolapse and anismus are being explored. Endoanal ultrasound assesses the integrity of the internal and external sphincters and associated defects, sepsis, obstetric trauma or sphincter thickening. Transperineal ultrasound a high positive predictive value and low negative predictive value for abnormalities compared to defaecation proctography (for example, rectocoele). It may provide a suitable screening tool for symptomatic patients and therefore avoid the need for defaecatory imaging in some patients. **Take home message:** - Physiologic tests such as anorectal manometry and imaging such as Proctography and MRI play a key role in objective diagnosis and may assist in planning treatment for this group of patients.
Speaker 4 (Heidi Brown)	**Pelvic floor defecatory dysfunction: The Urogynecologist's Perspective** The urologist or urogynecologist's approach to defecatory dysfunction is similar to that of the colorectal surgeon but also often includes evaluation and investigation of concomitant urinary symptoms. Complaints of urinary urgency, frequency, or sensation of incomplete bladder emptying often prompt further investigation of bowel symptoms. Our approach to defecatory dysfunction includes: (1) clarification of patient symptoms; (2) consideration of underlying causes; (3)

	recommendation of conservative management as first-line therapy; and (4) pursuit of surgical repair when it is likely to improve symptoms. According to ICS/IUGA terminology, straining to defecate refers to a patient's complaint of the need to make an intensive effort (by abdominal straining or Valsalva) to initiate, maintain, or improve defecation. Feeling of incomplete (bowel) evacuation is the complaint that the rectum does not feel empty after defecation, while diminished rectal sensation refers to diminished or absent sensation in the rectum. Constipation incorporates the Rome II criteria and encompasses complaints that bowel movements are infrequent and/or incomplete and/or there is a need for frequent straining or manual assistance to defecate [2]. Splinting refers to the need to digitally replace vaginal prolapse or otherwise apply manual pressure to the vagina or perineum, while manual evacuation refers to placement of fingers in the rectum to evacuate stool. The pathophysiology of defecatory dysfunction is covered elsewhere in this workshop, but referral to a gastroenterologist may be helpful if you suspect systemic or motility disorders contributing to symptoms. The Pelvic Organ ProlapseQuantification (POP-Q) system [3] is used to quantify support defects in the posterior compartment, which may result in prolapse of the anterior rectal and posterior vaginal wall into the lumen of the vagina ('rectocele,') prolapse of the small bowel into the lumen of the vagina ('enterocele,') or perineal descent (perineum descending greater than or equal to 2 cm below the level of the ischial tuberosities at rest or at straining). Posterior compartment prolapse may be associated with splinting or manual evacuation symptoms, but most studies do not show a correlation between prolapse stage and defecatory symptoms. First line management includes optimization of stool consistency through adjustments in fluid and fiber intake with additional pharmacologic therapy if necessary and referral to pelvic floor physiotherapy for muscle coordination, biofeedback, and behavioural coaching, including toileting behaviours. If symptoms persist following conservative management, surgical intervention is considered. Urogynecologists often approach posterior compartment prolapse with native tissue vaginal posterior repair with or without levator plication, which has success rates for anatomic restoration of 76–98% for traditional posterior colporrhaphy and 56–100% for site-specific repairs. Existing literature does not support the placement of biological or synthetic grafts in the posterior compartment, as they do not improve anatomic and symptomatic outcomes. If underlying concomitant reasons for defecatory dysfunction are not addressed prior to surgical repair, prolapse is likely to recur due to persistent straining. Transanal and transabdominal approaches to correct anatomic defects are more commonly performed by our colleagues in colorectal surgery. **Take home message:** - Many women that present to the Urogynaecology/Urology clinics with urinary symptoms will have concomitant bowel dysfunction so an understanding of investigations, treatment options and when to seek further opinion once simple measures have failed is important. - A multidisciplinary approach including dietetics, physiotherapy, gastroenterology, colorectal surgery, and urogynaecology is preferred to ensure patients receive individualized and appropriate therapy.
Speaker 5 (Anton Emmanuel)	**Psychological evaluation** Patients with functional colorectal problems often have symptoms related to other aspects of pelvic floor function. In addition, they often have non-pelvic co-morbidity in the form of other functional disorders (such as fibromyalgia, chronic back pain). The multiplicity of symptoms, and the nature of symptoms being often related to intimate or taboo functions mean that there is often an associated psychological dimension to be considered. In turn, these psychological symptoms can cause exacerbation of pelvic floor dysfunction. The spectrum of psychological morbidity ranges from low-grade anxiety to full-blown mood disorder. As such it is little surprise that purely focussing on the surgical aspects of management of pelvic dysfunction is likely to result in poor outcomes for the patient. Psychological evaluation is key to optimising treatment outcomes with other modalities, but also key to help explain the complexity of symptoms to patients and validate why they may have emotional complaints alongside the physical. The family drawing test has been used in children and adults to assess cognitive, interpersonal and psychological functioning. It has been investigated in patients with pelvic floor dysfunction and may be an alternative to obtaining a formal psychiatric or psychological opinion. This is a test for somatisation which can also be assessed by the PHQ-15 or the modified for GI patients PHQ-12. In terms of clinic assessment without needing referral to a psychological service, anxiety and depression can be identified by use of the HAD questionnaire and there is an extensive literature of this instrument being used to identify cases as well as reflect progress with therapies.

	Pain questionnaires and maintaining a bowel diary are also helpful assessment tools, which can aid by pointing to possible trigger factors and cyclical patterns. Ultimately there will be a small group of patients who may be suffering with significant psychiatric disease. This includes, but is not limited to, atypical eating disorders. The clinician needs to keep an open mind and keen eye and ear to detect language and features that point to this. It is critical to identify these patients early and not subject them to both intrusive and surgical therapies or to behavioural therapies, which are not likely to succeed and rather defer the patient's access to correct psychiatric therapies. **Pharmacological therapy** Drug therapy of pelvic floor dysfunction mostly relates to managing bowel function. Optimising bowel frequency and consistency is a key component of behavioural or surgical therapies in this patient group. In terms of constipation there is a rational approach to laxatives and rectal therapies that needs to be developed. These are potent drugs and they are not mutually interchangeable. Rather it is important that the clinician understands how to choose the right agent according to the particular symptom profile of the patient. Equally it is important to understand how laxatives may need to be used in terms of regular or as required use in order to get the best effect of these medications. Such an understanding arises from understanding the differing mechanisms of actions of laxatives. Newer generation prokinetic and secretagogue agents have emerged which offer an effective option for a proportion of patients who are refractory to laxatives. For diarrhoea the standard has been to use non-centrally acting opioid agonists in titrated fashion. Tricks of optimising this therapy can help some patients in order to avoid the adverse effects of agents that have adverse brain and dependence effects. New agents are emerging for such patients with diarrhoea, but a key part of the clinical work up of patients is to look for common (and overlooked) co-morbidities, which may be causing diarrhoea (such as bile acid malabsorption, pancreatic insufficiency and coeliac diseases). Finally there is a role of managing pain in many patients with pelvic floor dysfunction and the role of tricyclic agents and anti-epileptics is central to this. **Take home message:** - Occasionally there is an underlying psychological problem that needs to be addressed when treating PFDD - Managing stool consistency and bowel frequency as well as treating pain when necessary is a key component of managing this group of patients
Speaker 6 (Paula Igualada-Martinez/Carlene Igbedioh)	**Rectal Irrigation** Trans-anal irrigation therapy (TAI) is in widespread use throughout the UK as a treatment for obstructed defecation. TAI involves instilling tap water into the rectum via the anus, using either a balloon catheter or a cone delivery system. This is attached via a plastic tube to an irrigation bag holding up to 2 litres of water; alternatively a low-volume system consisting of a hand pump and a cone may be employed. TAI may be an effective therapy for obstructed defecation, and may be considered in patients who have not responded to medical management. Irrigation is safe and its effectiveness is at least comparable with pharmacological therapies. **Take home message:** - Escalation of the appropriate treatment and appropriate assessment pre TAI is essential in order to adhere with clinical guidelines - Patient selection is the most important factor for a successful intervention

<u>Suggested Reading</u>

- Abrams P, Cardozo L, Khoury AAD, Wein A (2013) 5th International Consultation on Incontinence. ICUD-EAU. ISBN : 978-9953-493-21-3.
- Christensen P, Krogh K, Buntzen S, Payandeh F, Laurberg S. (2009) Long- term outcome and safety of transanal irrigation for constipation and fecal incontinence. Dis Colon Rectum. 52. p.286–292.

- Haylen BT, de Ridder D, Freeman RM et al. An International Urogynecological Association (IUGA)/International Continence Society (ICS) joint report on the terminology for female pelvic floor dysfunction. Neurourol Urodyn. 2010;29(1):4–20
- Rao SS, Bharucha AE, Chiarioni G, Felt-Bersma R, Knowles C, Malcolm A, Wald A. (2016) Anorectal Disorders. Gastroenterology, Volume 150, Issue 6, Pages 1430-1442.e4
- Rao, S. S. C., Benninga, M. A., Bharucha, A. E., Chiarioni, G., Di Lorenzo, C., & Whitehead, W. E. (2015). ANMS-ESNM Position Paper and Consensus Guidelines On Biofeedback Therapy for Anorectal Disorders. Neurogastroenterology and Motility?: The Official Journal of the European Gastrointestinal Motility Society, 27(5), 594–609. http://doi.org/10.1111/nmo.12520
- Russo A, Pescatori M. (2005) Psychological assessment of patients with proctological disorders. In: Wexner SC, Zbarv A, Pescatori M. (eds). Complex Anorectal Disorders. Investigation and Management. London, England: Springer.
- Sultan AH, Monga A, Lee J, Emmanuel A, Norton C, Santoro G, Hull T, Berghmans B, Brody S, Haylen BT (2017). An International Urogynecological Association (IUGA)/International Continence Society (ICS) joint report on the terminology for female anorectal dysfunction. Neurourol Urodyn. Jan;36(1):10-34. doi: 10.1002/nau.23055

W 32- Pelvic floor defecatory dysfunction: Management or Cure?

47th Annual Scientific Meeting of the International Continence Society (ICS)
Florence, Italy
12th– 15th September 2017

Buongiorno!
Good morning!

The Faculty

- Paula Igualada Martinez
- Alexis Schizas
- Heidi Brown
- Dave Chatoor
- Valentina Passananti

Pelvic floor defaecatory dysfunction: Management or cure?

Aim: The aim of this course is to learn how to evaluate and manage pelvic floor defaecatory dysfunction (PFDD)

The objectives for this workshop are:

- Pathophysiology and types of PFDD
- Learn how to evaluate
- Understand the role of imaging
- Present to a Urogynaeocology or Urology
  - when to liaise with the Colorectal team
- Role of biofeedback/rectal irrigation
- Pharmacological management
- Surgical management
- Importance of mental health on PFDD

At the end of the workshop the you should be able to:

- Identify pelvic floor disorders that affect defecation
- Assessment of PFDD
- Awareness of PFDD
- Biofeedback/Rectal Irrigation
- Pharmacological treatment of PFDD
- The importance of mental health in PFDD
- When to seek surgical treatment!

WORKSHOP SCHEDULE

09:30
INTRODUCTION TO THE WORKSHOP
PAULA IGUALADA-MARTINEZ
09:35
PATHOPHYSIOLOGY OF PFDD
ALEXIS SCHIZAS
09:50
EVALUATION AND IMAGING OF PFDD
ALEXIS SCHIZAS
10:05
PFDD IN UROGYNAECOLOGY AND UROLOGY CLINICS
HEIDI WENDELL BROWN
10:20
PSYCHOLOGICAL EVALUATION OF PATIENTS WITH PFDD
DAVE CHATOOR
10:35
PHARMACOLOGICAL TREATMENT OF PFDD
VALENTINA PASSANANTI
10:50
SURGICAL TREATMENT OF PFDD
ALEXIS SCHIZAS
11:00

COFFEE BREAK
11-11:30

BIOFEEDBACK IN PATIENTS WITH PFDD
PAULA IGUALADA-MARTINEZ
11:50
HANDS ON TRAINING OF RECTAL IRRIGATION
12:25
DISCUSSION
ALL

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HOUSE KEEPING

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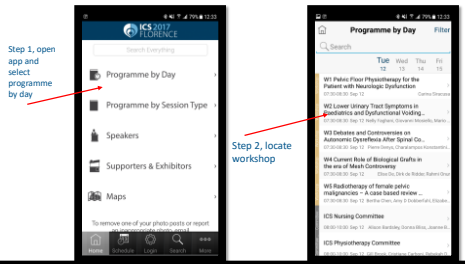
NEW FOR 2017

Please complete the in-app evaluation in the workshop before leaving.



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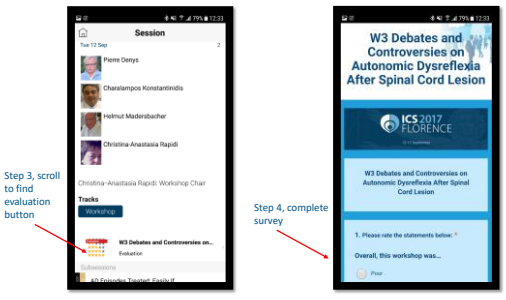

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- A shortened version of the handout has been provided on entrance to the hall
- A full handout for all workshops is available via the ICS website.
- Please silence all mobile phones
- Please refrain from taking video and pictures of the speakers and their slides. PDF versions of the slides (where approved) will be made available after the meeting via the ICS website.

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Pathophysiology of PFDD

Alexis Schizas
Consultant Colorectal Surgeon
Guy's and St Thomas' NHS Foundation Trust

Pathophysiology of PFDD

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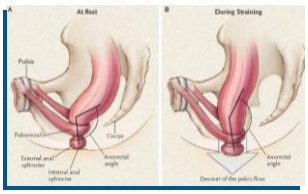
- PFDD occur in about 18% of the population
- Considerable impact on health costs
- Quality of life
- Functional and mechanical causes

Pathophysiology of PFDD

- Before defaecation occurs
  - rectum dispense and the somatic sensation
  - relaxation of the internal anal sphincter
  - if it is an appropriate time defaecation occurs
  - if not there is voluntary contraction
    - until the sensation to defecate passes

Pathophysiology of PFDD

- To defecate
  - the recto-anal angel straightens by squatting
  - correct defaecatory dynamics are required
  - abdominal muscles and diaphragm



Pathophysiology of PFDD

- Patients with defaecatory difficulties complain of:
  - symptoms of straining
  - feeling of incomplete evacuation
  - pain
  - digital assistance during defecation
  - unsuccessful attempts
  - spend an extended time on the toilet
  - decreased bowel frequency
  - complain of post defecation soiling
  - fragmented defecation
- Often complain of concomitant
  - urinary and/or sexual symptoms

Ano rectal physiology made simple

PFDD

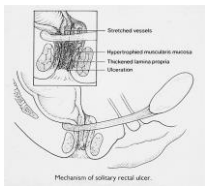
- PFDD is the difficulty in evacuation of the rectum
- Classified into several groups:
  - Functional outlet obstruction
    - (Inefficient relaxation of the anal sphincters, Paradoxical sphincter contraction (anismus), neurological causes)
  - Mechanical outlet obstruction
    - (itrarectal intussusception/rectal prolapse, enterocoele)
  - Defaecatory force and direction
    - (rectocoele, perineal descent, poor propulsive effort)
  - Colorectal Compliance
    - (mega rectum, rectal hyposensitivity, slow transit)
  - Pelvic pain syndromes
    - (levator syndrome, coccygodynia, proctalgia fugax, pudendal neuralgia)

PFDD

- PFDD is the difficulty in evacuation of the rectum
- Classified into several groups:
  - Functional outlet obstruction
    - inefficient relaxation of the anal sphincters
    - paradoxical sphincter contraction (anismus)
    - neurological causes

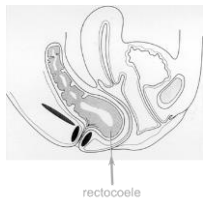
PFDD

- Classified into several groups:
  - Mechanical outlet obstruction
    - intrarectal intussusception
    - SRUS
    - rectal prolapse
    - enterocoele



PFDD

- Classified into several groups:
  - Defaecatory force and direction
    - rectocoele
    - perineal descent
    - poor propulsive effort



PFDD

- Classified into several groups:
  - Colorectal Compliance
    - mega rectum
    - rectal hyposensitivity
    - slow transit

PFDD

- Classified into several groups:
  - Pelvic pain syndromes
    - levator syndrome
    - coccygodynia
    - proctalgia fugax
    - pudendal neuralgia

PFDD

- Causes of Constipation
  - Dietary
    - Low fibre, dieting, dementia, depression, anorexia, fluid depletion
  - Metabolic
    - Diabetes mellitus, hypercalcaemia, hypokalaemia, hypothyroidism, porphyria
  - Neurological
    - Parkinson's disease, spinal cord pathology, multiple sclerosis
  - Iatrogenic
    - Antacids that contain aluminium, iron, anticholinergics, antidepressants, opiates for analgesia
    - Post-operative
  - Painful anorectal conditions
    - Anal fissure, haemorrhoids, abscess, fistula
    - Toilet avoidance

PFDD

- Complex problem of rectal evacuation
- Severity variable
- Symptoms difficult to describe
- Defined by a combination of symptoms
- Pathophysiology not clear
  - Widening of the pelvic floor hiatus
  - Descent of pelvic
    - obesity
    - menopause
    - pregnancy
    - childbirth
    - inherited collagen deficiency
    - congenitally weak connective tissue

Alison Hainsworth

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Affiliations to disclose†:

BK Medical

Funding for speaker to attend:

- [X] Self-funded
- [X] Institution (non-industry) funded
- [ ] Sponsored by: BK Medical

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Evaluation and Imaging of Pelvic Floor Defaecatory Dysfunction

Alison Hainsworth
Colorectal Surgical Registrar/ Research Fellow

Guy's and St Thomas' NHS
NHS Foundation Trust

Aims of Presentation

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Assessment of pelvic floor defaecatory dysfunction -

- Clinical Assessment
  - History
  - Symptom Severity Scores
  - Clinical Examination
- Anorectal Physiology
- Barostat
- Radiological Investigations
  - Colonic Transit Studies
  - Defaecatory Imaging (proctogram/ MRI)
  - Integrated Total Pelvic Floor Ultrasound

Clinical History

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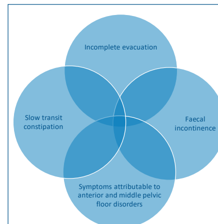
- Rule out organic disease
- Symptoms

difficulty initiating rectal emptying
incomplete evacuation,
a feeling of obstruction
pelvic pressure
digitation (rectal/ vaginal)
straining
rectal pain/ bleeding
post defaecatory soiling
faecal incontinence



Not possible to distinguish between pathologies based on symptoms alone [1]

(1) Mertz H, Naliboff B, Mayer EA. Symptoms and physiology in severe chronic constipation. American Journal of Gastroenterology 94, 131-138. 1999.

Clinical History

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- Link between symptoms & structural abnormalities not absolute.

Is incomplete evacuation due to a rectocoele? [1]
Overlap between rectocoele & intussusception?[2;3]
Enterocoele symptoms vague[4]

- Not clear which symptom characteristics predict optimal treatment outcomes?

Vaginal digitation may predict improvement after rectocoele repair [5;6]
Evacuatory difficulty may predict optimal results with biofeedback[7]

(1) Zbar AP, Lienemann A, Fritsch H, Beer-Gabel M, Pescatori M. Rectocele: pathogenesis and surgical management. Int J Colorectal Dis 2003 Sep;18(5):369-84.
(2) Collinson R, Cunningham C, D'Costa H, Lindsey I. Rectal intussusception and unexplained faecal incontinence: findings of a proctographic study. Colorectal Dis 2009 Jan;11(1):77-83.
(3) Dvorkin LS, Knowles CH, Scott SM, Williams NS, Lunniss PJ. Rectal intussusception: characterization of symptomatology. Dis Colon Rectum 2005 Apr;48(4):824-31.
(4) Beer-Gabel M, Assoulin Y, Amitai M, Bardan E. A comparison of dynamic transperineal ultrasound (DTP-US) with dynamic evacuation proctography (DEP) in the diagnosis of cul de sac hernia (enterocele) in patients with evacuatory dysfunction. Int J Colorectal Dis 2008 May;23(5):513-9.
(5) Murthy VK, Orkin BA, Smith LE, Glassman LM. Excellent outcome using selective criteria for rectocele repair. Dis Colon Rectum 1996 Apr;39(4):374-8.
(6) Van Laarhoven CJ, Kamm MA, Bartram CI, Halligan S, Hawley PR, Phillips RK. Relationship between anatomic and symptomatic long-term results after rectocele repair for impaired defecation. Dis Colon Rectum 1999 Feb;42(2):204-10.
(7) Chiarioni G, Salandini L, Whitehead WE. Biofeedback benefits only patients with outlet dysfunction, not patients with isolated slow transit constipation. Gastroenterology 2005 Jul;129(1):86-97.

Symptom Scoring

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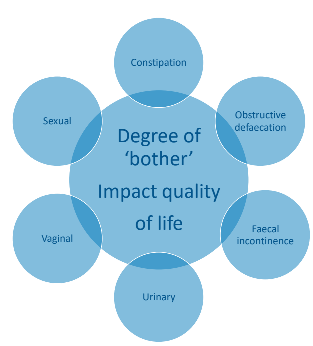


Questionnaires - Symptom Scoring

- Symptom severity, treatment outcomes
- The International Consultations on Incontinence (ICI)
  - universally applicable questionnaires, international populations
  - clinical practice and research
  - bowel, urinary, bladder, sexual,
  - quality of life [1]
- Obstructed defaecation syndrome (ODS) score
  - pure outlet obstruction
  - statistically validated
  - clustering of symptoms associated with different subtypes [2]

(1) Abrams P, Avery K, Gardener N, Donovan J. The International Consultation on Incontinence Modular Questionnaire: www.iciq.net. J Urol 2006 Mar;175(3 Pt 1):1063-6.
(2) Altomare D.F., Spazzafumo M., Rinaldi M, Dodi G., Ghiselli R., Piloni V. Set-up and statistical validation of a new scoring system for obstructed defaecation syndrome. Colorectal Disease 10, 84-88. 2007

Questionnaires - Symptom Scoring

Questionnaire	Purpose	Validation
ICIQ – BS **ICIQ – VS** **ICIQ – UI Short form**	Symptoms Bother	Validated - protocol
Obstructed defaecation syndrome (ODS) score	Symptom Treatment	Reliable Repeatable
Cleveland Constipation Score	Diagnosis	Correlates
The Knowles Eccersley Scott Symptom (KESS) score - constipation	Diagnosis Subgroups	Cross validation
Patient Assessment of Constipation Symptom (PAC – SYM)	Treatment	Consistent, reproducible, valid, responsive
Patient Assessment of Constipation Quality of Life (PAC – QOL)	Burden	
Wexner Continence Grading Scale **St Marks' Faecal Incontinence score**	Symptoms	Reliable Sensitive to change
Bladder control self-assessment questionnaire (B-SAQ)	Screening	Psychometrically robust

Clinical Examination

- Inspection
- Digital Rectal Examination
  - Muscle tone
  - Ask patient to expel the examining finge
    - **Anismus**

    (sensitivity 77%, specificity 87%[1]).
    - **Intussusception**

    (detects a third of intussusception[2])
    - **Rectocoele**
- Vaginal Examination

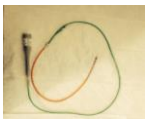
1) Tantiphlachiva K, Rao P, Attaluri A, Rao SS. Digital rectal examination is a useful tool for identifying patients with dyssynergia. Clin Gastroenterol Hepatol 2010Nov;8(11):955-60.
2) Tutt M, Bartolo DC, Salih SM, Jarratt JA, Mawdsley SK. Defecography in patients with anorectal disorders. Which findings are clinically relevant? Dis Colon Rectum 1995 Apr; 38(4):377-84.

Anorectal Physiology

The function of the anal canal & rectum is assessed

Anorectal manometry –
- rest
- squeeze
- push

RAIR



Sensory testing –
- Balloon inflation

Balloon evacuation –
- Timing & ability

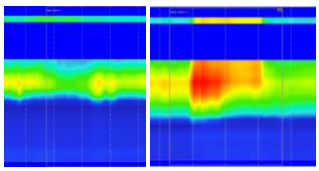
Barostat
- Compliance & capacity

Anorectal Physiology and Anismus

Dyssynergy has four patterns during anorectal manometry[1];

	Anal Pressure	Rectal Pressure
Type I	Paradoxical ↑	Adequate ↑
Type II	Paradoxical ↑	No adequate ↑
Type III	Failure to ↓	Adequate ↑
Type IV	Failure to ↓	No adequate ↑

Normal relaxation on pushing | Paradoxical contractions on pushing



1) Rao SS. Dyssynergic defecation and biofeedback therapy. Gastroenterol Clin North Am 2008 Sep;37(3):569-86, viii.

Anorectal Physiology and Anismus

Little agreement on optimal method of diagnosis

- Anorectal manometry

  Grossi et al.
  170 women, functional constipation vs age matched controls.
  90% of healthy volunteers had an 'abnormal' pattern ? use of manometry for diagnosis [1]
- Sphincter electromyography (EMG) during voiding
- Balloon expulsion (timing and ability) during voiding

  Chiarioni et al.
  286 patients and 40 controls
  good agreement
  balloon expulsion & anorectal manometry
  balloon expulsion & EMG [2]

  Palit et al.
  100 patients
  considerable disagreement
  balloon expulsion & anorectal manometry
  & evacuation proctography [3]

1) Grossi U, Carrington EV, Bharucha AE, Horrocks EJ, Scott SM, Knowles CH. Diagnostic accuracy study of anorectal manometry for diagnosis of dyssynergic defecation. Gut 2016 Mar;65(3):427-35.
2) Chiarioni G, Kim SM, Vantini I, Whitehead WE. Validation of the balloon evacuation test: reproducibility and agreement with findings from anorectal manometry and electromyography. Clin Gastroenterol Hepatol 2013 Dec;11(12):1599-54.
3) Palit S, Thin N, Knowles CH, Lunniss PJ, Bharucha AE, Scott SM. Diagnostic disagreement between tests of evacuatory function: a prospective study of 100 constipated patients. Neurogastroenterol Motil 2016 May 7.

Barostat

- Rectal compliance & capacity
- Not routine practice
- Conflicting evidence

Gosselink et al.
Normal compliance and sensation in all (with/ without rectocoele)[1]

Schouten et al.
Reduced rectal compliance
Impaired sensation[2]

Hicks et al.
Rectal compliance and capacity higher with rectocoele[3]

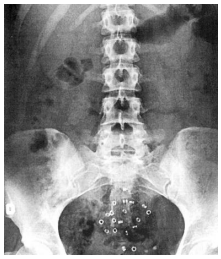
Sloots et al.
Rectal compliance unaltered after rectocoele repair[4]

1) Gosselink, M.J., Hop, W.C., & Schouten, W.R. 2003b. Rectal compliance in females with obstructed defecation. *Dis.Colon Rectum*, 44, (7):971-977 available from: PM:12958077
2) Schouten, W.R., Gosselink, M.J., Boerma, M.O., & Ginal, A.Z. 1998. Rectal wall contractility in response to an evoked urge to defecate in patients with obstructed defecation. *Dis.Colon Rectum*, 41, (4):473-479
3) Hicks CW, Weinstein M, Wakamatsu M, Pulliam S, Savitt L, Bordeianou L. Are rectoceles the cause or the result of obstructed defaecation syndrome? A prospective anorectal physiology study. Colorectal Dis 2013 Aug;15(8):993-9.
4) Sloots, C.E., Meulen, A.J., & Felt-Bersma, R.J. 2003. Rectocele repair improves evacuation and prolapse complaints independent of anorectal function and colonic transit time. *Int.J.Colorectal Dis.*, 18, (4):342-348

Radiology

- Colonic Transit Studies
- Defaecatory Imaging
- Integrated Total Pelvic Floor Ultrasound

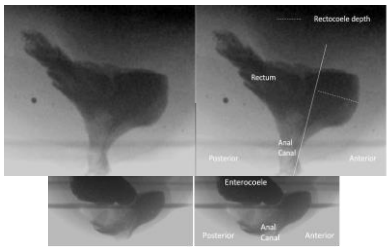
Colonic Transit Study



Fluoroscopic Defaecation Proctography

- Fluoroscopic defaecation proctography/ evacuatory proctography/ defaecography
- Dynamic investigation - rectal emptying
- Structural & functional
- Multi-compartmental

Fluoroscopic Defaecation Proctography



Fluoroscopic Defaecation Proctography

What is normal?

- Shorvon et al.
- 47 volunteers
- Rectocoele - 17/20 nulliparous women
- Intussusception – over half ≥ grade IV[1]

- Palit et al.
- 46 volunteers
- Rectocoele - up to 3.9cm may be asymptomatic
- Intussusception – ≥ 20% grade III[2]

1) Shorvon PJ, McHugh S, Diamant NE, Somers S, Stevenson GW. Defecography in normal volunteers: results and implications. Gut 1989 Dec;30(12):1737-49
2) Palit S, Bhan C, Lumba PJ, Boyle DJ, Gladman MA, Knowles CH, et al. Evacuation proctography: a reappraisal of normal variability. Colorectal Dis 2014 Jul;16(7):538-46

Fluoroscopic Defaecation Proctography

- Rectocoele & barium trapping
  - More common in larger rectocoeles[1]

- Debate
  - Is barium trapping truly associated with symptoms?[2]
  - More complete evacuation after evacuation in private[3]
  - No association - barium trapping & response to surgery[4]
  - Response of vaginal splinting may predict clinical significance[5]

(1) Mellgren A, Bremmer S, Johansson C, Dolk A, Uden R, Ahlback SO, et al. Defecography. Results of investigations in 2,816 patients. Dis Colon Rectum 1994 Nov;37(11):1133-41.
(2) Halligan S, Bartram CI. Is barium trapping in rectoceles significant? Dis Colon Rectum 1995 Jul;38(7):764-8.
(3) Greenberg T, Nelson FM, Maglinte DD. Barium trapping in rectoceles: are we trapped by the wrong definition? Abdom Imaging 2001 Nov;26(6):587-90.
(4) Stojkovic SG, Balfour L, Burke D, Finan PJ, Sagar PM. Does the need to self-digitate or the presence of a large or nonemptying rectocoele on proctography influence the outcome of transanal rectocoele repair? Colorectal Dis 2003 Mar;5(2):169-72.
(5) Murthy VK, Orkin BA, Smith LE, Glassman LM. Excellent outcome using selective criteria for rectocele repair. Dis Colon Rectum 1996 Apr;39(4):374-8.

Fluoroscopic Defaecation Proctography

Intussusception and constipation

- Dvorkin et al.
- 896 patients
- no symptoms predict obstructing intussusception on proctogram[1]

Intussusception and faecal incontinence

- Plays important role in faecal incontinence[2]
- Hawkins et al.
- 147 patients
- ↑ grade of intussusception - ↑ severity of incontinence[3]

(1) Dvorkin LS, Knowles CH, Scott SM, Williams NS, Lunniss PJ. Rectal intussusception: characterization of symptomatology. Dis Colon Rectum 2005 Apr;48(4):804-11.
(2) Collinson R, Cunningham C, D'Cruz M, Lindsey I. Rectal intussusception and unexplained faecal incontinence: findings of a proctographic study. Colorectal Dis 2009 Jan;11(1):77-81.
(3) Hawkins AT, Olarte AG, Savitt LR, Singamsetty S, Wakamatsu MM, Pucheu S, et al. Impact of Rising Grades of Internal Rectal Intussusception on Fecal Continence and Symptoms of Constipation. Dis Colon Rectum 2016 Jan;59(1):94-101.

Fluoroscopic Defaecation Proctography

Substantial diagnostic and therapeutic effect and benefit regarding

- diagnostic confidence,
- resolving diagnostic conflict
- determining intended management[1,2]

BUT should not solely be relied upon for treatment planning

(1) Harvey CJ, Halligan S, Bartram CI, Hollings N, Sahdev A, Kingston K. Evacuation proctography: a prospective study of diagnostic and therapeutic effects. Radiology 1999 Apr;211(1):223-7.
(2) Bartram C. Dynamic evaluation of the anorectum. Radiol Clin North Am 2003 Mar;41(2):425-41.

Defaecation MRI

Dynamic conditions or expulsion of USS gel

Sitting or supine

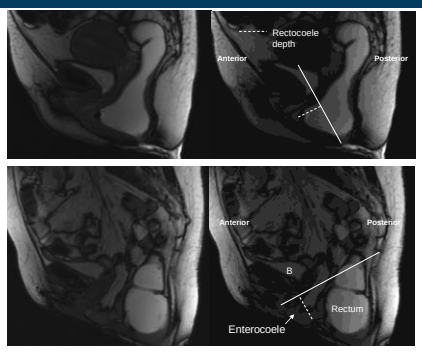
Structural and functional assessment of

- Anterior
- Middle
- Posterior

} compartments

NB: Levator plate, anal sphincter complex if necessary

Defaecation MRI



DefaecationMRI

Sitting vs supine MRI (small studies) –

Sitting	Supine
Greater degree of pelvic floor laxity during dynamic imaging	All intussusceptions missed (though dynamic imaging only)
Significant difference in position of bladder, vagina and anorectal junction during dynamic imaging	
BUT no difference in position of anorectal junction in defaecatory imaging	
More enterocoeles seen	Less enterocoeles seen
Small rectocoeles seen	Small rectocoeles missed
BUT not necessarily superior for depicting clinically relevant findings	

Bertschinger, K.M., Hetzer, F.H., Roos, J.E., Treiber, K., Marincek, B., & Hilfiker, P.R. 2002. Dynamic MR imaging of the pelvic floor performed with patient sitting in an open-magnet unit versus with patient supine in a closed-magnet unit. *Radiology*, 223, (2) 501-508
Fielding, J.R., Griffiths, D.J., Versi, E., Mulkern, R.V., Lee, M.L., & Jolesz, F.A. 1998. MR imaging of pelvic floor continence mechanisms in the supine and sitting positions. *AJR Am J Roentgenol.*, 171, (6) 1607-1610
Iacobellis, F., Brillantino, A., Renzi, A., Monaco, L., Serra, N., Feragalli, B., Iacomino, A., Bruness, L., & Cappabianca, S. 2016. MR Imaging in Diagnosis of Pelvic Floor Descent: Supine versus Sitting Position. *Gastroenterol Res Pract.*, 2016,

Defaecation MRI vs Defaecation Proctography

Author	n	Position	Rectal evacuation	Conclusions
Pilkington et al.	42	Supine	Yes	MRI - ↓intussusception -↑anismus
Pannu et al.	82	Supine	Yes (35) No (47)	With contrast – similar Without contrast – MRI↓ abnormalities
Kelvin et al.	10	Supine	Yes	Similar detection rates – prolapse
Vanbeckevoort et al.	35	Supine	No	MRI lower sensitivity
Schoenenberger et al.	15	Sitting	Yes	MRI superior
Healy et al. a	24	Supine	No	MRI more organ decent
Healy et al. b	10	Supine	No	MRI no rectal intussusception/ prolapse
Lienemann et al.	44	Supine	Yes	MRI more accurate prolapse & descent
Delemarre et al.	51	Prone	No	Examination for rectocoele corresponds with defaecation proctography but not MRI

- MRI underestimates posterior pathology
- Contrast **expulsion is the key** to detection of pathology
- Reason for underestimation probably difficulty evacuating contrast when supine

Defaecation MRI

What is normal?

(asymptomatic subjects – rectocoele, pelvic floor hypermobility(1)).

Decision making

Small studies - has clinical impact

Rentsch et al.	Kaufman et al.
20 patients	22 patients
77.3% - confirmed clinical diagnoses	41% - changed operative plan(3)
34% - revealed combined pelvic floor disorders(2)	

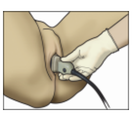
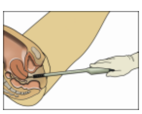
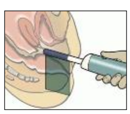
(1) Schreyer AG, Paetzel C, Furst A, Dendl LM, Hutzel E, Muller-Wille R, et al. Dynamic magnetic resonance defecography in 10 asymptomatic volunteers. World J Gastroenterol 2012 Dec 14;18(46):6836-42.
(2) Rentsch M, Paetzel C, Lenhart M, Feuerbach S, Jauch KW, Furst A. Dynamic magnetic resonance imaging defecography: a diagnostic alternative in the assessment of pelvic floor disorders in proctology. Dis Colon Rectum 2001 Jul;44(7):999-1007.
(3) Kaufman HS, Buller JL, Thompson JR, Pannu HK, DeMeester SL, Genadry RR, et al. Dynamic pelvic magnetic resonance imaging and cystocolpoproctography alter surgical management of pelvic floor disorders. Dis Colon Rectum 2001 Nov;44(11):1575-83.

Integrated Total Pelvic Floor Ultrasound

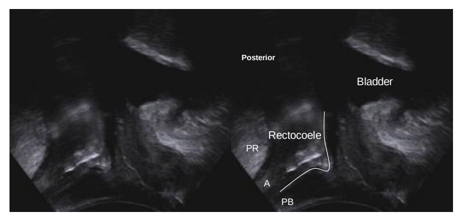
Endoanal, transperineal and transvaginal ultrasound

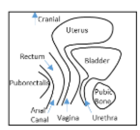
Routine
- anterior/ middle dysfunction
- endoanal - anal sphincters

Posterior dysfunction not routine


Integrated Total Pelvic Floor Ultrasound





Transperineal Ultrasound vs Defaecation Proctography

Author	n	Findings
Beer Gabel et al.	105	Sensitivity good/ excellent & specificity high for rectocoele, intussusception, enterocoele, rectal prolapse.
Martellucci et al.	54	Agreement substantial/ perfect for rectocoele, intussusception, enterocoele No significant difference for anorectal angle
Steensma et al.	75	Agreement moderate/ good - rectocoele/ enterocoele, fair - intussusception.
Beer Gabel et al.	62	Both methods accurate for cul-de-sac hernia Ultrasound more readily diagnoses peritoneocoele, upgrades enterocoele
Perniola et al.	37	High positive predictive value for rectocoele, intussusception, rectal prolapse Poor agreement for rectocoele (& depth), intussusception, anorectal angle
Grasso et al.	43	Moderate agreement for rectocoele, excellent agreement for intussusception, excellent concordance for ARA straining / rest ratio
Brusciano et al.	114	High specificity - intussusception and rectocoele. Transperineal ultrasound confirm rectocoele, intussusception and enterocoele
Beer Gabel et al.	33	Good agreement for rectocoele, intussusception, rectal prolapse. Ultrasound more likely to make multiple diagnoses No difference in measurement of anorectal angle, anorectal junction position

- Ultrasound is a suitable screening tool for defaecatory dysfunction

In summary …

Anorectal Physiology

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Advantages	Useful in diagnosis of…	Disadvantages	Unhelpful in diagnosis of…
• Bedside test • Minimally invasive • Physiology and function • Biofeedback tool	• Neurological conditions • Muscle tone, sphincter injury, fistulas • Anismus • Increased rectal capacity	• Debate - no international standardisation for techniques and normal values - anismus - rectal compliance • Left lateral	• Structural problems

Fluoroscopic Defaecation Proctography

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Advantages	Useful in diagnosis of…	Disadvantages	Unhelpful in diagnosis of…

• Available, practical
• Cost
• Functional & anatomical assessment of defaecatory dynamics
• Sitting
• Expulsion contrast
• Visual biofeedback
	• Posterior compartmental dysfunction
	• Barium trapping in a rectocoele
	• Effect of vaginal splinting & correct defaecatory techniques
		• No consistency in technique
		• Debate
		  • normal parameters
		  • implications of findings
		• Radiation
		• Multicompartmental assessment – contrast
			• Anterior and middle compartmental prolapse (unless contrast)

Integrated Total Pelvic Floor Ultrasound

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Advantages	Useful in diagnosis of…	Disadvantages	Unhelpful in diagnosis of…
• Dynamic multicompartmental assessment without contrast • Safe, cheap, portable, • One stop clinic • Visual biofeedback • ?Screening tool	• Multicompartmental assessment • Screening tool for obstructed defaecation	• User dependent, training, experience • Gynaecological/ left lateral position • Expulsion of rectal gel not routine • May underestimate pathology • Splinting effects of probe ?distort anatomy/ prevent Valsalva	• Completeness and pattern of evacuation • Effects of vaginal splinting and correct defaecatory techniques

MRI Proctography

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Advantages	Useful in diagnosis of…	Disadvantages	Unhelpful in diagnosis of…
• Functional & anatomical assessment of defaecatory dynamics • Open configuration magnets – sitting • Expulsion of contrast • Multicompartmental • Soft tissue • No radiation	• Multicompartmental • Trapping of gel in rectocoele • Effect of vaginal splinting and correct defaecatory techniques	• Expense • Limited access to open configuration magnets • Pathology may be underestimated due to; - Supine - No expulsion of rectal contrast	• If no rectal expulsion - intussusception

Summary

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No one perfect assessment tool

Combination

- **clinical review**
- physiological examination
- radiological investigation

} determine pathophysiology, treatment planning

Future developments - ? imaging with simultaneous physiological assessment.

In summary …

ICS 2017 FLORENCE

Advantages	Useful in diagnosis of…	Disadvantages	Unhelpful in diagnosis of…
Anorectal Physiology			
Bedside Minimally invasive Physiology and function Biofeedback tool	Neurological conditions Muscle tone, sphincter injury, fistulas Anismus Increased rectal capacity	Debate -standardisation -anismus -rectal compliance Left lateral	Structural problems
Fluoroscopic Defaecation Proctography			
Available, practical Cost Functional & anatomical Sitting Expulsion contrast Visual biofeedback	Posterior dysfunction Barium trapping Effect of vaginal splinting & defaecatory techniques	No consistent technique Debate – Normal ? implications of findings Radiation Contrast	Anterior and middle compartmental prolapse (unless contrast)
Defaecation MRI			
Functional & anatomical Sitting Expulsion contrast Multicompartmental Soft tissue No radiation	Multicompartmental Trapping of gel in rectocoele Effect of vaginal splinting and correct defaecatory techniques	Expense Limited access to open configuration magnets Underestimate pathology	If no rectal expulsion - intussusception
Integrated Total Pelvic Floor Ultrasound			
Dynamic multicompartmental assessment without contrast Safe, cheap, portable, One stop clinic ?Screening Visual biofeedback	Multicompartmental assessment Screening tool for obstructed defaecation	User dependent, training, experience Gynaecological/ left lateral position Expulsion of rectal gel not routine May underestimate pathology Splinting effects of probe ?distort anatomy/ prevent Valsalva	Completeness and pattern of evacuation Effects of vaginal splinting and correct defaecatory techniques

Tackling the Taboo: Defecatory Dysfunction from the Urogynecologist's Perspective

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Consultant: Grand Rounds, Inc.

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Site Principal Investigator for LIBERATE, funded by Pelvalon, Inc. (ClinicalTrials.gov NCT02428595)

† All financial ties (over the last year) that you may have with any business organisation with respect to the subjects mentioned during your presentation

Funding for speaker to attend:

- ☐ Self-funded
- ☒ Institution (non-industry) funded
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Overview

- Definitions
- Concomitant Symptoms
- Evaluation
- Treatment

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Joint Terminology

- **Straining to defecate:** need to make intensive effort (by abdominal straining or Valsalva) to initiate, maintain, or improve defecation
- **Splinting:** need to digitally replace vaginal prolapse / apply manual pressure to vagina / perineum
- **Manual evacuation:** placement of fingers in the rectum to evacuate stool
- **Feeling of incomplete evacuation:** rectum does not feel empty after defecation
- **Diminished rectal sensation:** decreased / absent sensation of contents in the rectum

Functional Constipation (Rome III)

1. ≥2 symptoms w/ ≥ 25% of defecations over last 3 mo:
   - Straining
   - Lumpy or hard stools
   - Sensation of incomplete evacuation
   - Sensation of anorectal obstruction / blockage
   - Manual maneuvering required (vaginal or rectal)
   - Fewer than 3 defecations / week
2. Loose stools rarely present without use of laxatives
3. Insufficient criteria for irritable bowel syndrome

Overview

- Definitions
- Concomitant Symptoms
- Evaluation
- Treatment

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When you have a hammer…

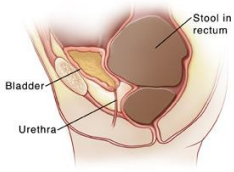
Concomitant Symptoms

- Urinary incontinence
- Urinary urgency
- Urinary frequency
- Urinary retention
- Fecal incontinence
- Pelvic organ prolapse

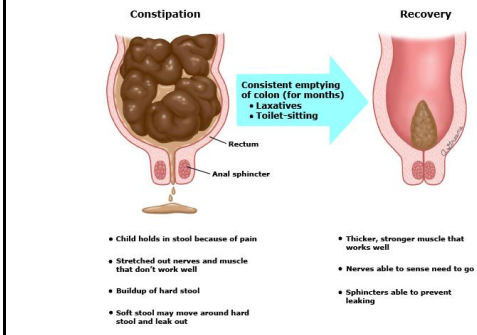
Urinary Symptoms & Bowel Dysfunction

- Stool in rectum can press on bladder → urgency, frequency
- Incontinence can be related to pressure, retention, loss of pelvic floor muscle coordination
- Retention from urethral occlusion or underlying nerve dysfunction

Roommates in a small apartment

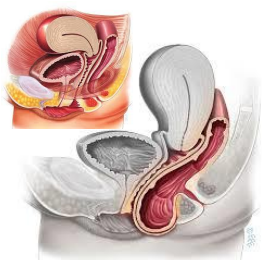


Bowel Leakage & Defecatory Dysfunction

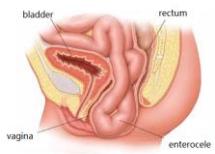


Prolapse and Defecatory Dysfunction

Rectocele



Enterocele



Association versus causation

Straining → prolapse

Prolapse → straining

Constipation → urinary incontinence → fluid restriction

Urinary incontinence → fluid restriction → constipation

Overview

- Definitions
- Concomitant Symptoms
- Evaluation
- Treatment

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Urogynecologist's Evaluation

- History
  - Duration, bother, mediators and triggers
  - Prior therapies and results
  - Alarm symptoms → referral
- Validated Instruments
  - Pelvic Floor Distress Inventory (PFDI)
  - Pelvic Floor Impact Questionnaire (PFIQ)
  - Bristol Stool Scale
- Physical Exam
- Additional testing?

Pelvic Floor Distress Inventory

Patient Name:_____

Date: _____

Pelvic Organ Prolapse Distress Inventory 6 (POPDI-6):	NO	YES If yes, how much does it bother you?			
	No	Not at all	Somewhat	Moderately	Quite a bit
1. Usually experience *pressure* in the lower abdomen?	0	1	2	3	4
2. Usually experience *heaviness* or *dullness* in the pelvic area?	0	1	2	3	4
3. Usually have a bulge or something falling out that you can see or feel in your vaginal area?	0	1	2	3	4
4. Ever have to push on the vagina or around the rectum to have or complete a bowel movement?	0	1	2	3	4
5. Usually experience a feeling of incomplete bladder emptying?	0	1	2	3	4
6. Ever have to push up on a bulge in the vaginal area with your fingers to start or complete urination?	0	1	2	3	4

Colorectal-Anal Distress Inventory 8 (CRADI-8):	No	Not at all	Somewhat	Moderately	Quite a bit
7. Feel you need to strain too hard to have a bowel movement?	0	1	2	3	4
8. Feel you have not completely emptied your bowels at the end of a bowel movement?	0	1	2	3	4
9. Usually lose stool beyond your control if your stool is well formed?	0	1	2	3	4
10. Usually lose stool beyond your control if your stool is loose?	0	1	2	3	4
11. Usually lose gas from the rectum beyond your control?	0	1	2	3	4
12. Usually have pain when you pass your stool?	0	1	2	3	4
13. Experience a strong sense of urgency and have to rush to the bathroom to have a bowel movement?	0	1	2	3	4
14. Does part of your bowel ever pass through the rectum and bulge outside during or after a bowel movement?	0	1	2	3	4

Urinary Distress Inventory 6 (UDI-6):	No	Not at all	Somewhat	Moderately	Quite a bit
15. Usually experience frequent urination?	0	1	2	3	4
16. Usually experience urine leakage associated with a feeling of urgency, that is, a strong sensation of need to go to the bathroom?	0	1	2	3	4
17. Usually experience urine leakage related to coughing, sneezing, or laughing?	0	1	2	3	4
18. Usually experience small amounts of urine leakage (that is, drops)?	0	1	2	3	4
19. Usually experience difficulty emptying your bladder?	0	1	2	3	4
20. Usually experience *pain* or *discomfort* in the lower abdomen or genital region?	0	1	2	3	4

Pelvic Floor Impact Questionnaire (PFIQ):

A validated, condition-specific Quality of Life instrument

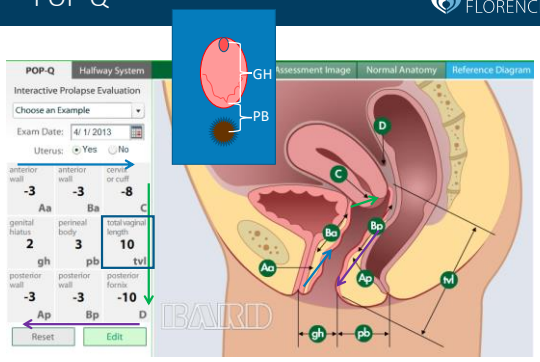
How do symptoms or conditions relate to the following → / usually affect your ↓	*Bladder or urine*	*Bowel or rectum*	*Vagina or pelvis*
1. Ability to do household chores (cooking, housecleaning, laundry)?	□ Not at all □ Some what □ Moderately □ Quite a bit	□ Not at all □ Some what □ Moderately □ Quite a bit	□ Not at all □ Some what □ Moderately □ Quite a bit
2. Ability to do physical activities such as walking, swimming, or other exercise?	□ Not at all □ Some what □ Moderately □ Quite a bit	□ Not at all □ Some what □ Moderately □ Quite a bit	□ Not at all □ Some what □ Moderately □ Quite a bit
3. Entertainment activities such as going to a movie or concert?	□ Not at all □ Some what □ Moderately □ Quite a bit	□ Not at all □ Some what □ Moderately □ Quite a bit	□ Not at all □ Some what □ Moderately □ Quite a bit
4. Ability to travel by car or bus for a distance greater than 30 minutes away from home?	□ Not at all □ Some what □ Moderately □ Quite a bit	□ Not at all □ Some what □ Moderately □ Quite a bit	□ Not at all □ Some what □ Moderately □ Quite a bit
5. Participating in social activities outside your home?	□ Not at all □ Some what □ Moderately □ Quite a bit	□ Not at all □ Some what □ Moderately □ Quite a bit	□ Not at all □ Some what □ Moderately □ Quite a bit
6. Emotional health (nervousness, depression, etc)?	□ Not at all □ Some what □ Moderately □ Quite a bit	□ Not at all □ Some what □ Moderately □ Quite a bit	□ Not at all □ Some what □ Moderately □ Quite a bit
7. Feeling frustrated?	□ Not at all □ Some what □ Moderately □ Quite a bit	□ Not at all □ Some what □ Moderately □ Quite a bit	□ Not at all □ Some what □ Moderately □ Quite a bit

Assessment of Stool Consistency

Physical Exam

Neurological assessment (S2-4)
Abdominal exam
Bimanual exam
Pelvic organ prolapse
Pelvic floor muscle tone
Rectal exam (including IAS, EAS tone)
Cough stress test
Post-void residual

POP-Q



http://www.bardmedical.com/POPQ

POP-Q and symptoms

Correlation with GH+PB?

Correlation with Bp?

Aa	Ba	C
GH	PB	TVL
Ap	Bp	D

Minimum assessment of bladder function

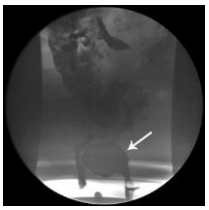
- Reduce bulge & observe urethra with full bladder
- Enterocele or rectocele can prevent urine leakage
- Post-void residual

Defecography if symptoms ≠ exam

Prior to defecation:

Black arrow: vagina
White arrow: rectum

With attempt to defecate:



Rectocele

Overview

- Definitions
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The Urogynecologist's Management: FIRST

Fiber & fluid – 25-35 g/day, referral to dietitian

Patient education and diary, consider pessary

Medications (laxatives – polyethylene glycol)

Referrals (pelvic floor physical therapy, GI, health psych, nutrition/dietitian)

Surgical correction (only for appropriate candidates)

Schedule follow up to assess response to therapies

Urogyn Treatment Options

If not bothered: Nothing!

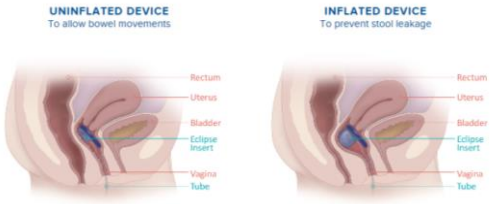
If bothered: Knee injury analogy

- Physical therapy
- Brace (pessary)
- Surgery

Balance risks with likelihood that interventions will improve symptoms

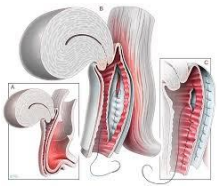
Eclipse vaginal bowel control system

- N = 61 subjects fitted / 110 enrolled
- 6 episodes / week → 1 episode per week (1 month)
- No device-related serious adverse events
- Pelvic cramping and discomfort (esp during fitting)



Surgical repair

1. Offered if symptoms persist after other treatments fail.
2. Posterior compartment prolapse with native tissue vaginal posterior repair has success rates for anatomic restoration of 76–98% for traditional posterior colporrhaphy and 56–100% for site-specific repairs.
3. No role for biological or synthetic grafts in the posterior compartment.



Post-op: avoid constipation / straining

http://www.evidentlycochrane.net/feet-up-constipation/

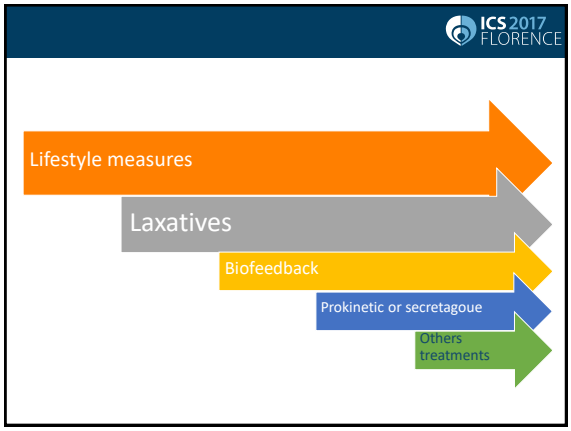
Conclusions & Recommendations

- Symptom tracking enables self-directed, personalized effort and evaluation of results
- Best outcomes involve multidisciplinary approach to optimize various mechanisms contributing to symptoms

UCL

Pharmacological management of PFDD

Valentina Passananti ,MD
University College Hospital, London UK



Modest effect of fluid consumption

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Severe water restriction reduces stool weight.

RCT in volunteers reducing fluid intake from 2500ml to <500ml

Results: Stool weight fell from 1,290 to 940 g/wk, p<0.05

Klauser et al *Z Gastroenterol* 1990;**28**(11):606-9

No evidence of benefit with additional water if already well hydrated.

RCT of 108 children with CC randomised to:

- No change
- 50% increase in fluid intake with water
- 50% increase in total fluid intake as soft drinks

Results: No change in stool frequency of consistency

Young et al *Gastroenterol Nurs* 1998;**21**(4):156-61

Modest effect of exercise

ICS 2017 FLORENCE

Several studies link exercise with reduced risk

- Community survey of 1,699 Japanese
- >4h /day walking reduces risk OR 0.46(0.2-1.0)

Nakaji et al *Eur J Nutr* 2002;**41**(6):244-8

One RCT of exercise in IBS-C

- 56 IBS randomised to usual care or 12 weeks exercise programme
- Primary endpoint : QOL showed no change
- Significant improvement in constipation

Daley et al *Int J Sports Med* 2008;**29**(9):778-82

In patients with chronic idiopathic constipation

- moderate physical activity 1 h/d improves stool consistency

De Schryver AM et al Scand J Gastroenterol 2005

Laxative options for chronic constipation

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Agent and mechanism of action	Example	Therapeutic response
Bulking agent • Increase stool volume making it easier to pass	• Psyllium	• Decreased gut transit time and increased stool frequncy[1,2]
Stool softener • Soften stool making it easier to pass	• Docusate	• Less effective than psyllium in improving bowel movements and stool output[3]
Osmotic laxative • Increase fluids within the intestine making stools softer and easier to pass	• Lactulose	• Decreased transit and reduced fecal impaction[4]
	• Polyethylene glycol	• Increased stool frequency and decreased straining[5]
Stimulant laxative • Stimulate muscles helping them to move stools and waste products along the large intestine	• Bisacodyl	• Increased frequency of bowel movement[6]
	• Sennoside	• Increased frequency of bowel movements in elderly patients[7]

Although 16–40% of patients use laxatives, symptoms persist despite laxative use in up to 70% of patients[8]

1. Ashraf et al. Aliment Pharmacol Ther. 1995;9(6):639-47. 2. Cheskin et al. J Am Geriatr Soc. 1995;43(6):666-9. 3. McRorie et al. Aliment Pharmacol Ther. 1998;12(5):491-7. 4. Sanders. J Am Geriatr Soc. 1978; 26(5):236-9. 5. Attar et al. Gut. 1999;44:226-30. 6. Kamm et al. Clin Gastroenterol Hepatol. 2011;9(7):577-83. 7. Kinnunen et al. Pharmacology. 1993;47 Suppl 1:53-5. 8. Wald et al. Aliment Pharmacol Ther 2008;28:917

Are current laxative options effective for chronic constipation?

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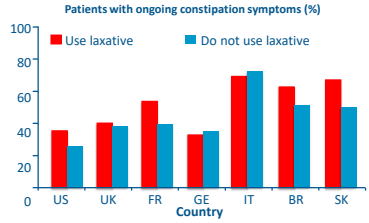
16–40% of those with constipation use laxatives

Symptoms persist despite laxative use



Approximately 2000 adults each from: United States, US; United Kingdom, UK; France, FR; Germany, GE; Italy, IT; Brazil, BR; South Korea, SK

Wald *et al. Aliment Pharmacol Ther* 2008;**28**:917

Effect of fiber on Constipation Subtypes

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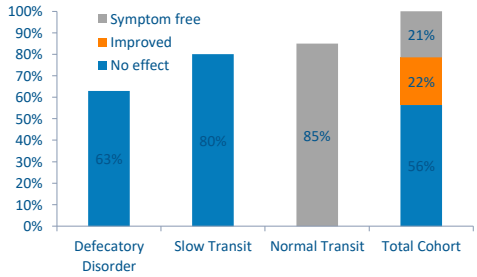

149 patients with chronic constipation (mean age 53 yr, range 18-81 yr, 84% women)

Plantago ovata seeds, 15-30 g/day, for a period of at least 6 wk

Voderholzer et al. Am J Gastroenterol; 1997;92:95

Bulking agents

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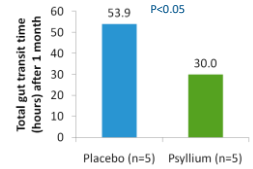
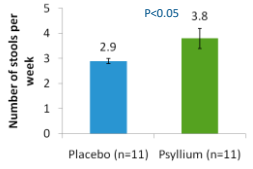
Decreased total gut transit time after 1 month of psyllium in patients with dyssynergic defaecation[1]



Increased stool frequency after 2 months of psyllium in patients with normal transit constipation[2]



1. Ashraf et al. Aliment Pharmacol Ther. 1995;9(6):639-47
2. Cheskin et al. J Am Geriatr Soc. 1995;43(6):666-9

Current therapeutic options for chronic constipation

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Agent and mechanism of action	Example	Therapeutic response
Bulking agent • Increase stool volume making it easier to pass	• Psyllium	• Decreased gut transit time and increased stool frequncy
Stool softener • Soften stool making it easier to pass	• Docusate	• Less effective than psyllium in improving bowel movements and stool output[3]

Stool softeners

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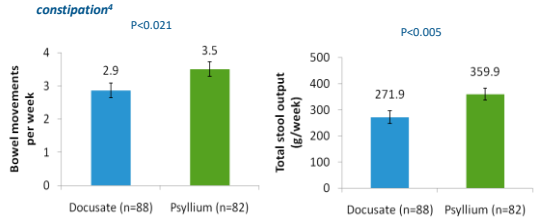
Docusate appears less effective than psyllium in improving bowel movements and stool output after 2 weeks in patients with normal transit constipation[4]



1. Pare et al. Can J Gastroenterol. 2007;21(Suppl B):3B-22B
2. Emmanuel. Ther Adv Gastroenterol. 2011;4(1):37-48
3. Mihaylov et al. Health Technol Assess. 2008;12(13):iii-iv, ix-139
4. McRorie et al. Aliment Pharmacol Ther. 1998;12(5):491-7

Current therapeutic options for chronic constipation

ICS 2017 FLORENCE

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Osmotic laxative • Increase fluids within the intestine making stools softer and easier to pass	• Lactulose	• Decreased transit and reduced fecal impaction[4]
	• Polyethylene glycol	• Increased stool frequency and decreased straining[5]

Osmotic agents: Lactulose

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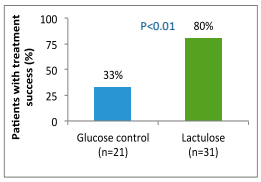
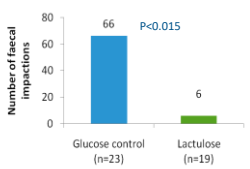
Slow transit success (needing ≤1 additional laxative during 3-week treatment period) with lactulose[1]



Reduced faecal impaction after 2 months of lactulose[1]

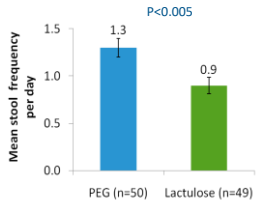


1. Sanders. J Am Geriatr Soc. 1978 26(5):236-9
2. Wesselius-De Casparis et al. Gut. 1968;9(1):84-6

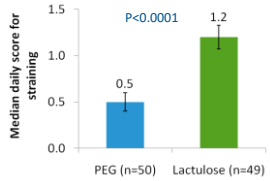
Osmotic agents: polyethylene glycol

ICS 2017 FLORENCE

Higher stool frequency with PEG vs lactulose after 1 month: elderly[1]



Less straining with PEG vs lactulose after 1 month: elderly[1]



1. Attar et al. Gut. 1999.44.226-30
2. Andorsky & Goldner. Am J Gastroenterol. 1990;85(3):261-5
3. Corazziari et al. Dig Dis Sci. 1996;41(8):1636-42
4. Di Palma et al. Am J Gastroenterol. 2007;102(9):1964-71

Current therapeutic options for chronic constipation

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	• Sennoside	• Increased frequency of bowel movements in elderly patients[7]

Stimulants

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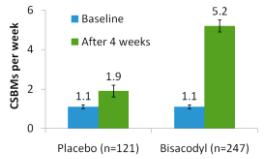
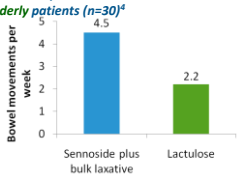
More frequent bowel movements with bisacodyl vs placebo in patients with "occasional missed days"[3]



*P<0.0001 vs placebo

CSBM, complete spontaneous bowel movement

More frequent bowel movements with sennoside plus bulk laxative vs lactulose in elderly patients (n=30)[4]



1. Pare et al. Can J Gastroenterol. 2007;21(Suppl B):3B-22B
2. Emmanuel. Ther Adv Gastroenterol. 2011;4(1)37-48
3. Kamm et al. Clin Gastroenterol Hepatol. 2011 [Epub ahead of print]
4. Kinnunen et al. Pharmacology. 1993;47 Suppl 1253-5

Laxatives for chronic constipation: Luminal mechanism of action[1]

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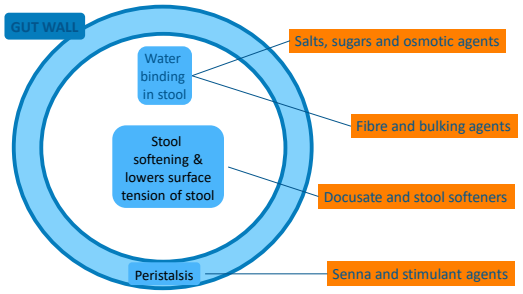

1. Tack & Müller-Lissner. Clin Gastroenterol Hepatol 2009;7:502

Tailoring laxatives to the patient, based on their symptoms and diagnosis

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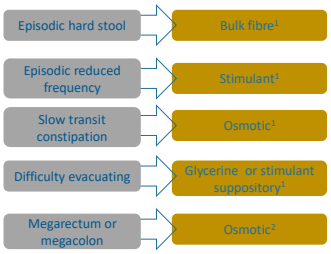

If no improvement:
- Increase dose[1]
- Rational combination e.g.
- Stool softener and stimulant laxative[3,4] or bulking agent[1]

1. Emmauel Ther Adv Gastroenterol 2011;4(1):37-48
2. Szarka & Pemberton Curr Treat Options Gastroenterol. 2006;9(4):343-50.
3. Larkin et al. Palliat Med. 2008;22(7):796-807
4. Sykes. Cancer Surv. 1994;21:137-46

Prosecretory agents

ICS 2017 FLORENCE

Lubiprostone

Though FDA-approved for use in CC, IBS, and OIC, it is not currently approved by the EMA. It is a drug that is generally safe at a dose of 24 mcg, according to the results of clinical trials undertaken at 4 weeks.

Linaclotide

It is a non-absorbable drug which has been shown to be safe and effective in the treatment of CC and IBS at doses of 145 and 290 mcg, respectively.

Blanca Serrano-Falcón Expert Opin Drug Saf 2017 Aug 4:1-11

Serotonergic agents

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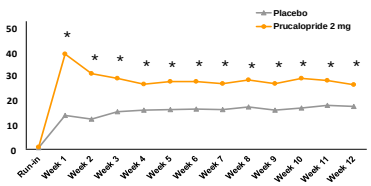
Prucalopride

at doses of 2 mg represents a safe and effective treatment option in subjects with CC. This is the drug that have been studied with the longest follow-up, in which only 10% of patients abandoned the treatment due to adverse effects .



Tack J, et al. United European Gastroenterol J. 2013;1(1):48–59

Suppositories

Mainly for patients with normal urge sensation where rectal evacuation is problem[1]

- Typically glycerine suppositories first-line followed by bisacodyl suppositories[1]

Only weak evidence supporting their use in chronic constipation[2]

WGO Practice Guideline (2007) recommends suppositories as an osmotic laxative option (glycerin) or where a fast-acting stimulant laxative is needed[3]

- WGO Global Guideline (2011) makes no recommendations on the use of suppositories[4]

1. Emmanuel Ther Adv Gastroenterol 2011; 4(1):37-48
2. Pare et al. Can J Gastroenterol. 2007;21(Suppl B):38-228
3. World Gastroenterology Organisation. Practice Guideline: constipation. 2007
4. World Gastroenterology Organisation Global Guideline. J Clin Gastroenterol. 2011;45(6):483-7

Grazie

Surgical treatment of PFDD

Alexis Schizas

Consultant Colorectal Surgeon

Guy's and St Thomas' NHS Foundation Trust

Surgical treatment of PFDD

Conservative

- maximal medical treatment
- biofeedback or pelvic floor retraining, rectal irrigation

Surgery

- failed conservative treatments
- underlying structural abnormality – e.g. rectocoele
- vaginal, transanal, abdominal or laparoscopic
- Significant recurrence and complication rates

Surgical treatment of PFDD

- Surgery
  - Vaginal
    - Transvaginal rectocoele repair
  - Perineal
    - Transperineal rectocoele repair
  - Anal
    - Prolapse repair
    - STARR
  - Abdominal or laparoscopic
    - Prolapse repair
    - Ventral mesh rectopexy

Surgical treatment of PFDD

Surgery for Rectocoele

Transvaginal
Posterior repair
+/- Levatoplasty
Site specific repair

Transanal
STARR
Intra-anal Delormes

} excision / reduction of redundant tissue

Perineal

Trans-abdominal
Ventral mesh Rectopexy
Laparoscopic

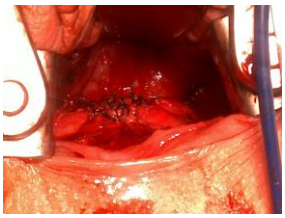
} buttressing the R/V septum + / - sphincteroplasty / repair

Trans-vaginal Rectocoele Repair

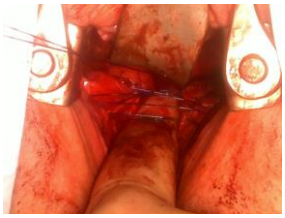
Trans-vaginal Rectocoele Repair

Trans-vaginal Rectocoele Repair

Trans-vaginal Rectocoele Repair



Trans-vaginal Rectocoele Repair



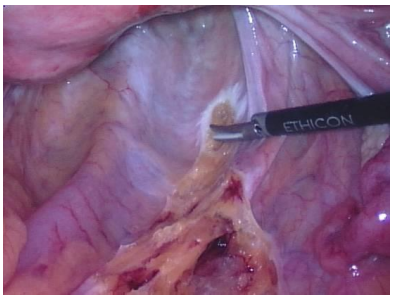
Trans-vaginal Rectocoele Repair

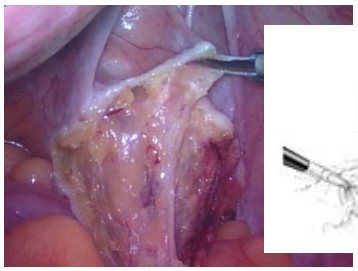
Results of Rectocoele Repair

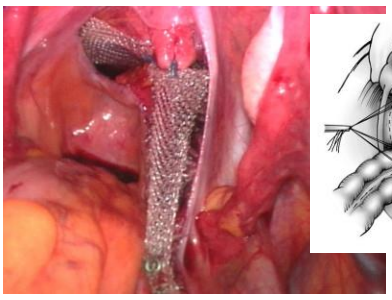
Author	n	Improved	
Khubchandani et al (1983)	59	63%	
Siproudhis et al (1993)	26	76%	
Janssen & van Dijke (1994)	76	50%	
Mellgren et al (1995)	25	52%	
Van Dam et al (1996)	75	71%	Overall
Karlbom et al (1996)	34	79%	73%
Khubchandani et al (1997)	105	82%	
Van Laarhoven et al (1999)	22	73%	
Lamah et al (2001)	24	75%	
Boccasanta et al (2002)	30	80%	
Murthy et al (1996) (Selective policy)	31	92%	

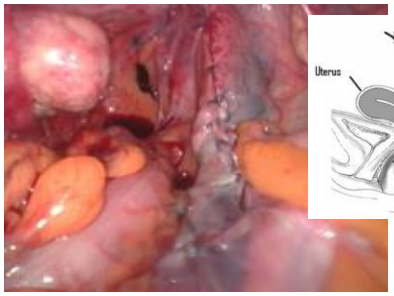
Ventral Mesh Rectopexy

- External rectal prolapse
- Internal organ prolapse / descent
- Intra rectal intussusception
  - ? Incontinence
  - ? SRUS
  - ? Pelvic pain









VMR

- Rectocoele
  - Improvement in vaginal discomfort 66%
- Reduction in ODS score 40%
  - 86% patients improvement
- Ext Rectal Prolapse
  - Recurrence 2% - 4%
- Resolution / Improvement constipation 72% - 84%
- New Constipation 2%

Prolapse Surgery

- Abdomial procedure
  - Ventral Mesh Rectopexy
  - Sutured Rectopexy
  - Resection Rectopexy
- Perianal procedures
  - Delorme's procedure
  - Altmeier's

Types of prolapse

Full Thickness External Prolapse

- Low Take Off
- High Take Off

(external protrusion of intra-rectal intussusception)

Intra-rectal Intussusception

Rectal wall prolapse (rectocoele)

Perineal approaches

Delorme's operation	Perineal proctosigmoidectomy
Described in 1900	1933 Miles 1971 Altemeier
Resection of sleeve of mucosa with plication of remaining muscle and suture of bowel mucosa to anal mucosa	Full thickness excision of rectum and portion of sigmoid colon

Delorme's procedure

No. of studies (1979-2003)	No. pts	Recurrence (%)	Continence improved (%)
14	487	21	71

Perineal rectosigmoidectomy
(Altmeier's)

No. of studies (1971-1999)	No. pts	Recurrence (%)	Continence improved (%)
11	558	17	61

STARR - Indications

Anatomical changes
- STARR (surgery) corrects anatomical abnormality
- in presence of symptoms

STARR: symptomatic patients with abnormality

STARR - Indications

- Prolonged evacuation or repeated straining
- Excessive time spent on the toilet
- Frequent calls to defaecate prior to or following evacuation
- Incomplete evacuation
- Laxative and or suppositories/enema use
- Digitation
- Pelvic pressure, rectal discomfort, and perineal pain

Exclusion Criteria

External full-thickness rectal prolapse

Perineal infection (abscess, fistula)

Recto-vaginal fistula

Inflammatory bowel disease (including proctitis)

Radiation proctitis

Anal incontinence (Cleveland Clinic Florida; Wexner Score > 7)

Anal stenosis precluding insertion of the stapling device

Enterocoele at rest

Significant gynaecological or urinary pelvic floor abnormality requiring combined treatment

Presence of foreign material adjacent to the rectum (e.g. mesh)

Absence of anatomical or physiological abnormality associated with ODS

Intra-operative technical factors which preclude the safe execution of the operation

Significant rectal or peri-rectal fibrosis

Prior rectal anastomosis

STARR - Outcome

Improvement ODS and structure in >90% of patients

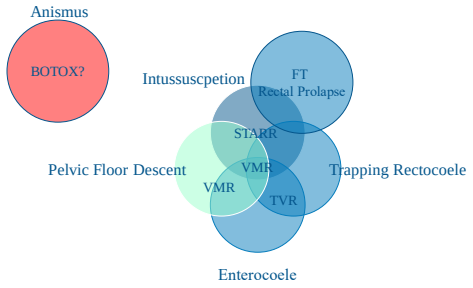
European STARR registry
- 2,224 patients, 12-month follow-up
- significant improvement
  - obstructive defaecation score (15.8 vs. 5.8, P<0.001)
  - symptom severity score (15.1 vs. 3.6, P<0.001)
  - quality of life

Jayne DG *et al*. Stapled transanal rectal resection for obstructed defecation syndrome: one year results of the European STARR Registry. Dis Colon Rectum 2009 July;52(7):1205-12.

STARR - Complications

Overall - 36%
- Urgency 20%
- Bleeding 5%
- Sepsis 4.4%
- Staple line complications 3.5%
- Incontinence 1.8%
- Pain <2%
- rectal necrosis <1%
- rectovaginal fistula <1%

Surgical treatment of PFDD



Surgical treatment of PFDD

- Clear understanding of pathology
- Appropriate decision with each patient
- If any surgical options are available
- Most appropriate for their symptoms

Affiliations to disclose†:

† All financial ties (over the last year) that you may have with any business organisation with respect to the subjects mentioned during your presentation

Funding for speaker to attend:

- [x] Self-funded
- [x] Institution (non-industry) funded
- [ ] Sponsored by:

Biofeedback Therapy

By
Paula Igualada-Martinez
Clinical Specialist Physiotherapist
Guy's and St Thomas' NHS Foundation Trust

47th Annual Scientific Meeting of the International Continence Society (ICS)
Florence, Italy
12th– 15th September 2017

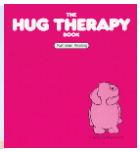
Aims of this presentation

- What is Biofeedback Therapy?
- What does the literature say?
- Assessment pre Biofeedback
- Biofeedback therapy techniques
- Outcome of Biofeedback
- Conclusion

What is Biofeedback?

What the patients may think…

What my colleagues may think…



What is Biofeedback?

- Biofeedback (BFB) therapy is an instrument-based learning process that is based on "operant conditioning" techniques.
- The governing ... any behavior when reinforced its ... ing repeated and perfected increa...

"Practice makes perfect."
English Proverb

Gastroenterol. 25(1): 159–166.

- Biofeedback first described in 1981 as the "Light at the end of the tunnel"

PAUL O'BRIEN
Senior Lecturer in Surgery

MERRILYN BUSHELL
Research Associate
Flinders Medical Centre
Bedford Park South Australia 5042

1. O'Brien P, Silen, W. Influence of acid secretory state on the gastric mucosal tolerance to back diffusion of H+. Gastroenterology, 1976;71:780–5.

Biofeedback: The Light at the End of the Tunnel? Maybe for Constipation

Sir:

Using anorectal manometry, Martelli et al. (1) have shown that constipation might result from outlet (anorectal) obstruction and that myectomy could be efficacious when this mechanism of constipation was observed. Moreover, Cerulli et al. (2) reported that fecal incontinence could be relieved by biofeedback conditioning method. The functional basis of this latter method consists of patients relearning how to contract their external anal sphincter by showing them their manometric tracing and noting what maneuver is necessary to raise intrarectal pressure. Hence it was tempting to speculate that this method of instrumental learning might

In conclusion, biofeedback method did not modify anal manometry disturbances, at least after 6 mo. But despite persistence of the motility abnormalities of the anal canal, the relaxation maneuver, learned during the first training session, allowed always a daily stool 1 yr later. This case seems to indicate that biofeedback conditioning could play a role in the treatment of constipation by outlet obstruction. So we agree with Almy and Corson (3) that biofeedback might be the light at the end of the tunnel for constipation.

DENIS Ph.
CAYRON G.
GALMICHE J.P.
Centre Hospitalier Universitaire de Rouen
Rouen, France

1. Martelli H, Devroede G, Arhan P, Duguay C. Mechanisms of idiopathic constipation: outlet obstruction. Gastroenterology 1978;75:623–31.
2. Cerulli MA, Nikoomanesh P, Schuster MM. Progress in biofeedback conditioning for fecal incontinence. Gastroenterology 1979;76:742–6.
3. Almy TP, Corson JA. Biofeedback. The light at the end of the tunnel? Gastroenterology 1979;76:874–6.

What is Biofeedback Therapy nowadays?

A combination of all of these therapies will help the patient to defecate effectively. Also, evacuating regularly may also stimulate gut transit.

Denis P. (1996) *European Journal of Gastroenterology and Hepatology.* 8(6). p.530–3.

Goals of Biofeedback

- To restore a normal pattern of defecation
- To correct the dyssynergia or incoordination of the abdominal, rectal, puborectalis and anal sphincter muscles
- To enhance rectal sensory perception in patients with impaired rectal sensation
- To strengthen the pelvic floor musculature

Rao et al (2015) *Neurogastroenterol Motil.* 27(5): 594–609
Heymen et al (2009) *Dis Colon Rectum*. 52(10)

What does the literature say?

- Currently there is insufficient evidence regarding the efficacy and safety of biofeedback for the management of people with pelvic floor defecatory dysfunction (PFDD).
- There is low or very low quality evidence from single studies to support the effectiveness of biofeedback for the management of PFDD.
- However, the majority of trials are of poor methodological quality and subject to bias.
- Further well-designed RCT's with adequate sample sizes, validated outcome measures and long-term follow-up are required to allow definitive conclusions to be drawn.

What does the literature say?

Published in final edited form as:
Neurogastroenterol Motil. 2015 May ; 27(5): 594–609. doi:10.1111/nmo.12520.

Abstract

- Biofeedback therapy is recommended:
  - For the short term and long term treatment of constipation with dyssynergic defecation **(Level I, Grade A).**

What does the literature say?

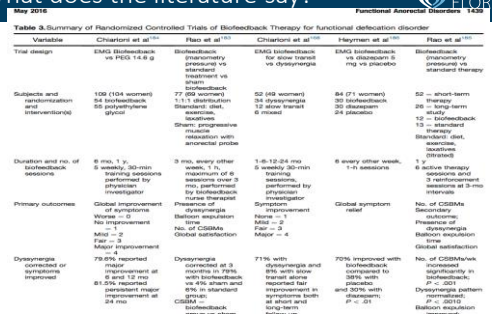


Table 3.Summary of Randomized Controlled Trials of Biofeedback Therapy for functional defecation disorder

Variable	Chiarioni et al[164]	Rao et al[165]	Chiarioni et al[166]	Heymen et al[167]	Rao et al[163]
Trial design	EMG Biofeedback vs PEG 14.8 g	Biofeedback (manometry pressure) vs standard treatment vs sham biofeedback	EMG biofeedback for slow transit vs dyssynergia	EMG biofeedback vs diazepam 5 mg vs placebo	Biofeedback (manometry pressure) vs standard therapy
Subjects and randomization and intervention(s)	109 (104 women) 54 biofeedback 55 polyethylene glycol	77 1:1:1 distribution Standard: diet, exercise, laxatives Sham: progressive muscle relaxation with anorectal probe	52 (49 women) 34 dyssynergia 12 slow transit 6 mixed	84 (71 women) 30 biofeedback 30 diazepam 24 placebo	52 — short-term therapy 26 — long-term study 12 — biofeedback 13 — standard therapy Standard: diet, exercise, laxatives (nitrates)
Duration and no. of biofeedback sessions	6 mo, 1 y; 6 weekly, 30-min training sessions performed by physician investigator	3 mo, every other week, 1 h, maximum of 6 sessions over 3 mo, performed by biofeedback nurse therapist	1-5-12-24 mo 5 weekly 30-min training sessions, performed by physician investigator	6 every other week, 1-h sessions	1 y 6 active therapy sessions and 3 reinforcement sessions at 3-mo intervals
Primary outcomes	Global improvement of symptoms Worse = 0 No improvement = 1 Mild = 2 Fair = 3 Major improvement = 4	Presence of dyssynergia Balloon expulsion time No. of CSBMs Global satisfaction	Symptom improvement None = 1 Mild = 2 Fair = 3 Major = 4	Global symptom relief	No. of CSBMs Secondary outcome: Presence of dyssynergia Balloon expulsion time Global satisfaction
Dyssynergia corrected or symptoms improved	79.6% reported major improvement at 6 and 12 mo 81.5% reported treatment major improvement at 24 mo	Dyssynergia corrected at 3 months in 78% with biofeedback vs 4% sham and 0% in standard group; CSBM — biofeedback	71% with dyssynergia and 8% with slow transit alone reported fair improvement in symptoms both at short and long-term	70% improved with biofeedback compared to 38% with placebo and 30% with diazepam; $P < .0010$	No. of CSBMs/wk increased significantly in biofeedback; $P < .002$ Dyssynergia pattern normalized; $P < .0010$ Balloon expulsion

75% Improvement in symptoms

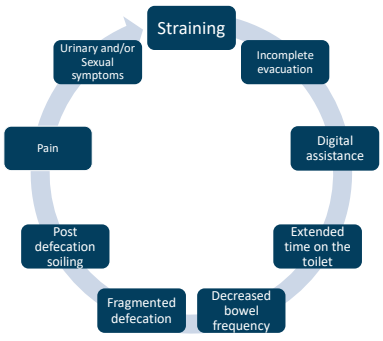
Rao et al. (2016) Gastroenterology 150:1430–1442

Assessment pre BFB

- History taking
  - Standardized assessment tools
  - Outcome measures – Thompson score
  - **Bowel diary**
- Observation and Physical examination
  - Digital Rectal Examination
    - **Sensitivity of 75% and Specificity of 87% for detecting dyssynergia!**
  - Pelvic floor muscle assessment via PV and/or PR
- Further tests and investigations
  - When basic treatment has failed e.g. education, fluid and fibre intake, review of medication, etc…

Laycock J and Jerwood D (2001) Physiotherapy 87 (12):631-642
Messelink B et al. (2005) Neurourology and Urodynamics 24:374-380
Slieker-ten Hove et al (2009) Neurourology and Urodynamics 28:295-300

What are the main symptoms to treat in BFB?



So, what do we do during Biofeedback sessions?

Biofeedback Therapy

Lets get the basics covered!

- Education
- Defecation dynamics
- Dietary advice
- Physical Activity
- Medication
- Pelvic floor muscle training

The more fancy treatment!

- EMG Biofeedback
- Rectal sensation and balloon expulsion training
- Neuromuscular electrical stimulation
- Perineal splinting/support: Femmeze
- Transanal irrigation

Emotional support and/or Therapeutic Alliance and Behavioral support!

Education is the key to success!!!

- Discussion of digestive tract, function and the defecation process
  - If possible with models/pictures
- Normalize bowel frequency according to patient's symptoms and pathology
  - Demystify the myth of the 'once a day rule'
- Discuss previous treatments and failures
- Discuss results of investigations and the relationship to patients symptoms

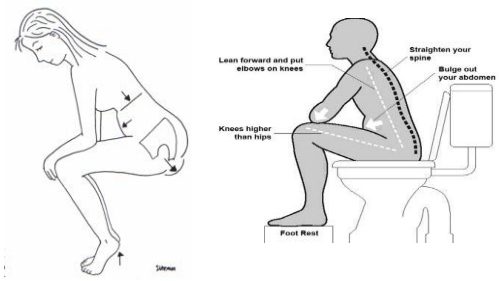
Bowel training

- Regular attempt following breakfast (stimulation of gastro-colic reflex) or after exercise
- Privacy and time
- Avoid ignoring the urge to defecate
- Strain for no more than 5-10 minutes
- During attempted defecation, they must be instructed to push at a level of 5 to 7, assuming level 10 as their maximum effort of straining
- Avoid prolonged sitting
- Advise to stop digitating anally

Rao (2008) Gastroenterol Clin North Am. 37:569–86.

Defecation dynamics: what should happen?

- Defecation technique:



Sapsford et al.(1998) Women's health. A textbook for physiotherapists. London: WB Saunders Company Ltd.

Squatty potty

Dietary Advice

- Trials evaluating the effect of increased liquid intake in patients with PFDD are lacking, and there is no evidence that bowel evacuation difficulties can be improved by increasing oral fluid intake, unless the patient is dehydrated.
- Recent studies concluded that psyllium, a natural fiber supplement increases stool frequency and gave this compound a grade B recommendation, but there was insufficient data to make a recommendation for the synthetic polysaccharide methylcellulose, or calcium polycarbophil or bran in patients with bowel evacuation difficulties.
- Any eating disorder should be managed accordingly
- ONE RCT: 25 grms of fibre + increased fluid intake improves chronic constipation in patients

Rao (2011) Best Pract Res Clin Gastroenterol. 25(1): 159–166
Mueller-Lissner, S. A., & Wald, A. (2010) *BMJ Clinical Evidence*: 0413.

Physical Activity

- Physical activity can increase colonic transit time and reduce bowel evacuation symptoms in elderly subjects

However…

- Despite the recommendation to patients with PFDD of regular physical activity there is no evidence that bowel evacuation difficulties can be improved by an increased in physical activity.

Rao et al. (1999) *Am J Physiol.* 276: G1221-G1226.
De Schryver et al (2005) *Scand J Gastroenterol.* 40: 422-429.

Medication

- Laxatives
  - IDEALLY THEY SHOULD BE DISCONTINUED!!
- Review medication that may aggravate bowel dysfunction (e.g. pain medication/narcotics/calcium channel blockers)
- Initial stages of biofeedback therapy the use of glycerin or bisacodyl suppositories can be used as an evacuatory aid if bowels not opened for 3 days

Brandt et al. (2005) Am J Gastroenterol. 100(Suppl 1):S5–S21.

Pelvic floor muscle training

Chronic straining ➔Pudendal Neuropathy ➔Pelvic floor weakness

- PFMT
- Exercise programs should follow the principles of:
  - Specificity, Overload, Progression, Maintenance and reversibility
- For a minimum of **5 months**
- Include strategies to adhere to the exercise regime

Bø K Int Urogynecol J 1995; **6:** 282–91.
Bø et al (2007) Evidence-Based Physical Therapy for the Pelvic Floor
American College of Sports Medicine (ACSM) (1998) Med Sci Sports Exer 30: 975-991

Neuromuscular Electrical Stimulation (NMES)

- NMES is aimed at training the pelvic floor and external anal sphincter muscles by producing a series of electrically induced contractions, to improve strength, sensation and function
- Home stimulator
- Patients should join in with the electrically induced contraction.

Vonthein et al (2013) Int J Colorectal Dis 28:1567-1577

Pelvic floor muscle Trigger Points

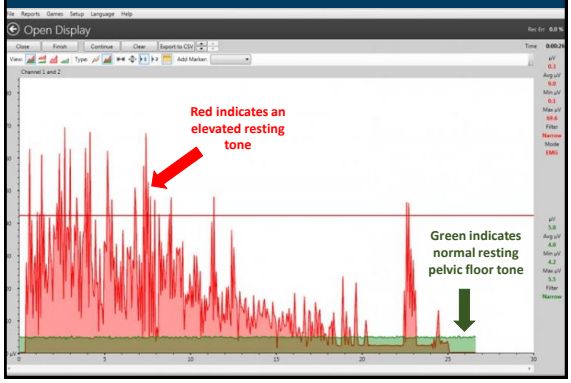
- Travell and Simons (1992)
  1) Focal tenderness
  2) Reproduction of 'familiar' pain
  3) Predicted referral pattern
  4) Local twitch response
  5) Painful limited range of movement
  6) Follow the same principles of TrP release
     - Firm pressure
     - Contract-relax technique

EMG BFB

- To teach patients to relax their pelvic floor muscles when straining
- This skill can be taught by providing visual feedback regarding anal canal pressure or EMG activity
- The subject should be seated on a commode with the manometry/EMG probe *in situ*.
- The monitor display of the pressure/EMG changes from the rectum and anal canal provides visual feedback and facilitates learning.
- First, their posture and breathing techniques during attempted defecation are corrected.
- After few sessions the patient is encouraged to perform these maneuvers without visual or verbal feedback

Engeler et al. (2012) Guidelines on chronic pelvic pain. European Association of Urology

Biofeedback with sEMG



Rectal Sensation Training

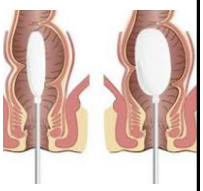
To improve Rectal hyposensitivity and promote better awareness of stool.

- This is performed by intermittent inflation of the balloon in the rectum.
- The goal is to teach the subject to perceive a lower volume of balloon distention but with the same intensity as experienced with a higher volume.
- With repeated inflations and deflations newer sensory thresholds can be established.

Rao et al (2015) *Neurogastroenterol Motil*. 27(5): 594–609
Rose S (2014) Constipation: A Practical Approach to Diagnosis and Treatment

Balloon expulsion training

Simulated Defecation Training: educate patient to practice defecation and expulsion of a lubricated, inflated balloon.



Rao et al. (2016) Gastroenterology 150:1430–1442
Rose S (2014) Constipation: A Practical Approach to Diagnosis and Treatment

Abdominal Massage

McClurg et al (2017). *Trials*, *18*, 150. http://doi.org/10.1186/s13063-017-1890-y

Perineal splinting/support: Femmeze

- No literature available regarding the effectiveness of this gadget
- Anecdotal information suggests that patients have mixed feelings about using it when PFDD is present

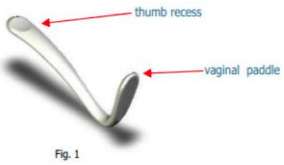


Fig. 1

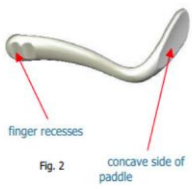


Fig. 2

Femmeze

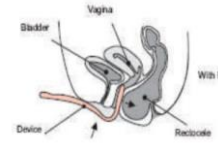


Diagram. 1

Aims to reduce the rectocele in order to improve the rectal evacuation.

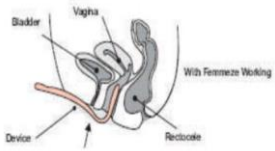


Diagram. 2

'Emotional support' or 'Therapeutic alliance'?

- Good relationship between the clinician and patient is considered central to the therapeutic process.
- Commonly referred to as the therapeutic alliance, helping alliance, or working alliance.
- Positive alliance is associated with improved health outcomes such as depression, anxiety, mood, interpersonal problems, and general psychological functioning.
- Trust is seen as a global attribute of treatment relationships, encompassing satisfaction, communication, competency, and privacy, and is vital to cooperation with treatment and physician recommendations

End of Biofeedback Therapy

- The number of sessions and frequency of sessions should be customized for each patient.
- Each session takes 45 mins, and on average, 4 to 6 training sessions are required
- Patients are encouraged to practice exercises at home
- Biofeedback therapy is discontinued when patients demonstrate:
  - consistent coordinated pattern of defecation with anal relaxation;
  - improved stooling habit; and
  - normal balloon expulsion time.
- If no improvement, the patient should be referred back to the Colorectal Surgeon or back to the GP

Can we predict outcome of BFB?

- Factors That Predict Outcome of Biofeedback Therapy in Constipation With Dyssynergic Defecation (DD)

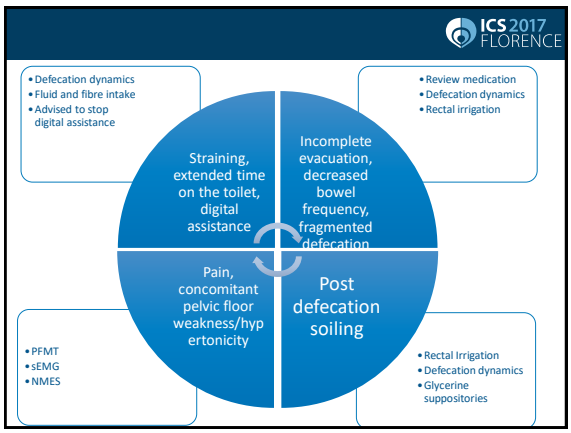
Patcharatrakul et al (2016) AGA Abstract

	Success (n= 77)	Failure (n=50)	p-value
Age (year)	42 ± 15	40 ± 14	NS
Gender (M:F)	5:72	2:48	NS
Bowel satisfaction score (VAS 0-100), mm	9(1-21)	17(2-33)	0.002
Digital maneuvers to facilitate defecation, n(%)	20(26.6)	5(10)	0.03
Balloon expulsion time (s)	73 (26->300)	54 (15->300)	NS
First sensation threshold (ml)	20 (10-30)	20 (10-30)	NS
Desire to defecate threshold (ml)	80 (70-160)	80 (60-130)	NS
Urge to defecate threshold (ml)	160 (110-240)	160 (110-240)	NS
Rectal hyposensitivity, n(%)	28(36.3)	15(28.8)	NS
Rectal hypersensitivity, n(%)	36(46.8)	26(52)	NS
Dyssynergic defecation type, n(%) -Type I -Type II -Type III -Type IV	20(26) 51(66.2) 5(6.5) 1(1.2)	13(26) 28(56) 5(10) 4(8)	NS

Background & Aims: Uncontrolled trials suggest biofeedback is an effective treatment for pelvic floor dyssynergia (PFD), a type of constipation defined by paradoxical contraction, or inability to relax, pelvic floor muscles during defecation. The aim was to compare biofeedback to laxatives plus education. *Methods:* Patients with chronic, severe PFD were first treated with 20 g/day fiber plus enemas or suppositories

Conclusions: Five biofeedback sessions are more effective than continuous polyethylene glycol for treating PFD, and benefits last at least 2 years. Biofeedback should become the treatment of choice for this common and easily diagnosed type of constipation.

sensations of incomplete evacuation and anorectal blockage, use of enemas and suppositories, and abdominal pain (all $P < .01$). Stool frequency increased in both groups. All biofeedback-treated patients reporting major improvement were able to relax the pelvic floor and defecate a 50-mL balloon at 6 and 12 months. *Conclusions:*



Conclusion – Take home messages

- Biofeedback therapy is a labor-intensive approach but has NO ADVERSE EFFECTS:
  - It should be first line management for PFDD!
- Identification of patients is the key to success of BFB
- Only offered in a few centers around the world
- Despite being effective in over 75% of patients, the mechanism of action is still unclear
- We should aim for a standardization of protocols and equipment
  - "There is marked variation in practice, training and supervision of BFB therapists in the UK"

Etherson et al. (2016) Frontline Gastroenterology. 0:1-6.

Paula Igualada-Martinez

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Affiliations to disclose†:

The equipment utilised as part of this presentation has been kindly donated by the following companies:

- Coloplast
- Bbraun
- Qufora

† All financial ties (over the last year) that you may have with any business organisation with respect to the subjects mentioned during your presentation

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Trans-anal Irrigation Therapy (TAI)

By

Paula Igualada-Martinez

Guy's and St Thomas' NHS Foundation Trust (London)

Aims of this presentation

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- What is Trans-anal Irrigation Therapy?
- Benefits, Indications and Contraindications
- Complications of TAI
- When should TAI be considered?
- Patient selection/investigations required/initiating treatment
- What does the literature say?
- Rectal Irrigation systems
- Rectal Irrigation – Decision Matrix
- Trouble shooting

Trans-anal irrigation therapy

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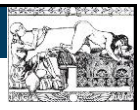
- Trans-anal irrigation therapy (TAI), commonly known as Rectal irrigation, involves facilitation of bowel evacuation by instilling water into the rectum via the anus, using either a balloon catheter or cone delivery system.

Emmett et al. BMC Gastroenterology (2015) 15:139

Emmanuel et al. Spinal Cord (2013) 51:732–738

History of TAI



Reintroduced into modern medicine in the 80's

1500 B.C., the 'Ebers Papyrus', an ancient Egyptian medical document, described the many benefits of colon cleansing.

Dr Ardene (English surgeon; 1307-1390) advocated that "each person should be purged 3 to 4 times a year to maintain good health".

The 17th century known as the age of the enema and the use of syringes for "internal washing or lavament"

In a 1917 edition of the (JAMA) Dr. Kellog reported that in over forty thousand gastrointestinal disease cases, he had used surgery in only twenty cases. The rest were helped as a result of cleansing the bowels, diet and exercise.

http://www.jacemedical.com/colon_articles/The%20history%20of%20colonic%20hydrotherapy.pdf

TAI in modern medicine

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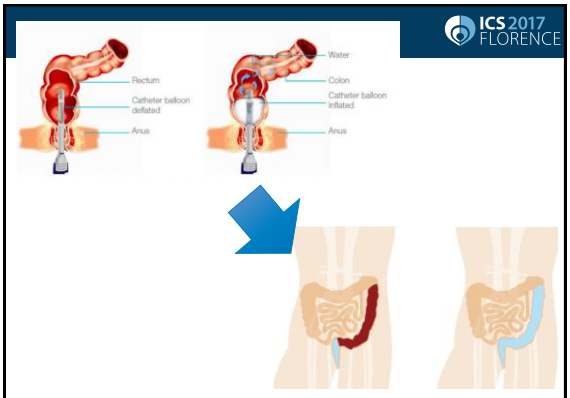
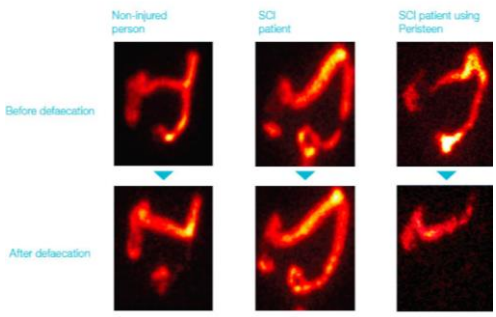
- Reintroduced into modern medicine in the 1980's as a treatment of neurological bowel dysfunction (Spina Bifida, MS, …)
- And more recently (early 2000's) to treat Pelvic pelvic floor defecatory dysfunction (functional bowel dysfunction)!

How does TAI work?

- TAI assists bowel evacuation by introducing warm water into the rectum and colon via the anus and using a balloon catheter and/or cone system;
- The balloon catheter or cone delivery system is attached via a plastic tube to an irrigation bag holding up to 1.5 liters of water although typically only 0.5–1 liter is required;
- Alternatively a low-volume system consisting of a hand pump and a cone may be employed. This will normally deliver up to 80mls of water;
- The water is subsequently evacuated into the toilet with the content of the descending colon, sigmoid colon and rectum.



TAI



Christensen et al. (2003) Dis Colon Rectum 46:68-76

Benefits of TAI

The regular use of TAI allows to re-establish and control bowel function in patients with bowel dysfunction.

This enables patients to develop a bowel routine by choosing the time and place of evacuation.

In patients with PFDD, regular evacuation of the rectosigmoid region can accelerate transit through the entire colon and therefore helps to prevent blockages.

Alternative to surgery.

Improving confidence and quality of life in patients!

Emmett et al. BMC Gastroenterology (2015) 15:139
Emmanuel et al. Spinal Cord (2013) 51:732–738
Christensen et al. Gastroenterology (2006) 131(3):738-47

Indications of TAI

- Pelvic floor defecatory dysfunction (PFDD): Obstructed defecation syndrome (ODS), Functional defecation disorder (FDD), Chronic idiopathic constipation (CIC), and Constipation-predominant irritable bowel syndrome (IBS-C).
- Idiopathic Post-traumatic Constipation
- Neurological Bowel dysfunction (MS, SCI, Spina bifida…)

Emmett et al. BMC Gastroenterology (2015) 15:139

Contraindications

Absolute contraindications:

- Anal or rectal stenosis
- Active inflammatory bowel disease
- Acute diverticulitis
- Colorectal cancer
- Within 3 months of rectal surgery
- Within 4 weeks after endoscopic polypectomy
- Ischaemic colitis

Relative contraindications/ Precautions:

- Severe diverticulosis
- Long-term steroid medication
- Radiotherapy to the pelvis
- Prior rectal surgery
- Faecal impaction
- Painful anal conditions
- Current or planned pregnancy
- Bleeding diathesis or anticoagulant therapy
- Severe autonomic dysreflexia
- Change of bowel habit
- The use of rectal medication
- Children below 3 years of age
- Severe heart/liver disease

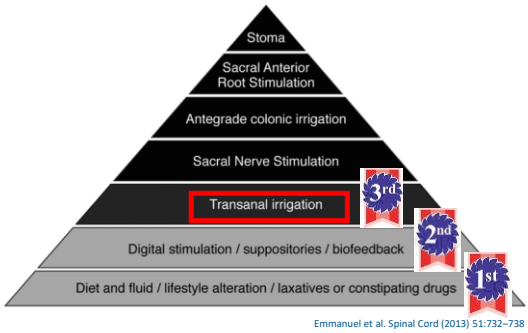
Emmanuel et al. Spinal Cord (2013) 51:732–738

Complications – Bowel perforation

- Bowel perforation is a rare complication of TAI
  - DRE/Patient evaluation is mandatory pre TAI!
- The patient usually experiences:
  - Severe/sustained pain in the abdomen/back
  - Severe anal bleeding
  - Patient should be advised to seek immediate medical help!
- In order to minimize the risk:
  - **Training the patient!** + Discuss symptoms of bowel perforation
  - Regular contact + contact details of the health professional that provided the TAI system

Emmanuel et al. Spinal Cord (2013) 51:732–738

When should TAI be considered?



Emmanuel et al. Spinal Cord (2013) 51:732–738

Patient selection and work up!

- The patient should be known to the health care professional initiating TAI
  - Pathophysiology and clinical indication of TAI
- The escalation of treatment pre TAI is an important part of deciding which method of TAI
  - Complying with clinical guidance and clinical governance
- Psyche and Motivation!
- Patient's manual dexterity

Maybe the patient has already de… her/his own TAI system!!!!

Picture taken with patient's permission.

Patient assessment pre TAI

- Review bowel management and ensure that the appropriate escalation of treatment has been completed!
- Assessment by a clinically competent TAI health care professional:
  - Symptoms up to date and comparison to the first visit with an appropriate outcome measure
  - Review PMHx, DHx and SurgHx=check contraindications!
  - Impact on QoL/ADL's
  - DRE±VE±Abdominal palpation
  - Bowel diary
  - 'Home made treatments' (coffee enemas, colonic irrigation, etc…)

Does the patient require any investigations pre TAI?

- Necessary to exclude RED FLAGS!
  - Triage clinic in our unit
- Depending on primary referrer
  - GP/Family doctor versus Colorectal Surgeon
- Bowel investigations:
  - Colonoscopy?
  - Flexible sigmoidoscopy?
  - Anorectal physiology?
  - Endoanal/Pelvic floor ultrasound?
  - Transit studies?

Initiating treatment

- PRACTICE-PRACTICE-PRACTICE-PRACTICE!!!
- Patient training
  - Explain rationale and procedure for the use of TAI
    - "Make it personal": correlation of the benefit of using TAI with the patient's symptoms and the alternative of not using TAI
    - Ensure the patient provides consent!
  - The patient should demonstrate "competence in clinic"
  - Establish a routine for the patient
    - Is there a better time? What about making use of the gastrocolic reflex?
  - Discuss frequency of TAI
    - Ideally, daily use and decrease to alternate days when patient confident with the use and experienced benefit of TAI (individual to each patient!)
  - Further encouragement of an appropriate diet and fluid intake with a reminder of defecation dynamics

- Discuss use of water and number of pumps required with each TAI system
- Set up realistic expectations
  - It may take a few weeks for an optimum benefit of TAI
- Discuss expected complications with the TAI system and how to resolve them
- Discuss the use of laxatives as an adjunct to TAI depending on initial diagnosis and indication of TAI

Ongoing support/adherence to the TAI

- Follow up in person or via a telephone appointment
- Is there a specific timeframe??
  - 2/52 in our local hospital
- Long-term patients have access to a group session at our local hospital
  - *"Consider group sessions as a way of teaching and supporting patients performing transanal irrigation (Recommendation Grade D- ICI 2017)".*
- Make accessible for patients to contact you in clinic or a designated health professional within your unit
- Give them the number of the different TAI companies

What does the literature say?

Scandinavian Journal of Gastroenterology, 2010; 45: 517–527

informa
healthcare

REVIEW ARTICLE

In patients with chronic idiopathic constipation, defecation disturbances after anorectal surgery or miscellaneous functional bowel problems, transanal irrigation can be attempted as a simple and reversible treatment, but whether it is superior to other non-surgical procedures remains to be studied. However, it seems reasonable to offer transanal irrigation before irreversible surgical procedures are considered.

disordered defecation before irreversible surgery is considered.

Key Words: *Constipation, disordered defecation, enema, faecal incontinence, neurogenic bowel dysfunction, review, transanal irrigation*

Emmett et al. *BMC Gastroenterology* (2015) 15:139
DOI 10.1186/s12876-015-0354-7

BMC Gastroenterology

RESEARCH ARTICLE Open Access

Trans-anal irrigation therapy to treat adult chronic functional constipation: systematic review and meta-analysis

Christopher D. Emmett[1*], Helen J. Close[2], Yan Yiannakou[3] and James M. Mason[2]

Conclusions: The reported success rate of irrigation for functional constipation is about 50 %, comparable to or better than the response seen in trials of pharmacological therapies. TAI is a safe treatment benefitting some patients with functional constipation, which is a chronic refractory condition. However findings for TAI vary, possibly due to varying methodology and context. Well-designed prospective trials are required to improve the current weak evidence base.

Results: Seven eligible uncontrolled studies, including 254 patients, of retrospective or prospective design were identified. The definition of treatment response varied and was investigator-determined. The fixed-effect pooled response rate (the proportion of patients with a positive outcome based on investigator-reported response for each study) was 50.4 % (95 % CI: 44.3–56.5 %) but featured substantial heterogeneity ($I^2 = 67.1$ %). A random-effects estimate was similar: 50.9 % (95 % CI: 39.4–62.3 %). Adverse events were inconsistently reported but were commonplace and minor.

Conclusions: The reported success rate of irrigation for functional constipation is about 50 %, comparable to or better than the response seen in trials of pharmacological therapies. TAI is a safe treatment benefitting some patients with functional constipation, which is a chronic refractory condition. However findings for TAI vary, possibly due to varying methodology and context. Well-designed prospective trials are required to improve the current weak evidence base.

Received: 4 April 2016 / Accepted: 28 April 2016

Abstract

Background The aim of the present study was to determine the success rate, quality of life and predictive factors of

Conclusions RC is a moderately effective long-term alternative in patients who do not respond to medical therapy and biofeedback exercises. There is a high dropout rate in the first months, but a moderate rate of continuation in the period hereafter. No predictive factors for continuation were found in medical history or function tests. Those who continued RC performed better on the SF-36 subscale energy/fatigue.

found between patients who stopped and continued RC concerning age, gender, defecation disturbance, underlying disorders, anorectal function, colon-transit time, FI-QoL or BDI-score. Twenty-three patients (38 %) were still performing RC after 21 months, 22 patients (37 %) after 28 months and 1 patient was lost to follow-up.

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Enough with the overview, lets get our hands dirty now!

TAI systems

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- Peristeen – Coloplast
  - https://www.youtube.com/watch?v=M89WHE3TAZA

- Qufora IrriSedo Cone Guide

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- Qufora Balloon Irrigation system
  - https://www.youtube.com/watch?v=XV6H-AEiEb8

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The system

Water bag
Control unit
Pump
Tube
Rectal catheters with silicone balloon
(available in regular and small)
Velcro straps (if needed)

- Qufora IrriSedo Mini Guide

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- Irypump® S Rectal Irrigation with Cone
  - https://www.youtube.com/watch?v=uOslfrGqZzk

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- Navina- New kid in town!
  - https://www.youtube.com/watch?v=lvNQlVs8t1E

TAI – Decision Matrix

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	Rectal Balloon System	Cone Shape System	Pump System	Evidence	Available on prescription (UK)
Peristeen®	✓			RCT & Observational	Yes
Qufora Cone Toilet®		✓		Observational	Yes
Qufora Balloon System ®	✓			Observational	Yes
Qufora Mini System®		✓		Observational	Yes
Irypump ®			✓	Observational	Yes

TAI – Decision Matrix

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	Clinical Indication	Why	Rationale
P			ve
To			on
I			nt
		extension if dexterity problems	

Cannot recommend one system over another!
Most of the time depends on clinicians clinical experience + competence with TAI systems and the PATIENT!

Christensen et al (2003) Dis Colon Rectum 46:68-76
Emmanuel et al. Spinal Cord (2013) 51:732–738

Trouble-shooting

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Consensus review of best practice of transanal irrigation in adults

Emmanuel et al. Spinal Cord (2013) 51:732–738

Bleeding	A small amount of bleeding is to be expected More copious or regular bleeding requires further investigation Haemorrhage with or without pain suggests a probable perforation, which should be treated as a medical emergency
Pain	If cramps, discomfort or pain occur while instilling the irrigation, pause instillation for a few moments and continue more slowly once the discomfort has subsided, ensure that irrigant is warm enough—at body temperature, around 36–38 1C If pain is severe/persistent stop irrigating—possible bowel perforation— medical emergency
Autonomic dysreflexia and autonomic symptoms during irrigation (sweating, palpitations and dizziness)	Instil the irrigant slowly Limit time on toilet depending on tolerance If symptoms are bothersome, ensure the patient is not alone when irrigating until symptoms at each TAI are reduced/absent If patient is at risk of AD medication should be immediately available in the home setting If AD occurs, stop irrigation immediately. Further assessment and possibly other interventions are required before continuing with TAI
Digital rectal check and removal of stool if present Increase frequency and/or volume of transanal irrigation to ensure evacuation is adequate	Digital rectal check and removal of stool if present Increase frequency and/or volume of transanal irrigation to ensure evacuation is adequate

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Leakage of water around the catheter/cone	Ensure catheter/cone is properly located Check water temperature Where used, increase balloon inflation up to maximum of five pumps Instill water more slowly Reflex expulsion of the catheter, where used Check water temperature Ensure rectum empty of stool Inflate balloon more slowly Minimise inflation to avoid triggering reflexes Check for and treat constipation
Irrigant is not expelled	Repeat irrigation Use adjunctive measures as described Ensure patient is adequately hydrated Assess for constipation and treat if necessary
No stool is evacuated after transanal irrigation	Repeat irrigation or split the irrigation into two consecutive episodes, 10–15 min between episodes, using half the irrigant each time Use adjunctive measures Consider use of laxatives Check for constipation and treat as required Ensure the patient is well hydrated No stool may be present if a good result was obtained at last irrigation; if this happens regularly consider reducing frequency of irrigation If no stool for several days, suspect constipation/impaction, assess and treat accordingly

Faecal incontinence (it can also happen in patients with PFDD) between uses of transanal irrigation	Increase volume of water by small increments (100 ml) until satisfactory evacuation achieved with no faecal incontinence Split the irrigation into two consecutive episodes, 10–15 min between episodes, using half the irrigant each time Increase frequency of transanal irrigation Consider laxative use
Leakage of water between irrigations	Ensure patient allows sufficient time on toilet following transanal irrigation Encourage use of adjunctive measures to encourage emptying Reduce or decrease amount of water instilled Split the irrigation into two consecutive episodes, 10–15 min between episodes, using half the irrigant each time An Anal Plug (Coloplast) can be tried if problem persists

Conclusion- Take home messages

- TAI is a beneficial and effective intervention for patients with PFDD
- Escalation of the appropriate treatment and an appropriate assessment (QoL/Symptoms) pre TAI is essential in order to adhere with clinical guidelines/ governance
- Patient selection is the number 1 factor for a successful intervention!
- Patient's support is the key for the success of the intervention in the short and the long term
- Ongoing liaison with the rest of the team is essential for the ultimate benefit of the patient!!

Peristeen, Qufora and Bbraun have very kindly put a list of contacts should you want to get the ball rolling in your clinics! Please go and speak with them at end of the session or ask Paula and Carlene.

Grazie mille
Ci Vediamo subito

Psychological evaluation of patients with PFDD

University College London Hospital

Dave Chatoor
Colorectal Surgery

University College London

ICS

Mr. Dave Chatoor MB.BS (U.W.I), MRCS (Ed, Eng.)

Affiliations to disclose†:

Funding for speaker to attend:

- [x] Self-funded
- [ ] Institution (non-industry) funded
- [ ] Sponsored by:

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Posterior floor dysfunction is common

	Evacuation Disorders	Faecal Incontinence
Prevalence	1 in 5 : Constipation 1 in 10: Evacuation disorder 80% of institutionalised	1 in 50 50% of institutionalised
Age related	20% > 65 years	20% > 80 years
M : F ratio	1 : 3 , Equal > 80 yrs	Equal
Quality Of Life	>30 % impaired QoL	> 50% impaired QoL
Tx outcome	Poor surgical outcome	Better Tx outcomes

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Case History

- 28 Year old ♀ with 10 year history of bowel infrequency, evacuation difficulty.
- Feeling of incomplete emptying strains, anally digitates, spends half hr per day in the bathroom, irrigates with shower hose
- Has a very restrictive diet, refuses to be weighed, wants more laxatives
- Cant work, stays at home, gets panic attacks, avoids public bathrooms
- Has been seen in 2 previous hospitals and extensively investigated
- Already emailed 4 times, and contacted my secretary 5 times to get a sooner appointment
- Thinks a colectomy will solve her problems

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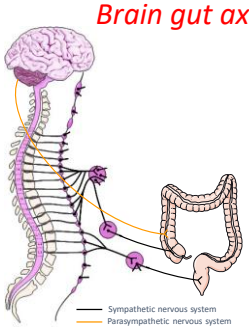
Regulation of colonic function
Brain gut axis

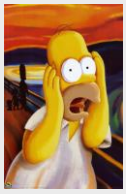


- Two-way interaction between ENS and CNS via sympathetic and parasympathetic nervous system
- Factors influence colonic function:
  - Conscious: Behavioural factors[1]e.g. toilet avoidance
  - Unconscious: Emotional distress[2]
  - Hormonal: Increased expression of progesterone receptors[3]

1. Kamm MA. Gastroenterology 2006;131:233-239; 2. Chan AOO et al. World J Gastroenterol. 2005;11(34):5362-5366
3. Cong P et al. Gastroenterology 2007;133:445-453; Image developed for programme

Psychological Burden

- Neuroticism, introversion associated with IBS [1]
- Psychological disorders in 65% with evacuation disorders [2]
- Sexual abuse an underlying factor in 22 % [3]
- Associated with poor outcome of surgery [4]



1 Dinan et al Acta Psychiatr Scand July 1985
2 Nehra et al Am J Gastroenterology July 2000
3 Drossman et al Annals of Internal Medicine November 1995
4 Tjandra et al DCR December 1999

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Psychological Correlates

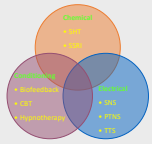
Symptom	Comparison with those without symptoms	Symptomatic vs asymptomatic (p value)
Vaginal digitation 22 / 73 (30%)	Lower anxiety (HAD –A) More somatised (SCL –SOM) Higher psychological burden (SCL – GSI)	5.7 vs 8.0 (p = 0.04) 55.8 vs 50.3 (p= 0.01) 53.5 vs 50.3 (p= 0.02)
Anal digitation 20 / 73 (27%)	Hypersensitive urge volume Greater anxiety (HAD – A) Higher somatisation (SCL –SOM) More obsessive compulsive (SCL – OC) Higher psychological burden (SCL –GSI)	74 vs 95 (p = 0.03) 9.1 vs 6.6 (p < 0.03) 59.9 vs 51.9 (p=0.0003) 55.7 vs 51.3 (p =0.01) 56.6 vs 51.1 (p =0.02)
Straining to evacuate 46 / 73 (63%)	More depressed (HAD –D) More obsessive compulsive (SCL – OC) Higher psychological burden (SCL – GSI)	8.3 vs 6.0 (p=0.04) 53.8 vs 50.2 (p=0.02) 53.6 vs 50.8 (p=0.03)

Chatoor et al Gut 2009

Reversibility

- High scores of anxiety , depression and somatisation correlate with slow transit
- Biofeedback in treating constipation improves objective measures of transit in parallel with improving anxiety scores

Modulating Central Control and Gut Function



Emmanuel et al Gut 2001

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Assess the 'Hidden History'

- Optimize the fist encounter
- '*Listen*' to what they aren't saying
- Primary complaint isn't always linked to cause
- Understand bowel behavior
- Don't dictate but guide realistic goals

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Types of assessments

- Symptom Severity
  - Wexner Constipation score
  - Bowel diaries
  - QoL Assessments
  - Visual Analog Scale (0-10)
- HAD – Hospital Anxiety and Depression Scale
- Psychometric Testing
  - PHQ-Patient Health Questionnaire -12 , 15
- Family drawing test Burns & Kaufman 1972

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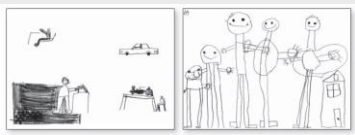

Family drawing test

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Kinetic Family drawing

Figure 1. Colour Family Drawing by a child of a "Very Conflictual Family". The main colours used are violet, grey, black.

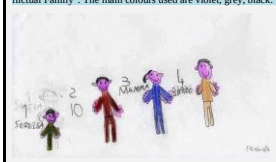
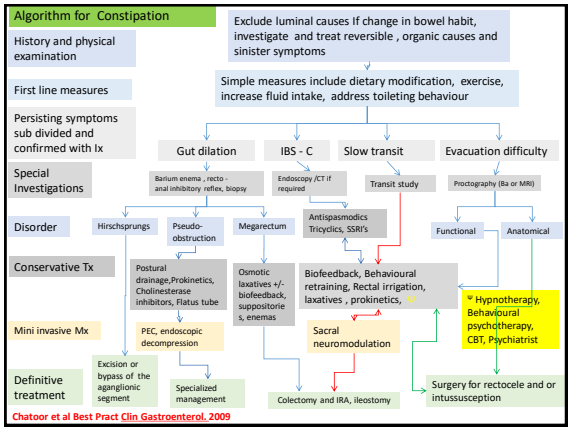


Figure 2. Colour Family Drawing by a child of a "Very Conflictual Family". The main colours used are olive green, dark blue, violet.

Biasi et al Psychology 2014

Figure 3. Colour Family Drawing by a child of a "Harmonious Family". The main colours used are pastel colours like light yellow, light blue, light green, pink.

Figure 4. Colour Family Drawing by a child of a "Harmonious Family". The main hues used are bright yellow, orange and pink.



Who to refer to ?

Key points in assessment

- Brain gut connection is strong
- Explore hidden symptoms
- Guide , don't dictate goals
- Refer appropriately

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