The assessment and management of rectal prolapse, rectal intussusception, rectocoele, and enterocoele in adults

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Rectal prolapse is an extrusion of the full thickness of the wall of the rectum beyond the anal verge. Internal rectal prolapse, or intussusception, is defined as a full thickness prolapse of the rectum that does not protrude through the anus. Rectal prolapse and intussusception often coexist with a rectocoele (herniation of the rectovaginal septum anteriorly into the vagina) and an enterocoele (deep herniation of the rectovaginal peritoneum). Globally, these problems are often referred to as “pelvic floor dysfunction,” and this review focuses on the posterior compartment, the rectum, around which these pathologies occur.

Patients with these conditions are often unable to empty the rectum effectively (obstructed defecation syndrome) and make up about half of the estimated 2-27% of the population with constipation; the remainder have a problem of colonic inertia. They may also get additional symptoms including faecal incontinence and pain.

Interest in rectal prolapse has recently increased, with a multicentre randomised trial (PROSPER) now completed comparing surgical techniques. The advent of laparoscopic surgery also offers a potentially less invasive, better tolerated, and more durable surgical solution. Initial surgical attempts at treating intussusception were disappointing and led to its virtual abandonment for many years in favour of conservative measures. However, in recent years, good results with acceptable morbidity have been reported for perineal and laparoscopic/abdominal approaches, so that patients with substantial symptoms should be referred for consideration for surgery. We review evidence from epidemiological studies, observation studies, case series, and randomised trials to discuss the assessment and management of external prolapse, intussusception, rectocoele, and enterocoele.

Who gets pelvic floor dysfunction?
Pelvic floor dysfunction can affect men and women of any age. However, it is more common in women, reflecting the fact that obstetric injury is its most common cause. Women may not present until many years after the injury for several reasons, including a reluctance to seek medical advice or a perception that nothing can be done. The pelvic floor changes with age and sphincter pressures may fall, unmasking dysfunction in middle and old age that was not clinically apparent at the time of injury.

The prevalence of posterior compartment pelvic floor dysfunction inevitably depends on how the condition is defined. Constipation has a reported prevalence in North America of between 1.9 and 27.2%, and a similar proportion have some faecal incontinence. Symptoms may be many and varied, and often patients will be told that they have haemorrhoids, an anal fissure, or irritable bowel syndrome, while the underlying pelvic floor dysfunction is overlooked.

What is the anatomy of the pelvic floor function and dysfunction?
When functioning normally, the pelvic floor is a dynamic structure that supports the pelvic viscera and functionally maintains continence but can relax to allow defecation and urination. It can be thought of as three layers: the...
pelvic fascia, the pelvic floor muscle, and the urogenital diaphragm. The urethra, anorectum, and vagina all pass through the pelvic floor. The levator ani, the predominant muscle of the pelvic floor, originates from the pubis before passing like a sling behind the urethra, vagina, and anorectum, closing the urogenital and anorectal hiatuses through its tonic action. It is supplied by the levator ani nerves, which are direct branches from segments S2-4, with anatomists reporting variable contribution from the pudendal nerve. The urogenital diaphragm lies just anterior to the levator ani and its predominant muscle is the deep transverse muscle of the perineum (fig 1).

The pelvic floor is often considered in terms of three compartments: anterior, middle, and posterior. This review focuses predominantly on the posterior compartment, the rectum, although pelvic floor dysfunction often straddles all three compartments. As a consequence, patients with pelvic floor disorders may present to a range of health professionals in various specialties.

**How might a patient present initially?**

Patients may present with a single symptom but often report several problems. Some patients present with a lump at the anal verge, typically after defecation, that might reduce spontaneously or require reduction by pressure. In external rectal prolapse (fig 2) the rectal muscular wall can be felt in the prolapsed tissue, allowing distinction between this and other causes of a lump, such as mucosal prolapse or haemorrhoids.

Many patients report faecal incontinence with a predominant problem of control of flatus or stools. Incontinence can be divided into “passive,” which manifests as leakage of which the patient is often initially unaware, or “urge,” when a patient becomes aware of the need to open their bowels but cannot get to the toilet in time. Asking the patient if they have had to change their lifestyle or wear a pad because of the incontinence will give an impression of the severity of the problem.

Patients may have more of a problem with what they describe as constipation. Establish what is meant by this term; for some patients it means stool infrequency whereas for others it might mean a difficulty with defecation. Patients may show signs of obstructed defecation syndrome, which is typically characterised by a sensation of incomplete evacuation or of a blockage, hard or thin stools, the need to digitate vaginally or anally, straining, repeated (often unsuccessful) visits to the toilet, and anorectal pain (table).

### Evaluating a patient with symptoms of pelvic floor dysfunction

**Clinical examination**

Clinical examination of the patient with pelvic floor dysfunction should start with an inspection of the perineum to look for evidence of scarring, fissures or haemorrhoids, previous episiotomy, soiling, and visible prolapse. Where facilities permit, the patient can be asked to sit on a commode or toilet and asked to strain to attempt to demonstrate a suspected prolapse. Digital rectal examination may give an accurate impression of resting and squeeze anal canal pressure. More specialist evaluation might include asking the patient to bear down during digital examination to assess for paradoxical contraction, suggesting anismus or simultaneous vaginal and rectal examination in the standing patient for detection of an enterocele. Where facilities permit, proctoscopy and rigid sigmoidoscopy ensure that there is not a luminal aspect to the problem such as a rectal cancer.

### Conservative measures and whom to refer

In patients with extensive symptoms of incontinence a few conservative measures may bring about substantial improvement. Constipating agents such as codeine phosphate or loperamide may improve continence. Results of a randomised, double blind crossover trial suggested that in patients with chronic diarrhoea and incontinence, loperamide improves episodes of incontinence and severe urgency. Dietary changes in patients with faecal incontinence may also improve symptoms. Another randomised trial suggested no difference between high fibre diet with loperamide and a low fibre diet with loperamide. However, the authors commented that both groups had significantly improved continence compared with baseline and that there individual responses varied greatly, with some favouring more fibre and others less.
By contrast, patients with constipation may benefit from laxative treatments. Patients whose condition is not resolved by conservative treatments and who have substantial residual symptoms should be considered for investigation.

Investigation
Few tests can be arranged by the non-specialist before referral. The exclusion of other conditions, including cancer, is important, although local policies will determine whether patients are sent straight to tests, such as colonoscopy, or are seen in clinic first.

The specialist evaluation of the pelvic floor involves several different specialties—in the Oxford Pelvic Floor Centre, the multidisciplinary team includes colorectal surgeons, urologists, gynaecologists, radiologists, research fellows, specialist nurses, physiologists, and physiotherapists. The assessments done by this team are described in box 1. Anorectal physiology and an endoanal ultrasound may also be useful. Physiology gives an impression of sphincter muscular function, rectal sensation, and neuropathy. A special electrode may be used to assess pudendal nerve function more formally by stimulating the nerve at the ischiat spine and measuring the time taken to elicit sphincter contraction. Endoanal ultrasound delineates sphincter anatomy, identifies thickening of the internal anal sphincter (often seen in patients with internal and external rectal prolapse), and will show any scarring or tears.11

Defecating proctography studies the dynamics of defecation. Barium paste is administered into the rectum and oral contrast given to opacify the small bowel and facilitate identification of an enterocele. Women may be asked to consent to insertion of contrast into the vagina to delineate its position. The patient is then asked to try to evacuate their bowels while the episode is recorded by videofluoroscopy (fig 3). Proctographic abnormalities may be seen in asymptomatic healthy people, emphasising the importance of interpretation in the light of symptoms and clinical findings.12

Magnetic resonance defecography is an alternative to standard proctography, although except in open coil scanners, the patient has to be studied in the supine position. A transit study is an abdominal radiograph taken after the patient has taken radio-opaque markers in the preceding days according to a standardised protocol (fig 3). The number of markers remaining within the colon helps to identify those patients with prolonged colonic transit.

How can these problems be treated?
Rectal prolapse
In most instances, an acute prolapse will reduce spontaneously or with gentle pressure from the patient or doctor. In some patients, associated oedema may make reduction more difficult. Reduction in oedema can be facilitated by application of ice wrapped in a cloth or sugar to the prolapsed rectum.13 Patients with troublesome symptoms from their rectal prolapse (difficulties in reduction of prolapse, substantial incontinence, or obstructed defecation) should be referred for consideration of surgery.

Surgery can be divided into two categories: perineal and abdominal. Perineal procedures (Delorme’s or Altmeier operation) can be performed under a spinal anaesthetic, which may be an advantage in elderly and frail patients. Abdominal rectopexy (surgical fixation of the rectum by an open or laparoscopic abdominal approach) is sometimes perceived to have a lower prolapse recurrence rate.14 However, a Cochrane review of a dozen trials involving 380 patients was unable to draw any firm conclusions regarding the relative efficacy of perineal compared with abdominal approaches.15 The results of a larger multicentre randomised trial comparing resectional and non-resectional techniques and the abdominal versus perineal approach (the FROSPER study16) are awaited.

Laparoscopic rectopexy combines the perceived advantages of low recurrence rate from an abdominal approach with the advantages of minimally invasive surgery. A recent meta-analysis of comparative studies of 688 patients suggested that laparoscopic surgery took longer to perform but was associated with a shorter hospital stay.17 It did not show any difference in morbidity or mortality. However, a case series from two tertiary referral pelvic floor centres suggested that laparoscopic surgery is very well tolerated in older people. It reported outcomes involving 380 patients was unable to draw any firm conclusions regarding the relative efficacy of perineal compared with abdominal approaches.15 The results of a larger multicentre randomised trial comparing resectional and non-resectional techniques and the abdominal versus perineal approach (the FROSPER study16) are awaited.

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PATIENT'S PERSPECTIVE

After years of problems with constipation, being unable to empty the bowels without assistance, a sensation of the bowel coming down, and the additional distress of incontinence on walking for short distances and a ruined holiday made me pluck up the courage to seek help. I was referred to the Oxford Pelvic Floor Clinic. The consultant explained that I would need a series of tests that sounded embarrassing but were handled sensitively. The diagnosis of a rectocele, rectal intussusception, and slow transit constipation was made. I was referred initially to the biofeedback nurse for advice and exercises, which helped but did not resolve the problem. I was offered a ventral mesh rectoectomy, which the consultant said offered roughly an 80% chance of substantial improvement.

I only needed to be in hospital overnight and the discomfort was minimal. I found the advice that had been given by the biofeedback nurse helped greatly in the first week or so. I have been very pleased with the result. I travel with confidence. I just need to take a small dose of Movicol [a macrogol] to help with some constipation and as a bonus my bladder function has improved too.

Intussusception

Patients with symptomatic intussusception might benefit from conservative measures including osmotic laxatives. Although these are widely recommended in the surgical literature, evidence for their efficacy is lacking. Biofeedback is a process by which control of an action that is not usually monitored consciously can be developed using systematic information. Its use in patients with pelvic floor dysfunction is well established but although some trials have compared it with a range of treatment strategies, these are heterogeneous and of variable quality. A Cochrane review of its role in faecal incontinence commented on the poor quality of many of the studies and showed no superiority for biofeedback over other conservative treatments. The improvement in constipation and obstructed defecation in patients treated with laparoscopic ventral rectoectomy for external prolapse lead to the application of this operation to those patients with intussusception. Improvements in symptoms of obstructed defecation and faecal incontinence associated with intussusception have been reported in around 80% of patients in a number of case series. These outcomes are similar to those reported for external prolapse, which suggests that there may be a link between the two entities.

An alternative surgical approach to laparoscopic ventral rectoectomy is stapled transanal rectal resection or the related procedure called transtar, which uses a different stapling device. These are perineal procedures in which the redundant intussusception and deficient tissue of the rectovaginal septum contributing to the rectocele is removed with a stapling gun introduced per-anally. There has been reported morbidity associated with the procedure including pain, haemorrhage, and rarely septic problems. A combination of urgency and faecal frequency is seen in many patients immediately after surgery and may persist in around a fifth of patients for up to a year. Results of a recent randomised controlled trial suggested that stapled transanal resection of the rectum is more effective than biofeedback for the treatment of intussusception and rectocele.

Rectocele and enterocoele

A rectocele and enterocoele often occur in association with other manifestations of pelvic floor failure that may determine treatment. Indeed, enterocoele is little more than a marker for pelvic floor weakness. Both stapled transanal rectal resection and laparoscopic ventral rectoectomy are effective treatments for rectocele and also treat co-existing intussusception. Although a rectoectomy also treats an enterocoele, its presence is a relative contraindication to stapled transanal resection.

For patients with an isolated rectocele, repair can be performed via a transvaginal, transperineal, or transanal approach; gynaecologists tend to favour the transvaginal approach while colorectal surgeons more commonly use the transanal approach. A recent Cochrane review evaluating randomised trials concluded that the transvaginal approach may be associated with a lower rate of rectocele recurrence, although sexual dysfunction may occur. The transvaginal approach also avoids the stretching of the anal sphincter that occurs with the transanal approach, which is an advantage in a patient group with a high prevalence of incontinence.

TIPS FOR THE NON-SPECIALIST

- Detailed history and examination often uncover symptoms suggesting pelvic floor dysfunction
- Faecal incontinence and obstructed defecation often coexist, despite their apparently contradictory symptoms
- Many patients with incontinence and soft or loose stools benefit from stool modification with constipating agents, such as codeine phosphate or loperamide
- Patients with obstructed defecation should be given a trial of an osmotic laxative

UNANSWERED QUESTIONS

- What are the long term outcomes of different approaches to external rectal prolapse?
- Is external rectal prolapse an extreme version of intussusception or do the disease processes differ?
- What are the normal parameters for defecating proctography, especially in relation to intussusception, and how can we better use proctography to predict treatment outcome?
- What is the relative efficacy of stapled transanal resection and laparoscopic ventral rectoectomy in the treatment of obstructed defecation?

SOURCES AND SELECTION CRITERIA

We searched the Cochrane databases using the terms rectal prolapse, rectocele, and intussusception. We also searched Medline, Embase, and PubMed using the search terms rectal prolapse, intussusception, rectocele, enterocoele, STARR (stapled transanal rectal resection), and rectoectomy.

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Ischaemic heart disease

Increased numbers of research articles on heart disease were found in the electronic archive of the BMJ (Table 1). Between 2004 and 2008, the number of articles on non-communicable diseases increased substantially compared with the number on communicable diseases (malaria, cholera, influenza, and tuberculosis) and four other non-communicable diseases (ischaemic heart disease, hypertension, obesity, and lung cancer). Titles and abstracts were searched, and further manual searches were performed for mentions of four general terms: ‘rectocele’, ‘rectopexy’, ‘haemorrhoids’, and ‘anorectal’. A reference list was built for further searches. A total of 848 articles were included. All articles were read and relevant information was extracted. The number of research articles on communicable diseases fluctuated with the number of influenza pandemics, whereas the number of articles on non-communicable diseases increased substantially in the second half of the 20th century (figure 1, note the fivefold difference in scale between the two plots). Increased numbers of research articles on heart disease and obesity in the 1960s and 1970s were preceded by an increase in non-research articles on these topics.

**Analysis of temporal trends in the BMJ archive**

We searched the 170 year electronic archive of the BMJ for mentions of four communicable diseases (malaria, cholera, influenza, and tuberculosis) and four non-communicable diseases (ischaemic heart disease, hypertension, obesity, and lung cancer). Titles and abstracts were searched, and further manual searches were made of research articles. The number of research articles on communicable diseases fluctuated with the incidence of the individual diseases (such as with influenza pandemics), whereas the number of articles on non-communicable diseases increased substantially in the second half of the 20th century (figure 1, note the fivefold difference in scale between the two plots). Increased numbers of research articles on heart disease and obesity in the 1960s and 1970s were preceded by an increase in non-research articles on these topics.

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This is an abridged version of an entry from last year’s competition for the most creative use of the BMJ online archive. The authors’ data generated for their competition entry are available at http://tinyurl.com/ydx4tju

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