Faecal incontinence is common. It may relate to structural sphincter damage, a weak intact sphincter, or bowel contractions in excess of sphincter tone.

Many patients are not suitable for surgical treatment, and surgery produces mixed long term results. For example, in a study of the long term results of sphincter repair for obstetric damage in 55 consecutive patients who had had repair a minimum of 5 years (median 77 months [range 60-96]) previously, seven patients had undergone further surgery for incontinence and one patient had not had a covering stoma closed. In the remaining contactable 38 patients none was fully continent to both stool and flatus and only four were totally continent to solid and liquid stool. Twenty still wore a pad for incontinence and 25 reported lifestyle restriction. 23 of the 46 patients contacted had a successful long term outcome (defined as no further surgery and ura faecal incontinence monthly or less).

There is a need for a readily available cheap therapy which does not have adverse effects. Behavioural techniques, biofeedback, have been developed to teach patients to improve sphincter function and diminish bowel contractions and urgency. The techniques are quite different to that used for patients with constipation.

Biofeedback has been reported to improve or eliminate symptoms in approximately 70 per cent of patients with faecal incontinence. However, it is unknown which patients respond in relation to this symptom. Studies have shown that improvement is associated with improved activity of the direct cerebral innervation to the gut and improved gut transit.

DEFINITION

Patients were considered to have significant constipation when symptoms were infrequent stools (less than 3 bowel motions a week), excessive straining at defaecation (more than 25 percent of time) or frequent feeling of incomplete defaecation, for at least six weeks.2 Nonetheless, constipation is not a disease by itself and expensive physiological tests should not be embarked upon unless the patient's lifestyles are so hampered by complications that they wish to undergo treatment based upon the results of such findings. At the very least, these complications would include distressing abdominal distension, needing to distastefully insert the finger regularly to extract stools, refractoriness to laxatives and other problems mentioned above.

A thorough history, physical examination and thyroid function tests (free thyroxine and thyroid stimulating hormone serum levels) will exclude constipation secondary to other causes. This includes generalised neurological and metabolic diseases (including hypothyroidism), as well as drugs. All patients should undergo complete colonoscopy to exclude lesions. If the clinician is not convinced that the patient's condition is adequately chronic, a six week trial of at least 30 g dietary fibre and 1.5 L (8 glasses) oral fluids per day, can be prescribed. Inadequate fibre and fluid intake is of course the most common cause of constipation, as a whole, in the general population.

INVESTIGATIONS

Patients who do not respond satisfactorily can undergo transit marker studies and anorectal physiology tests. For transit marker studies, 20 to 24 radio-opaque markers (Konsyl, Fort Worth) are ingested. After five days during which no laxatives were allowed, a plain abdominal x-ray is taken. Colonic inertia is diagnosed when more than 20 percent of the markers were retained in a diffuse pattern all over the colon.3-7 Anorectal physiology tests comprise of electromyography (EMG), manometry and proctometry. EMG is performed on the puborectalis muscle during simulated defaecation, using a Neuroamatic 3000M (Dantec, Skovlunde) EMG apparatus. Patients thus diagnosed to have paradoxical puborectalis contractions causing obstructed defaecation12-13 would be excluded from surgery, at least at the first instance. Manometry is performed using a microcapillary perfusion system (Synectics, Stockholm) which measures the pressure profile in various positions of the anus and rectum.12 The mean resting pressure and maximum squeeze pressure are measured in the anal canal. These measured the function of the internal and external anal sphincters. Anorectal manometry per se usually does not help to differentiate between the various causes of intractable constipation. Nevertheless, such assessment is important before contemplating bowel resection surgery for any form of constipation.3 Constipated patients can have weak anal sphincters13,14 from associated pelvic floor neuropathy.13 Injudicious bowel resection may thus leave the patient incontinent, because weak anal sphincters cannot cope with the resulting increased stool frequency. This may be a fate far worse than any
constipation symptoms that the patient has ever complained of. Proctometry is performed by controlled distension of a balloon placed in the rectum. The presence of the rectosphincter inhibitory reflex is noted by a transient drop in the anal pressures, during the rectal distension. The volume of initial sensation is the distending volume when rectal sensation is first felt. The maximum tolerable volume is the volume when rectal distension could no longer be tolerated. The rectal compliance is the change in distending volume divided by the change in the measured rectal pressures. The volume of initial sensation, maximum tolerable volume and compliance measures respectively the rectal sensitivity, reservoir capacity and elasticity.

MANAGEMENT
Testing for the rectospincteric inhibitory reflex is an effective and non-invasive technique to screen for Hirschsprung's disease.[16-18] which may be otherwise difficult to diagnose in adulthood.[19] Patients with absent rectospincteric inhibitory reflex can then undergo rectal biopsy to confirm Hirschsprung's disease. These patients can be treated by various options including low anterior resection, although resection of a segment of the internal sphincter may be adequate for those with very short segment aganglionosis. The aetiology of colonic inertia remains uncertain. Studies suggest visceral nerve[20] and neurotransmitter abnormalities.[21-23] hence bowel motility is reduced in various parts of the colon.[17-20] At present, transit marker studies cannot adequately delineate the segment of colon causing the constipation. Therefore, total colectomy with ileorectal anastomosis remains the procedure of choice.[1] However, if the rectum is also involved the procedure of choice.

Testo and colorectal manometry and EMG may be computer integrated with contrast cinefluoroscopy, to produce a composite picture.[3,14-15] Therefore any event can be identified and recorded in various modalities of investigation. The physiological significance of any co-existing paradoxical puborectalis contractions then may be ascertained. This is important because obstruction predominately due to paradoxical puborectalis contractions are effectively treated by biofeedback therapy.[16-18]

Treatment of outlet obstruction constipation by biofeedback
We reported the results of biofeedback (BF) on patients with outlet obstruction defeacion (OOC), including those with and without measurable paradoxical puborectalis contractions (PP). Clinical and anorectal physiological parameters (ARP) were assessed one week before and after a standardized course of BF. Sixty-two consecutive patients (24 men, 38 women; mean age 48.0 [6] years) underwent the 56 who improved and the 6 who did not. There were no side-effects or frequent feelings of incomplete defeacion. After surgery. There were significant improvements in the straining at defeacion (before n=19, after n=3; p=0.001), need to digitate per vagina (before n=16, after n=0; p=0.001), stool frequency (before 3.8 [0.7] times weekly, after 8.6 [1.2]; p=0.004) and laxative requirements (before n=7; after n=0; p=0.03). Whilst none were clinically incontinent, there was a mean 28 mmHg impairment in resting (p=0.05) and 42 mmHg impairment in maximum squeeze anal pressures (p=0.05) after operation. There were no other morbidity. Transanal rectocele repair effectively improves constipation problems, at the risk of impaired anal sphincter function. Although clinical incontinence was minimal, an alternative approach to rectocele repair should be considered when anal sphincters are lax.

Laparoscopic total colectomy in the treatment of slow transit constipation
A laparoscopic assisted technique (LTC) may be potentially advantageous over a traditional open technique (OTC) in the treatment of this benign condition. A historical control (non-randomised) study was performed on patients diagnosed to have STC after clinical, anorectal physiologic and transit marker studies. All earlier consecutive patients underwent OTC and the latter consecutive patients underwent LTC. The intra-operative, blood loss, postoperative ileus recovery, hospitalisation and complications were recorded. A bowel function and patient satisfaction questionnaire was administered on follow-up of 411 patients were found to have STC. 17 (2 men, 15 women; mean age 40 [standard error of mean 5] years) underwent OTC and 7 (2 men, 5 women; mean age 39.5 [6] years) underwent LTC. There were significant improvements in the stool frequency, need for assisted evacuation and abdominal distension (p<0.05) after both procedures. 96% were fully satisfied with the resulting bowel function. However, OTC patients who were less satisfied with the cosmetic outcome (p<0.05). Intraoperative time for LTC was longer by a mean 74 min (p<0.05). Post operative blood loss, recovery of ileus and hospitalisation were the same in both groups. There were no deaths. The complication rates were 43% for LTC and 24% for OTC. The predominant complication was bowel obstruction for which 2 patients (both OTC) required adhesiolysis. Both OTC and LTC improved bowel function for STC. LTC gives a better cosmetic result, but takes longer to perform.

Patients who complained predominantly of excessive straining or frequent feelings of incomplete defeacion also undergo synchronised man-o-myo-cindefeapectography (SMC). In this technique, the manometry, proctometry, and EMG were computer integrated with contrast cinefluoroscopy, to produce a composite picture.[11-13] Therefore any event can be identified and recorded in various modalities of investigation. The physiological significance of any co-existing paradoxical puborectalis contractions then may be ascertained. This is important because obstruction predominately due to paradoxical puborectalis contractions are effectively treated by biofeedback therapy.[16-18]

Laparoscopic resection rectoplasty for rectal intussusception
Significant rectal intussusception (RI) can cause severe defeacation problems in young adults. Rapid recovery and good cosmesis would be important in this group of patients. We therefore explored the feasibility of a laparoscopic technique in 12 patients (2 men, 10 women; mean age 38 [sd 17.8] years). All had excessive straining at defeacation, despite the use of laxatives. In addition, 3 needed to digitate to defeacate. Three also had solitary rectal ulcer syndrome (SRUS) proven on endoscopic biopsy. The mean duration of symptoms was 3.4 (sd 3.2) years. Anorectal physiology tests performed included synchronised man-o-myo-cindefeapectography, which showed RI to be the cause of defeacation problems. Through 5 laparoscopic ports, the rectum was dissected from the pelvis, down to the levator ani muscles. The rectum was then secured to the sacral promontory by prolene sutures. Re-anastomosis was performed with a CEDA (U.S. Surgical Corp., Norwalk) intraluminal stapling device. The first 2 cases (16.7 per cent) had to be converted to an open technique. However, the subsequent 10 cases were successfully performed laparoscopically (mean time 125 [sd 39.5] minutes). The mean hospital stay was 6.1 (2.1) days. There were operative complications. At a mean follow-up of 8.6 (sd 2.6) months, all patients reported improved defeacation (only 1 patient continued to require laxatives). There was no longer blood or mucus discharge in the SRUS patients. Our preliminary results suggested that laparoscopic resection rectoplasty was a safe and effective option in the management of RI.

REFERENCES
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MANAGEMENT

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Laparoscopic total colectomy in the treatment of slow transit constipation29

A laparoscopic assisted technique (LTC) may be potentially advantageous over a traditional open technique (OTC) in the treatment of this benign condition. A historical control (non-randomised) study was performed on patients diagnosed to have STC after clinical, anorectal physiologic and transit marker studies. All earlier consecutive patients underwent OTC and the latter consecutive patients underwent LTC. The intra-operative time, blood loss, postoperative ileus recovery, hospitalisation and complications were recorded. A bowel function and patient satisfaction questionnaire was administered on follow-up of

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We reported the results of biofeedback (BF) on patients with outlet obstruction defaecation (OOC), including those with and without measurable paradoxical puborectalis contractions (PP). Clinical and anorectal physiological parameters (ARP) were assessed one week before and after a standardized course of BF. Sixty-two consecutive patients (24 men, 38 women; mean age 48.0 SEM 2.3 years) were recruited. All had persistent constipation despite 6 weeks of dietary fibre suppletions. Colonic inertia was excluded by transit marker studies. Defaecating proctography excluded anatomical abnormalities causing outlet obstruction. The patients underwent 4 outpatient sessions of biofeedback, each session lasting 1 hour. After BF, 56 patients (90.3 percent) were subjectively improved. The frequency of spontaneous bowel motions were significantly increased (p=0.003). The frequency of laxative induced (p<0.004) and enema induced (p=0.005) stools were reduced. The anal resting (p=0.04) and squeeze (p=0.002) pressures were increased. The number of patients with PP was reduced from 21 (31.3%) to 7 (11.1%) (p=0.004) after BF. The response to BF. There were no differences in the ARP between the 56 who improved and the 6 who did not. There were no side-effects or clinical regressions after a mean follow-up of 14.9 SEM 0.9 months. BF effectively treated OOC in 90.3 percent, irregardless of PP. The anal pressures were increased and PP was decreased. However, rectoceles, sigmoidoceles and rectal intussusception are best managed surgically. Rectoceles result from weakness of the anterior rectum. This diverts the faecal stream to become obstructed in the rectocele pouch. Surgical repair of the weakened rectal wall and obliteration of the pouch is required.

Transanal repair of rectoceles37

This study prospectively assessed the functional results, particularly anal sphincter impairment, following transanal repair of rectoceles for chronic intractable constipation. 21 consecutive women (mean age 47.7 [standard error of mean, sem 2.7] years) had the diagnosis of rectocele obstructing defaecation made on synchronized anal manometry, electromyography and cinedefaecography. All underwent a standardized transanal repair with controlled anal stretching (maximum 4 cm) from self retaining anal retractors. The clinical function and anorectal manometry were assessed before surgery, and repeated 6 months after. All 21 patients were subjectively satisfied with the relief from constipation, after surgery. There were significant improvements in the straining at defaecation (before n=19, after n=3; p<0.001), need to digitate per vagina (before n=16, after n=0; p<0.001), stool frequency (before 3.8 [0.7] times weekly, after 8.6 [1.2]; p<0.004) and laxative requirements (before n=7; after n=0; p<0.03). Whilst none were clinically incontinent, there was a mean 28 mm Hg impairment in resting (p<0.05) and 42 mm Hg impairment in maximum squeeze anal pressures (p<0.05) after operation. There were no other morbidity. Transanal rectocele repair effectively improves constipation problems, at the risk of impaired anal sphincter function. Although clinical incontinence was minimal, an alternative approach to rectocele repair should be considered when anal sphincters are lax.

Sigmoidoceles consist of redundant sigmoid colon flopping into the rectovesical or rectovaginal recess to cause obstruction. This redundant colon is removed by anterior resection. Rectal intussusception occurs when rectal mucosa prolapses circumferentially to cause obstructed defaecation. The prolapse is fixed by rectopexy. A correct understanding of the pathophysiology in each patient was essential in the correct choice of surgical procedures. This ensued in good results.

Laparoscopic rectocele resection rectoplasty for rectal intussusception38

Significant rectal intussusception (RI) can cause severe defaecation problems in young adults. Rapid recovery and good cosmesis would be important in this group of patients. We therefore explored the feasibility of a laparoscopic technique in 12 patients (2 men, 10 women; mean age 38 [sd 17.8] years). All had excessive straining at defaecation, despite the use of laxatives. In addition, 3 needed to digitate to defaecate. Three also had solitary rectal ulcer syndrome (SRUS) proven on endoscopic biopsy. The mean duration of symptoms was 3.4 (sd 3.2) years. Anorectal physiology tests performed included synchronised man-o-ino-cinedefaecography, which showed RI to be the cause of defaecation problems. Through 5 laparoscopic ports, the rectum was dissected from the pelvis, down to the levator ani muscles. The rectum was then secured to the sacral promontary by prolene sutures. Reanastomosis of the colon was rectected and re-anastomosis was performed with a CEDA (U.S. Surgical Corp., Norwalk) intraluminal stapling device. The first 2 cases (16.7 per cent) had to be converted to an open technique. However, the subsequent 10 cases were successfully performed laparoscopically (mean time 125 [sd 39.5] minutes). The mean hospital stay was 6.1 (2.1) days. There were operative complications. At a mean follow-up of 8.6 (sd 2.6) months, all patients reported improved defaecation (only 1 patient continued to require laxatives). There was no longer blood or mucous discharge in the SRUS patients. Our preliminary results suggested that laparoscopic resection rectocele was a safe and effective option in the management of RI.

Summary

Doctors need to be aware that 8.3 percent of constipated patients referred to a specialist unit need surgical treatment. These patients would otherwise suffer long years of persistent abdominal distension and discomfort, not adequately relieved by laxatives. There are diverse causes of such intractable constipation, each requiring a differently tailored surgical strategy. Therefore, a proper sequence of physiological tests are required for precise diagnosis. The physiological status of the anal sphincters also needs to be adequately appreciated, before the correct choice of operation can be safely performed. It is only by such meticulous measures from beginning to end, that satisfactory results may ensue.

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