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RECTO-ANAL DYSSYNERGIA AND CHRONIC ANAL PAIN

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INTRODUCTION

Recto-anal dyssynergia is a type of constipation characterised by difficulty defecating. Reported by Preston and Jones in 1985 [12], this is characterised by no relaxation or paradoxical contraction of the striated sphincter of the anus and pubo-rectal muscle during defecation. It is also known by the term 'anismus' and is responsible for terminal constipation, which may be explained by functional irregularity caused by contraction of the anus during relief, leading to intense and repeated effort. It can be associated with, or exacerbated by, chronic anal pains. It affects 40% to 50% of patients complaining of chronic constipation and is often associated with bowel movement constipation [14].

PATHOPHYSIOLOGY

At rest, the muscles of the pelvic floor have permanent tonic activity that assures passive continence outside of defecation, and full relaxation during defecation. The arrival of faecal matter in the rectal ampoule causes relaxation of the internal sphincter. This recto-anal inhibitory reflex (RAIR) is not under voluntary control and endangers intramural phenomena and non-cholinergic, non-adrenergic mediators (NO): it is modulated by the parasympathetic system. Concomitantly, the arrival of faecal matter causes

contraction of the external sphincter (recto-anal excitatory reflex, RAER) at the lower part of the anal canal. These two reflexes, RAIR and RAER, make up the anal sampling reflex that enables, together with rectal compliance, contrasting with defecation. This reflex is acquired when hygiene is learnt, and disappears during sleep. It is not a spinal reflex; it is largely under voluntary control.

At the time of rectal filling, as of a volume of 50 cm³, a feeling of need appears. Triggering

defecation is linked to two mechanisms: external anal sphincter relaxation (EASR) and execution of the Valsalva manoeuvre. In parallel, relaxation of the pubo-rectal muscle, the crouched position and the sudden descent of the perineum enables opening of the anorectal angle and passage of stool in the anal canal. At the end of defecation, all these mechanical phenomena stop suddenly. The pubo-rectal angle, by contracting quickly, acts as a guillotine on the faecal column.

The recto-anal system recovers its normal anatomical functions and its baseline mechanical activity.

Some patients contract paradoxically or do not relax the muscles of the pelvic floor and, in particular, the external anal sphincter and pubo-rectal muscle during defecation. It is this abnormality that corresponds to rectal-sphincter or recto-anal dyssynergia or anismus.

WHAT ARE THE CAUSES OF RECTO-ANAL DYSSYNERGY?

Gastrointestinal causes

Rectal-sphincter dyssynergia is not a specific abnormality of constipation. Therefore, the existence of a solitary ulcer of the rectum, anal fissure, voluminous haemorrhoid, descending perineum or perineal pains can bring about abnormal relaxation of the anal sphincter. There is a link between rectal-sphincter dyssynergia, solitary ulcer and descending perineal syndrome. Patients who have a solitary ulcer commonly have a rectal abnormality of internal origin and suffer from constipation. It is likely that there are intense, repeated abdominal pressure efforts made to respond to closure of the anal canal which result in descent of the pelvic floor and rectal prolapse [8].

Neurological causes

Recto-anal dyssynergia, just as in vesical sphincter dyssynergia, is observed in patients presenting with central nervous system pathology (medullary condition, Parkinson disease, plaque sclerosis, etc.). As nervous control of defecation is very similar to that of micturition, disconnection of lacerated inclusive medullary structures with ponticanorectal and vesical sphincter coordination centres can also disturb defecation pathways [2]. However, recto-anal dyssynergia is not the only cause of terminal constipation because it can also be associated with rectal paralysis or intrarectal sensitivity disorders responsible for the abnormal need to defecate, and can favour the accumulation of intrarectal faecal matter.

Functional causes

There are also arguments in favour of a functional or behavioural origin of rectal-sphincter dyssynergia. One of these arguments is the frequency of dyssynergia in patient(s) who are victims of sexual and/or physical aggression. Leroi [10] reported that more than 40% of patients questioned suffering from bowel function disorders reported history of sexual abuse [4]. Constipation is the symptom most commonly reported by these patients. A total of thirty-nine patients out of 40 victims of sexual abuse have rectal-sphincter dyssynergia diagnosed with anorectal manometry. These results reveal that while not all patients presenting with an anismus have been the victim of sexual abuse, when one has been the victim of sexual abuse, the risk of having an anismus is very high. Another argument in favour of the behavioural origin of the anismus is the efficacy of treatment with rehabilitation, which suggests that the anismus corresponds to deficient sphincter learning rather than a disease. Therefore, a lot of constipated and encopretic children push when they are asked to tighten their anal sphincter and, conversely, tighten their sphincter when they are asked to push. This dysfunction can be corrected by perineal rehabilitation.

Moreover, one-third of normal subjects have rectal-sphincter dyssynergia [1]. We can assume that the subject who does not suffer from constipation, but who presents with rectal-sphincter dyssynergia, needs to apply more abdominal pressure to defecate than those who do not have rectal-sphincter dyssynergia.

HOW IS RECTAL-SPHINCTER DYSSYNERGIA REVEALED?

By means of history taking and clinical examination. Patients generally complain of symptoms of anorectal dyschezia that correspond to difficulty in expelling stools. This is a symptom of terminal constipation which is different to slow-transit constipation. The patient reports difficulty in evacuating stools, and a feeling of incomplete rectal emptying – at times requiring triggering manoeuvres (stimulation of the anal margin, suppositories to facilitate triggering of the evacuation reflex, or digital evacuation manoeuvres, etc.).

This symptom may be related to defective relaxation of the anal sphincter and pubo-rectal muscle but may also be linked to other parameters such as disorders in intra-rectal sensitivity, or poor modulation of the inhibitory recto-anal reflex. During anorectal examination, the existence of at least two of the following criteria enables the diagnosis of anorectal dyssynergia: incapacity to relax the anal sphincter, paradoxical contraction of the anal sphincter, incapacity to contract the abdominal muscles, and no perineal mobility upon pressure [16].

WHAT EXAMINATIONS ARE PERFORMED?

1- Anorectal manometry

This is performed by means of a probe used to measure rectal and anal pressures during a trial defecation. Rectal-sphincter dyssynergia or anismus is diagnosed by recording pressure during a Valsalva manoeuvre. The increase in anal pressures, instead of their reduction, is evidence of a paradoxical contraction of the external sphincter [Fig 1,2]. The second abnormality is the incapacity to expel an intrarectal balloon filled with 50 mL of water during a trial defecation.

The not very “physiological” examination conditions may lead to a false diagnosis of rectal-sphincter dyssynergia. It is, therefore, important to verify the existence of this abnormality several times, especially after the patient has become used to the presence of the catheter.

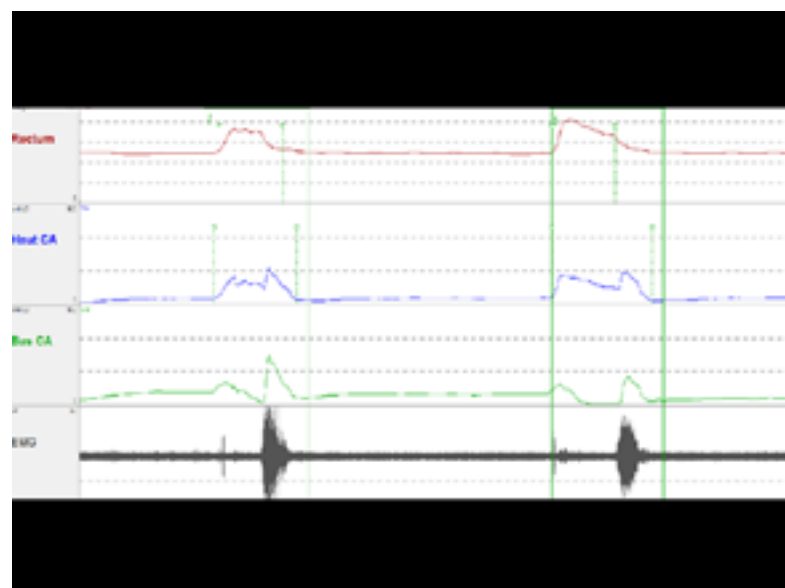


Figure 1. Manometry trace corresponding to normal pressure effort, with relaxation of the sphincter and reduction of internal pressures

2- Electromyography of the anal sphincter

When there is rectal-sphincter dyssynergia, the electromyographic record of the sphincter enables the recording of an increase, or absence of reduction, in perineal muscular activity during a defecation effort. The electromyogram is performed with skin electrodes positioned on both sides of the anal margin or needle electrodes placed in the anal sphincter or puborectal muscle. This recording is often associated with manometry [Fig 2].

3- Defecography

If there is anal dyssynergia, defecography will reveal the persistence of a closed anorectal angle, instead of its normally observed opening, during defecation efforts in a crouched position. It may at times be more closed than at rest [Fig 3]. The patient is more often incapable of expelling the barium product.

4- Magnetic resonance imaging (MRI) using MRI-Defeco

MRI is an attractive examination technique considering the quality of images and absence of irradiation. It entails a static and a dynamic phase. It enables studying the soft parts and sphincters but the diagnosis of intra-anal rectal prolapse may be difficult if there is no evacuation of intrarectal content. This may be coupled with a colpography to appreciate pelvic static and enable revealing atrophy of the anal sphincter [15]. The choice of one or other of both imaging techniques depends essentially on the practices of teams and their respective availability.

5- Measurement of colic bowel movement time

This enables a comparison of terminal constipation with bowel movement constipation, even if both are often associated. It consists of quantifying the number of opaque radio markers absorbed. Two protocols are possible:

- either the Chaussade method: intake of 20 markers for three consecutive days with ASP on day 4 and 7, and possibly on day 10;
- or the Bouchoucha method: intake of 10 markers for six consecutive days with ASP on day 7.

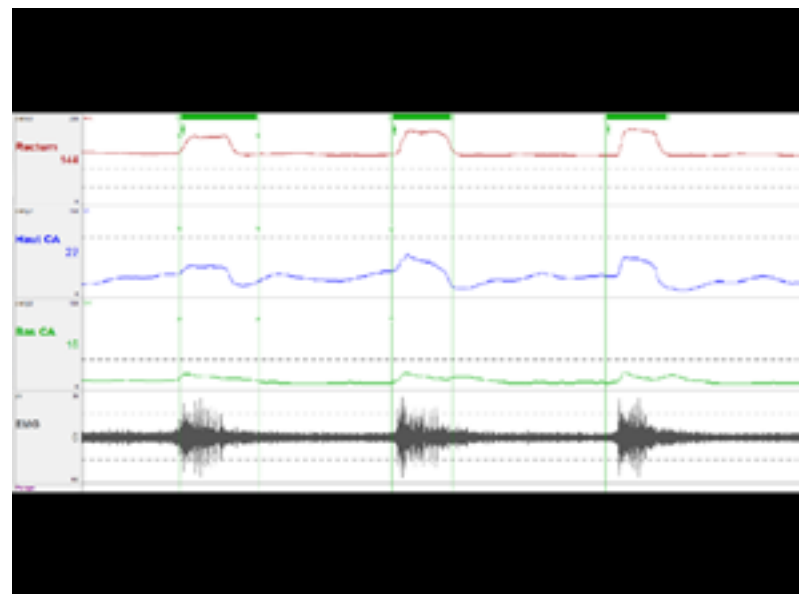


Figure 2. Electromyographic trace, together with anorectal manometry, revealing defective relaxation of the anal sphincter during abdominal pressure effort and strengthening of electromagnetic activity during a trial defecation (anismus).

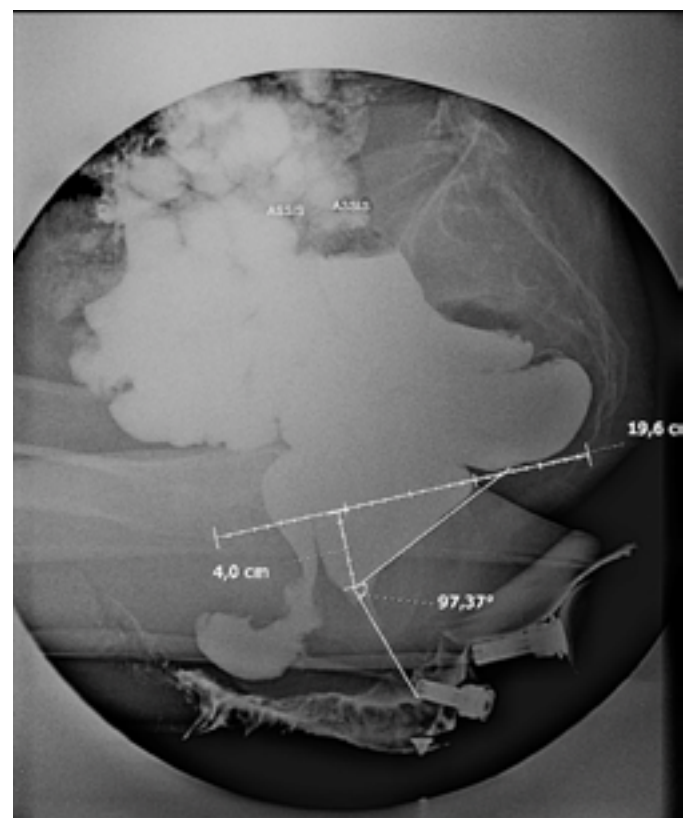


Figure 3. Defecography: abnormal relaxation of the pubo-rectal muscle during defecation. The perineal descent marked is evidence of the evacuation effort made by the patient to evacuate rectal contents. However, the anal canal is not very open, making a V shape, and the time to evacuate is greater than 30 seconds.

Calculation of radiopaque markers: by means of a line from the 5th lumbar vertebra to the right and left ischial spines, we divide the colon into right, left and recto-sigmoid colon on radiological images. We can therefore calculate overall and segmentary transit times. By using topography, we can differentiate a dominant slowdown in the right colon (leading us to suspect colic inertia) from an isolated slowdown in the recto-sigmoid colon (leading to a search for an anal cause of constipation or terminal constipation) [Fig 4].

The diagnosis of rectal-sphincter dyssynergia will only be made if the abnormality has been confirmed several times regardless of the means of examination used and if it has not improved during one of two biofeedback perineal rehabilitation sessions.

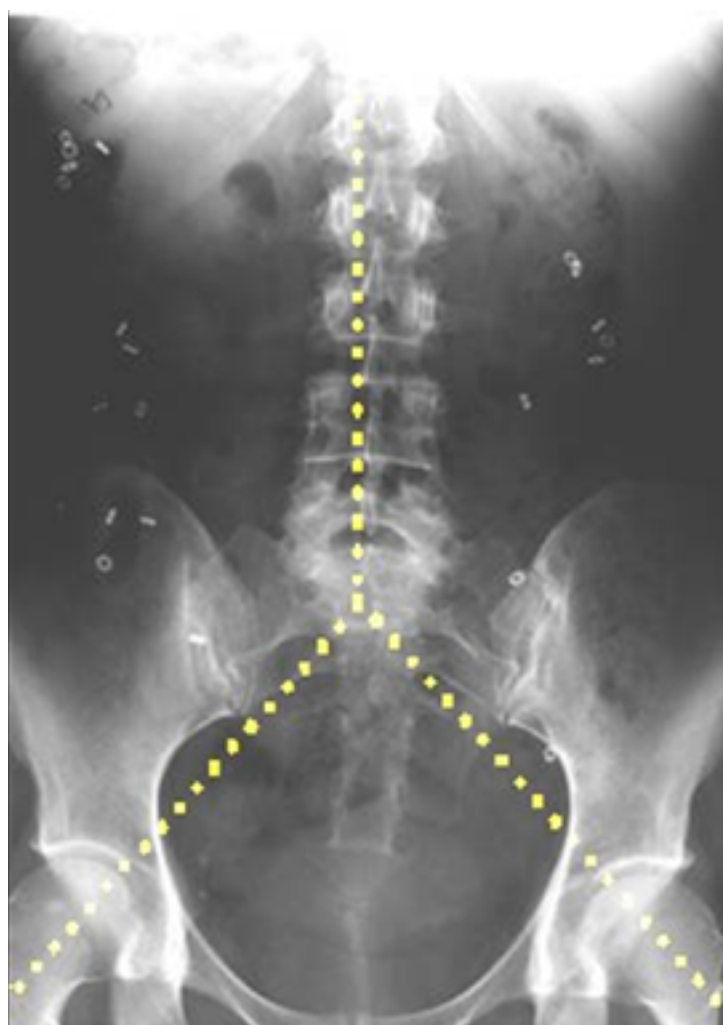


Figure 4. Colic transit time after intake of radiopaque markers

WHAT ARE THE CONSEQUENCES OF RECTAL-SPHINCTER DYSSYNERGIA?

Apart from terminal constipation, the presence of rectal-sphincter dyssynergia – by means of the abdominal pressure it imposes – may be responsible for pelvic static disorders (rectal prolapse, rectocele, solitary ulcer) with perineal descent. Repeated chronic abdominal pressure also exposes patients to the occurrence of subsequent incontinence, especially if there are associated neurological lesions (sensitivity disorders, anal hypotonia).

WHAT ARE THE TREATMENTS?

Hygiene and dietary rules

This consists of ensuring a sufficient fibre contribution (five fruits and vegetables per day) rich in oat or wheat bran (comprising 20 to 30 g of fibre) with daily physical activity and sufficient hydration (approximately 1.5 L water/24 h) [13]. In the case of functional causes, psychological treatment is essential, especially in cases with a history of sexual abuse.

Drug treatments

Medical treatment with laxatives is indicated according to stool quality (Bristol scale) and the existence of associated slow-transit constipation. The aim of laxative treatment is to obtain soft consistency and sufficient volume of stools to facilitate spontaneous evacuation. If this fails, gaseous breakdown of suppositories (acid potassium tartrate) or microlavage may be prescribed. The results of muscle relaxant treatments are, in general, disappointing.

Retrograde colic irrigation

Colic irrigation is a mini-invasive technique that entails performing a lavage to evacuate the rectum, sigmoid colon and part of the left colic angle using water. They are especially recommended in patients presenting with a central or peripheral neurological condition for whom other medical treatments have failed [3].

Botulinum toxin

Some studies have reported the results of botulinum toxin injections in the anal sphincter of non-neurological patients presenting with anismus. Short-term results appear satisfactory (70% improvement), ignoring cases of faecal incontinence reported subsequently. Effective botulinum infiltration is accompanied by a fall in anal pressure [7]; this is even more significant when it is combined with rehabilitation by biofeedback [17].

Biofeedback

Biofeedback can enable the correction of recto-anal dyssynergia where this has a behavioural origin. This is an instrumental rehabilitation technique whose aim is to teach the patient to allow the anus to open when pressure is exerted. If this dyssynergia is subsequent to neurological pathology, the biofeedback results are more random and depend on whether or not there is full or partial lesion of perineal motor command pathways. However, it is often difficult to appreciate the role of biofeedback on terminal constipation because it is rarely dissociated from the usual hygiene and dietary rules (going to the toilet regularly, a fibre-rich diet, etc.), laxative treatment and evacuator enemas.

When there is distal constipation with anismus, perineal rehabilitation by the biofeedback technique is effective in approximately 60% to 70% of patients treated [6]. Regardless of the subject's age and the length of time a patient has had disorders, it appears more effective than other medical treatments. Resorting to biofeedback will multiply by five the chances of improving constipation, compared with other medical treatments [9]. It is difficult to specify which biofeedback method should be used because there are few studies and they are difficult to compare. Nonetheless, it appears that using EMG biofeedback gives better results. Biofeedback is, therefore, a first-line treatment to propose to patients suffering from distal constipation when there is anismus, and even more so when patients have normal rectal sensitivity and are motivated.

CONCLUSION

Recto-anal dyssynergia is responsible for terminal constipation and requires chronic pressure to be exerted; it is susceptible to complications that include perineal descent, pelvic static disorders and anal incontinence. It can also be the cause and consequence of chronic anal pains. Diagnosis is by manometry, radiology and/or electromyography. Regardless of whether dyssynergia follows a neurological pathology, or local or functional gastrointestinal pathology of behavioural origin, treatment is, above all, based on rehabilitative care by means of biofeedback and drugs.

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