

Ultrasonographic assessment of patients referred with chronic anal pain to a tertiary referral centre

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Abstract

Background Chronic anal pain is relatively common as a presentation to specialist physicians and surgeons. Currently, it is regarded as a functional disorder upon the exclusion of occult intersphincteric sepsis. Our study assessed an unselected cohort of patients presenting with chronic previously undiagnosed anal pain using routine ultrasonography.

Methods All patients referred to a tertiary gastroenterology service between January 2005 and January 2008 with a diagnosis of chronic anal pain (>3 months duration with no clinical anorectal signs) underwent endoanal and static and dynamic transperineal ultrasound to assess for the frequency and pattern of occult intersphincteric sepsis.

Results Of 1,580 patients referred, there were 146 presenting with chronic anal pain as a main symptom. Of these, 37 (25.3%) had intersphincteric sepsis (ISS) diagnosed with ultrasound examination with 17 undergoing

evaluable surgery. There was a male preponderance (70.3%) with the diagnosis being made in 46% of cases after 6 months of symptoms and with 80.8% having posteriorly located sepsis. This occurred on a background of 62% having previous acute proctological conditions. There was complete ultrasonographic and operative concordance with 15 becoming asymptomatic after surgery at a mean follow-up of 6 months.

Conclusion Occult intersphincteric sepsis is not uncommon and is diagnosed using routine ultrasonography at the time of clinical presentation. Endoanal and transperineal ultrasound is recommended as part of the investigative armamentarium to exclude categorization as functional anorectal pain. This is currently not part of the Rome III coding for such a diagnosis suggesting a revision of these diagnostic criteria for the ultimate diagnosis of functional proctalgia.

Keywords Intersphincteric abscess · Endoanal ultrasound · Chronic anal pain

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Introduction

Chronic anal pain, defined as recurrent or persistent anal pain lasting more than 3 months in duration [1], is relatively poorly characterized [2], where as a major symptom, it may be present in up to 6% of American householders [3]. Clinical examination can exclude local anal pathology such as complicated internal and/or external haemorrhoids, chronic anal fissure and obvious perirectal sepsis, where it is suggested that patients without clinical findings either have a functional disorder presenting in the final common pathway of anal pain or that chronic anal pain is representative of a significant psychological overlay [4, 5]. Some have argued on this basis that anorectal

morphological investigation is unwarranted in this group of patients because of its low yield [6, 7]. Against this, it is well recognized that deep-seated perirectal sepsis may be occult, particularly in the postoperative patient [8, 9] and although uncommon, a primary intersphincteric abscess may present with chronic anal discomfort, being both difficult to manage successfully [10], requiring specialized anal imaging [11, 12] or even examination under general anaesthesia [13]. It is vital that this diagnosis is made by the referred clinician since recently, successful management in selected cases has been described using endosonographic drainage [14].

The accuracy of diagnosis of the presence and location of perirectal infection using endoanal sonography has been well described, alone [15], with hydrogen peroxide [16] or using specific ultrasonic contrast enhancement [17]. Recently, our group has shown that enhanced transperineal sonography may be accurate in delineating the presence of deep-seated anorectal abscesses [18, 19], providing complementary information to that obtained with conventional anal endosonography. We present those cases of patients referred over a 3-year period to a tertiary gastroenterological practice where one of the team (MBG) routinely performed endoanal and transperineal sonography as part of the clinical examination. In this cohort of patients, data on 146 patients primarily presenting with chronic anal pain is analysed.

Materials and methods

From January 2005 to January 2008, patients suffering from chronic anal pain were selected for analysis from a cohort of 1,580 patients referred for a range of conditions to be assessed using endoanal/transperineal sonography in our tertiary centre. All patients were suspected of having a diagnosis of functional anal pain, since there were no anoperineal signs on physical examination, no clinical signs of perirectal or perineal sepsis, and recent prior colonoscopy was normal. Patients were excluded each time an organic pathology was detected during clinical and/or endoscopic examination. All patients underwent both endoanal and transperineal ultrasound examinations to rule out organic pathology according to the usual accepted protocol of investigations in our institution for this type of presentation. Following ultrasonographic investigation, patients were divided into two main subgroups according to the presence or absence of deep-seated anal sepsis for analysis. This study was approved for prospective assessment by the local University and Hospital Ethics Committee.

All the patients underwent Endo Anal UltraSound (EAUS) and Static and Dynamic transperineal ultrasound (STP-US and DTP-US, respectively). In order to ensure the maximal quality of the picture, a fleet enema was

utilized 2–3 h prior to the examination where the bladder was emptied about half an hour before the ultrasound was performed. All ultrasound examinations were performed by the same operator (MB-G). STP-US and DTP-US were performed in accordance with our prior reported technique (20) using either a curvilinear C4-7 or a C8-12 transducer (Logiq 9, GE Healthcare, UK) with patients examined in the left lateral position. The transducer was protected with a latex condom, and images were routinely obtained of structures in the anterior compartment, (the pubis, urethra and bladder), the middle compartment, (the vagina and the rectovaginal septum) and the posterior compartment, (the anal canal, rectum and puborectalis muscle). Prior to the performance of the DTP-US, the rectum was instilled with 50 ml of ultrasonographic coupling gel (UltrageL Aquarius 101[®] Medilab, USA) using a standard Luer syringe with a soft-end catheter. Opacification of the vagina was routinely performed using 20 ml of acoustic gel. A total of 50 ml of Gastrografin (diluted 1:1 with tap water) was ingested by the patient 1 h prior before the DTP-US. The images were obtained in the mid-sagittal plane and at various transverse points of the posterior compartment and the perineal body at the mid-anal canal level at rest, during maximal straining and squeeze and in some cases, during rectal evacuation as has been previously described by our group [18, 20]. DTP-US was utilized in patients with chronic undiagnosed anal pain to exclude the associated diagnoses of non-relaxing puborectalis syndrome and recto-anal intussusception. EAUS was performed using a US scanner (model 3535, Bruel and Kjaer, Gentofte, Denmark) with a radial 360 degrees rotating hand-held endoprobe (Type 1850) 10.0-MHz transducer and a sonolucent plastic cone. The ultrasonographic probe was introduced into the anal canal, positioned at the rostral edge of the puborectalis sling and slowly withdrawn, perpendicular to the anal canal. Images were obtained at the proximal, middle and distal anal canal levels as has been previously reported [21].

For the purposes of diagnosis, an intersphincteric abscess is demonstrated when a small hypoechoic mass that might contain focal bright reflections from small gas bubbles is located between the hypoechoic internal anal sphincter (IAS) and the hyperechoic external anal sphincter (EAS) with connection shown to the IAS and traversal of the abscess through the hyperechoic submucosal complex (Fig. 1a, b). Both ultrasonographic techniques should demonstrate the same aspects of such an intersphincteric abscess where the collection is localized to the intersphincteric groove without crossing the EAS musculature [22]. All cases, where there was clinical evidence of an external fistula (confirmed on ultrasound), were excluded from analysis.

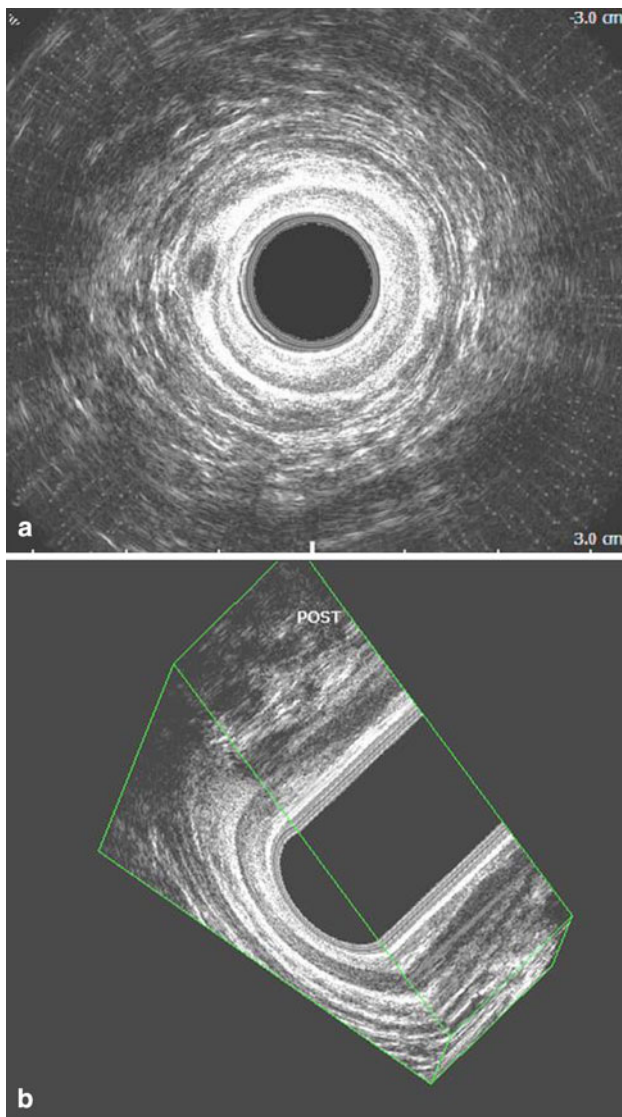


Fig. 1 **a** Two-dimensional transverse endoanal ultrasound. The intersphincteric abscess is located in the posterior distal anus. Its maximal diameter is 4 mm. **b** 3D oblique endoanal ultrasound view of the same patient showing a small hypoechoic mass (ISS) located in the posterior intersphincteric plane. The mass is 6 mm in height and is connected to the posterior internal anal sphincter (IAS)

Results

A total of 146 unselected patients, (90 women—61.6%, 56 men—38.4%; median age 52, range 20–83) presenting with chronic clinically idiopathic anal pain, form the analysis presented (Table 1). Of these patients, 37 (25.3%) had demonstrable intersphincteric sepsis, (ISS) with, in this group, a median age of 48 (range, 23–78) and a male preponderance (26 men—70.3%). In 12 patients (32.4%), the diagnosis was made 3 months following the onset of symptoms, in 17 patients (46%), it was established 6 months after symptom onset, and in eight patients

Table 1 Patient characteristics of cases referred with chronic anal pain

	Whole group (<i>n</i> = 146)	Anal pain with ISS (<i>n</i> = 37)
Mean age (years)	53	48
Age range (years)	20–83	23–78
Gender		
Male	46	26
Female	67	11
Duration of symptoms		
≤3 months	49	12
>3 months	24	17
But <6 months	–	–
>6 months	73	8
Associated symptoms		
Anal pain alone	74	18
Anal pain with		
Faecal incontinence	6	1
Constipation	30	18
IBS*	15	4
Urgency	8	3
Anal seepage	5	2
Pruritus	3	–
Tenesmus	6	3
Rectal bleeding	8	3
Urinary incontinence	6	2
Pain on micturition	10	10
Diarrhoea	6	2

* IBS Irritable bowel syndrome

(21.6%), diagnosis took at least a year. Patients were referred by surgeons in 20 instances, by gastroenterologists in eight patients and by general practitioners in a further nine patients. Sixty-two per cent of these patients (23/37) had previous proctological conditions with 9 (24.3%) having a chronic anal fissure and 11 (29.7%) prior drainage of a perianal abscess (Table 2). All patients had been performed at least 5 years prior to presentation to our unit with limited operative data available. In eight patients where the treating clinician deemed that there was presumptive sepsis in the absence of any corroborative ultrasonographic findings, a course of antibiotics (Ciprofloxacin plus Metronidazole) was employed for a period of 4-week therapy. The non-ISS group consisted of 109 patients (90 women—82.6% and 19 men—17.4%). In 49 patients, (45%) referral for ultrasound was 3 months or less, in 24 patients (22%), 6 months and in the remaining 36 (37%), referral was delayed for more than 6 months. In this non-ISS group, only 19 patients (17.4%) had a history of previous proctological disorders; 9 (8.3%) a previous

Table 2 Prior proctological history in the ISS and non-ISS groups

Prior surgery or group Proctological condition	Whole group <i>n</i> = 146 (%)	ISS group <i>n</i> = 37 (%)	Non-ISS group <i>n</i> = 109 (%)
Haemorrhoidectomy	10 (6.8)	3 (8.1)	7 (6.4)
Chronic anal fissure	12 (8.2)	7 (18.9)	5 (4.6)
Anal fistula	10 (6.8)	6 (16.2)	4 (3.7)
Perianal abscess	6 (4.1)	5 (13.5)	1 (0.9)
Lateral sphincterotomy	4 (2.7)	2 (5.4)	2 (1.8)
Total	42 (28.8)	23 (62.2)	19 (17.4)

chronic anal fissure and 5 (4.6%) prior perianal sepsis (Table 2). All patients in the ISS group had symptomatic obstructed defecation with only 30/52 patients (58%) in the non-ISS subgroup presenting with evacuatory dysfunction. Only patients in the non-ISS subgroup presented with painful defecation (38/109; 34.9%).

On ultrasonographic examination, in 37/146 patients (25.3%) both EAUS and STP-US demonstrated an intersphincteric abscess which had been clinically missed. Intersphincteric sepsis was located posteriorly in 30/37 patients (80.8%), with 3 patients (8%) sited anteriorly, and 4 (10.8%) detected on the right side of the perianal space with complete concordance between ultrasonographic techniques and surgery. Endosonographic size of the abscesses >2 cm in maximal diameter in four patients, between 1 and 2 cm in 12 patients and <1 cm on measurement in 20 patients. There were some minor differences in measured abscess size between EAUS and transperineal sonography, since the latter technique does not distend the anus. In all cases, an internal orifice/extension was detectable with each case showing a hypo-echoic extension to the level of the internal anal sphincter. In five patients, a sinus was located more proximally than the level of the internal orifice, and in 32 patients, the abscess extended distally to a presumptive internal opening. As patients were referred from many centres across Israel to our imaging unit, in this series of 37 patients, 12 patients were lost to follow-up with information on only 17 of the patients who underwent surgery in different hospitals. In all cases where operative data was available, there was complete operative and ultrasonographic concordance of a low- or mid-anal intersphincteric abscess; each of these patients being followed up clinically by the lead investigator (MBG). In five patients, between the timing of the ultrasound and that of surgery, spontaneous external fistulization of the intersphincteric abscess occurred. Two patients developed recurrent abscesses following operative drainage, both within 2 months of surgery with one presenting with residual/recurrent intersphincteric abscess at the same locale and the other a low trans-sphincteric fistula-in-ano. One unoperated patient was eventually

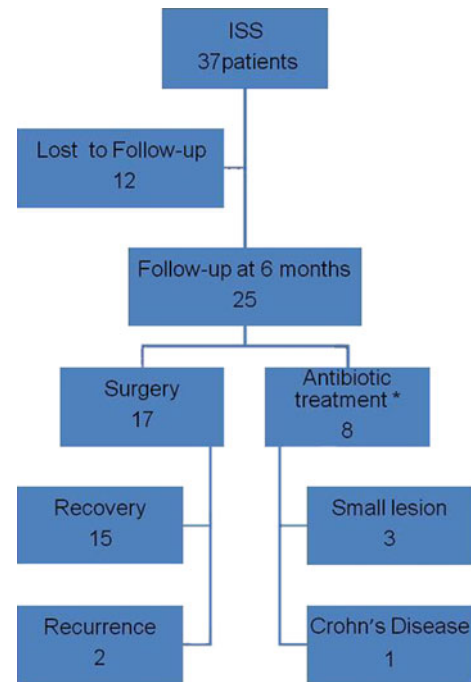


Fig. 2 Algorithm of 37 patients with anal pain and intersphincteric sepsis. *Antibiotics (ciprofloxacin and metronidazole for 4 weeks) used in these patients where there was presumptive sepsis but minimal ultrasonographic findings. A small ultrasonographic lesion is defined as one <2 mm in maximal diameter

diagnosed with perianal Crohn's disease as a first disease manifestation. Of the 15 patients operatively drained without recurrence, all are asymptomatic at a mean follow-up of 6 months. The algorithm of the 37 patients with chronic ISS is represented in Fig. 2.

Dedicated ultrasonography was valuable in demonstrating other anorectal pathologies in this patient cohort (Fig. 3). In 13 patients, (11.9%) both sonographic techniques diagnosed findings not specifically related to chronic anal pain (two with 'cystic' cavities presumed to be areas of chronic scarring) and 11 sphincter defects (seven internal anal sphincter and four external anal sphincter). Of the remaining 96 patients where EAUS had not demonstrated any other anorectal pathology, DTP-US showed 21 patients where there were rectoceles, cystoceles and rectoanal intussusceptions noted, where it is conceivable that some of these functional disorders might have significantly contributed to anal discomfort. In a further 22 patients, DTP-US showed closure of the anorectal angle during maximal straining conceivably providing a sonographic diagnosis of levator ani syndrome, so that in 44.8% of patients where EAUS was reported as normal, functional transperineal sonography showed other conditions that may have been contributory to the presenting symptomatology.



Fig. 3 Additional pathology found on transperineal sonography in referred patients

Discussion

In this study, 25% of patients, referred with chronic anal pain (as defined), had primary ISS demonstrable on outpatient ultrasonography, (either endoluminal or transperineal), as part of a single ambulatory proctological assessment. The majority of the patients in the ISS group were men with three quarters of the patients being referred either from consultant physicians or surgeons with a mean duration of pain of 6 months (range 3–12 months). Surgical correlation was only available in 17/37 patients which we accept is a significant weakness of our reported data. The study showed complete ultrasonographic/operative concordance. The mean follow-up of these patients at 6 months showed 2 patients with recurrent sepsis with the remaining 15 patients being asymptomatic. There was complete concordance of both ultrasonographic techniques.

Chronic anal pain as a clinical presentation to a tertiary gastroenterological referral practice is relatively common [1]. In our series, all patients had previously sought consultant help without a definitive diagnosis having been made over a prolonged period of time, where the diagnosis of primary ISS was relatively common. This data would suggest that ISS as a clinical diagnosis is not rare as has been previously suggested [10] and some cases of with functional anorectal disorders will be misclassified without dedicated imaging [23]. The difficulties in diagnosis of ISS, which represents between 5 and 25% of all anorectal abscesses [24], are because the protean external clinical signs of swelling or perianal induration may be absent and where the likelihood of ISS as a principal diagnosis increases in recurrent septic cases following prior inadequate drainage [25]. This was of relevance in nine of our patients where earlier diagnosis and effective treatment places less sphincter at risk and potentially provides better functional postoperative outcome [26].

The majority of sepsis being in the posterior locale may be indicative of prior painful anorectal conditions preceding presentation, such as chronic anal fissure where sphincter-saving minimalist surgery such as fissurectomy has been recently advocated suggestive of an underlying septic as well as an ischaemic background [27]. This may

also be reflective of the greater anatomical disposition of anal glands posteriorly [28, 29]. In this setting, the use of various forms of ultrasonography in the clinical setting (in particular, static and dynamic transperineal sonography) has also shown advantage in the delineation of other diagnoses such as rectoanal intussusception and enterocele which may conceivably contribute to perianal pain and painful defecation [30]. Complementary transperineal sonography in some cases will also provide resolution of sepsis located beyond the anal canal and the focal distance of endoluminal technology and is tolerated better in some cases where deployment of an endoanal probe is too painful.

There are several significant weaknesses in this study. First, all ultrasound examinations were performed by a single examiner, albeit one with a specific interest in the management of chronic perianal and perineal pain. Secondly, we only know of the operative findings of less than half of the patients, and thirdly, the clinical follow-up of operated patients is comparatively short and incomplete. Moreover, the operative correlation in a considerable number of patients is absent which clearly detracts from the veracity of our conclusions but not specifically from the recommendations which are applicable; namely, the integral importance of ultrasonography in the evaluation of these patients. It is equally accepted that these conclusions were made in an open, unselected group of patient referrals to a clinician nationally recognized for his specific clinical interest and ultrasonographic expertise, so that the patients may be skewed towards positive ultrasonographic findings interpreted in a particular clinical context. It is also accepted that we do not know the outcome of the 109 patients referred to our unit with chronic anal pain suggestive that initial and repeated ultrasonographic examination might have revealed even more cases of with occult underlying sepsis than was demonstrated in this study. Further, we do not know of the psychological status of many patients presenting with chronic perianal pain where there is considerable evidence that such patients may have significant psychological overlay as part of symptomatology manifesting as gastrointestinal somatization [31]. In the latter respect, there is little data concerning formal psychological assessment or intervention as part of the diagnostic and management workup in patients who principally present with chronic anal pain [32]. On the basis of our findings, we would suggest that the agreed Rome III diagnostic categorization for functional gastrointestinal disorders in patients presenting with anorectal pain, (group F2a; section 3) where there is recommended exclusion of cryptitis and intramuscular abscess, can only be made using endorectal and transperineal sonography by a clinician experienced in their performance and interpretation. This is an aspect that is not currently part of the Rome III criteria

[33]. The use of transperineal ultrasound early in the algorithm of the management of chronic perianal pain is as yet unproven; however, our data would suggest that it is accurate in the specific diagnosis of occult perirectal sepsis and in the separation of perianal from perineal sepsis, providing a potential for relabelling of some cases which are initially defined as idiopathic in origin [12]. The retrospective collated nature of the study suggests value in the development of a prospective ultrasound-based study where traditionally, the lack of standardized operative notation of perineal sepsis and its follow-up creates specific difficulties in analysis [34]. Repeated prospective ultrasound and clinical assessment, particularly in those cases presenting with chronic anal pain where the initial ultrasonographic examination is unremarkable may reveal even more cases where patient pain is diagnosed as septic in origin.

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