Referral for anorectal function evaluation is indicated in 65% and beneficial in 92% of patients

Maria M Szojda, Erik Tanis, Chris JJ Mulder, Richelle JF Felt-Bersma

Abstract

AIM: To determine the indicated referrals to a tertiary centre for patients with anorectal symptoms, the effect of the advised treatment and the discomfort of the tests.

METHODS: In a retrospective study, patients referred for anorectal function evaluation (AFE) between May 2004 and October 2006 were sent a questionnaire, as were the doctors who referred them. AFE consisted of anal manometry, rectal compliance measurement and anal endosonography. An indicated referral was defined as needing AFE to establish a diagnosis with clinical consequence (fecal incontinence without diarrhea, 3rd degree anal sphincter rupture, congenital anorectal disorder, inflammatory bowel disease with anorectal complaints and preoperative in patients for re-anastomosis or enterostoma, anal fissure, fistula or constipation). Anal ultrasound is always indicated in patients with fistula, anal manometry and rectal compliance when impaired continence reserve is suspected. The therapeutic effect was noted as improvement, no improvement but reassurance, and deterioration.

RESULTS: From the 216 patients referred, 167 (78%) returned the questionnaire. The referrals were indicated in 65%. Of these, 80% followed the proposed advice. Improvement was achieved in 35% and a reassurance in 57% of the patients, no difference existed between patient groups. On a VAS scale (1 to 10) symptoms improved from 4.0 to 7.2. Most patients reported no or little discomfort with AFE.

CONCLUSION: Referral for AFE was indicated in 65%. Beneficial effect was seen in 92%: 35% improved and 57% was reassured. Advice was followed in 80%. Better instruction about indication for AFE referral is warranted.

Key words: Anorectal function evaluation; Fecal incontinence; Anal endosonography; Anal manometry


Szojda MM, Tanis E, Mulder C, Felt-Bersma RJF. Referral for anorectal function evaluation is indicated in 65% and beneficial in 92% of patients. World J Gastroenterol 2008; 14(2): 272-277

http://www.wjgnet.com/1007-9327/14/272.asp

INTRODUCTION

Anorectal function evaluation (AFE) consists of several tests. Institutions differ in their selection of tests[1]. At our tertiary centre, anal manometry, rectal compliance measurement and anorectal endosonography are performed as part of our standard procedure[2]. Defecography and colon transit time are performed on strict indications. Neurophysiological tests of the pelvic floor are performed only for research purposes. Anal manometry establishes anal pressures while rectal compliance measures sensitivity and the volume of the rectum. Anal endosonography visualizes possible defects or atrophy of the anal sphincter complex. AFE is often requested in patients with anorectal symptoms including fecal incontinence, anal soiling, fistulas, anorectal tumours, anal pain, constipation etc. AFE is available in a limited number of hospitals, mainly academic centres and some large peripheral clinics.

A clinical referral (no research purposes) is indicated when disease can be demonstrated or excluded on the basis of AFE and when it has further therapeutic consequences. Which patients benefit most from anorectal function tests (by reduction of symptoms or reassurance) is unclear. Literature concerning this issue is scarce. Most studies that mention anorectal function tests in relation to anorectal pathology limit themselves to pre- and post-treatment results. Therefore, it often remains unclear whether AFE leads to relevant findings or subsequent change of therapy[1-10]. A large multi-centre Dutch study referred to the value of AFE for outcome of physiotherapy in patients with fecal incontinence[8]. One conclusion was that AFE had no predictive value for outcome of physiotherapy. Further, referral for AFE largely depended on availability of these tests in the referring hospital.
The aim of this study was to determine the indicated referrals to our tertiary center for patients with anorectal symptoms, the effect of the advice on their complaints and the perceived discomfort for the patients during AFE.

**MATERIALS AND METHODS**

**Patients**
All patients who were first clinical referrals for AFE between May 2004 and October 2006 were selected from our database. The database contained the complete medical history and extensive data of anorectal symptoms and anorectal test results. Deceased patients were excluded. All patients were sent a questionnaire. Additional data about follow-up in the outpatient clinic, hospital admittance, diagnostic and therapeutic procedures performed in our hospital could be retrieved from the (electronic) patient hospital files.

The Medical Ethical Commission of the VU University Medical Centre granted permission.

**The referring doctors**
The doctors who referred patients in the study period were also sent a questionnaire.

**Anorectal function evaluation (AFE)**
This consisted of anal manometry, rectal compliance measurement and anorectal endosonography according to our methods previously described elsewhere.

**Indicated referral**
A referral is indicated when disease can be demonstrated or excluded on the basis of AFE and when it has further therapeutical consequences. These are patients with fecal incontinence without diarrhea, 3rd degree sphincter rupture with or without fecal incontinence, congenital disorders, patients with inflammatory bowel disease with anorectal complaints and preoperative in patients for re-anastomosis or enterostoma, anal fissure or constipation. In patients with fistula, an ultrasound is always indicated but anal manometry and rectal compliance measurement only on indication regarding fecal incontinence. Test results in all these patients influence management. In patients with constipation, AFE was considered indicated in suspected Hirschsprung’s disease and surgery. AFE was not considered indicated in patients with fissures treated conservatively, soiling (defined as anal discharge without overt fecal incontinence), anal pain and hemorrhoids, since results do not change management.

**Questionnaires**
The questionnaire for patients contained questions about the actual received therapy and changes in their symptoms by the received treatment, stated in a Visual Analogue Score (VAS) (score 1-10, 1 = very bad, 10 = very good) and also stated as (1) improved, (2) no change but reassurance or acceptance of situation without further need for seeking other medical advice and (3) worse and/or no reassurance. Discomfort and pain during the examination was scored with VAS (score 1-10, 1 = very uncomfortable/painful, 10 = no discomfort/pain).

The questionnaire for the referring doctor consisted of questions about implementing the advice (yes, no), the quality of the advice (good, neutral, poor) and the willingness to refer again (yes, no).

**Treatment advice strategy**
The patients with symptoms of fecal incontinence were divided into five diagnostic subtypes: incontinence due to a sphincter defect, neurogenic incontinence, combined incontinence (sphincter defect and neurogenic), incontinence due to small rectal capacity and incontinence due to diarrhea. Patients with incontinence due to diarrhea were advised to have the cause of their diarrhea treated by the referring doctor.

All patients with fecal incontinence were prescribed fibers and physiotherapy. When unsuccessful additional therapy was advised depending of the cause. Patients with a sphincter defect 25% were offered a sphincter repair. In patients with a small rectal compliance an enterostoma was proposed (< 60 mL) or strongly recommended (between 60 and 100 mL).

Patients with a known 3rd degree sphincter rupture and as a result fecal incontinence were advised as other patients with fecal incontinence and the strong advice for a cesarean section with a next childbirth. If they were not incontinent, depending on the size of the rupture, the possibility of a cesarean section for next childbirth was discussed.

Advising re-anastomosis or enterostoma depended on the total impression of the anorectal function measured with anal pressures, rectal compliance and sphincter defects or atrophy.

In patients with a fistula the extension of the fistula tract(s) with anal ultrasound determined the type of surgery in our hospital (fistulotomy in simple and curettage with mucosal advancement plasty in complicated fistulas).

Patients where AFE was not indicated also received an advice. In patients with constipation a fibre-enriched diet, additional fibres and laxatives were advised. When unsuccessful and not previously attempted, pelvic floor physiotherapy was advised. When constipation coexisted with complaints of prolapse, a defecography was advised. When surgery was considered (rectocele correction or colectomy) besides an AFE, also a colon transit time test was proposed. Patients with fissures were treated conservatively; when treatment failed they were referred to the surgeon and AFE was indicated. Hemorrhoids and mucosal prolapse were treated with rubber band ligation. A hemorrhoidectomy was advised only in refractory cases.

**Statistical analysis**
The results were described as mean with standard deviation. The χ² test for independence and for trend, the Kruskal-Wallis test and the Wilcoxon matched-pair test were used when appropriate (GraphPad InStat Software, San Diego, Ca, USA).
RESULTS

Response questionnaires
There were 216 first referrals for AFE, 181 (84%) females, mean age 51 years, (SD 15, range 15–82). Two patients had died. A total of 167 patients [137 females (82%), mean age 51 years, SD 15, range 16–82] returned an adequate (almost all questions answered) questionnaire (78%).

Indicated referrals
Table 1 shows the indicated referrals. Of the 167 referrals, 109 (65%) were indicated. The most frequent referral was fecal incontinence, from which 93% was indicated (7% had diarrhoea).

Non-indicated referrals
Two of the 31 patients with constipation had signs of anismus during physical examination and anal manometry. Of the five patients with soiling, four had a mucosal prolapse and/or hemorrhoids. The fifth patient had an anal fissure on inspection, not previously found. In two patients with anal pain a fissure was found, one treated conservatively and one eventually much later with surgery. AFE revealed no abnormalities in all patients besides high rest pressure in the patients with fissures. AFE did not influence therapeutic advice.

Effect of treatment
Symptoms improved in 54 patients (35%). In 88 patients (57%) symptoms were unchanged but patients were reassured. Despite treatment, 12 patients (8%) deteriorated. The whole group improved one point on the VAS scale (5.1-6.1) (P < 0.0001), for those improved (35%) this was even 3.2 points (4.0-7.2). Both indicated and non indicated referred patients improved equally.

The causes of fecal incontinence were: sphincter defect (14), neurogenic (37), combined incontinence (10), incontinence due to diarrhea (5) and incontinence due to small rectal capacity (< 100 mL) (5). Within these groups, the largest improvement was seen in the combined incontinence group (1.8 point) (P = 0.01). Patients with a small rectal capacity had no improvement at all.

The actual therapies received by the patients according to the reason for referral are mentioned in Table 2. Some patients received several therapies. The most frequent advice was medication, mainly fibres.

Of all referred patients, only 17% were operated. No difference between effectiveness of conservative and surgical treatment could be observed on patient symptoms (P = 0.09).

AFE induced little stress, indicated by an average pain score of 7 (SD 2.7) and a discomfort score of 7.2 (SD 2.8). Two patients with fistulas experienced the examination as unpleasant and painful due to the hydrogen peroxide injection in their fistula tract during anal ultrasound. Thirty five females (26%) preferred to be examined by a female doctor while the remaining 102 (75%) had no preference. Twenty six males (93%) had no preference and the remaining two (7%) preferred a male and a female doctor, respectively (P < 0.0001). Dutch ethnic minorities did not influence these data.

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Indicated referrals in the main groups of patients</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>All n (% of referrals)</td>
</tr>
<tr>
<td>Incontinence</td>
<td>71 (43)</td>
</tr>
<tr>
<td>Constipation</td>
<td>31 (19)</td>
</tr>
<tr>
<td>3rd sphincter rupture</td>
<td>21 (13)</td>
</tr>
<tr>
<td>Pain</td>
<td>9 (5)</td>
</tr>
<tr>
<td>Re-anastomosis/enterostoma</td>
<td>8 (5)</td>
</tr>
<tr>
<td>Soiling</td>
<td>5 (3)</td>
</tr>
<tr>
<td>IBD</td>
<td>4 (2)</td>
</tr>
<tr>
<td>Hemorrhoids</td>
<td>3 (2)</td>
</tr>
<tr>
<td>Anal atresia</td>
<td>2 (1)</td>
</tr>
<tr>
<td>Fistulas</td>
<td>2 (1)</td>
</tr>
<tr>
<td>Fissure</td>
<td>1 (1)</td>
</tr>
<tr>
<td>Other</td>
<td>9 (5)</td>
</tr>
<tr>
<td>Total</td>
<td>167 (100)</td>
</tr>
</tbody>
</table>

1Five patients with diarrhea not indicated; 2Only patients suspected of Hirschsprung/surgery indicated, IBD-inflammatory bowel disease; 3Percentage of all referrals.

Questionnaires referring doctors
Of the 214 questionnaires, 102 (48%) responses were obtained. The advice was nearly always implemented (96%). The quality of the advice was considered good in 76% and neutral in 24%. All doctors except one (98%) were willing to refer again.

Agreement between proposed and followed advice.
The proposed and followed therapies are shown in Table 3. Therapies could also be a combination of medication, physiotherapy or surgery. Dietary advice was always followed (100%), while surgical advice was generally followed (89%). Less accepted advice included medication (71%) and physiotherapy (73%) (P = 0.005, 99% CI).

DISCUSSION
The 78% response to the questionnaires of the patients was good. In our previous study we reported a similar result[2]. Only 65% of the referrals were indicated. In 35% the diagnosis could have been established by clinical examination or added nothing. This is a signal that more communication and education is warranted, especially in times with restrictions and limited resources. However, many of the referred patients suffered from chronic symptoms, bringing both patient and doctor to despair. The possibility of referring the patients to another centre may come as a welcome alternative. The symptoms of the whole group improved an average of one point from 5.1 to 6.1 on a ten-point scale. Actual improvement took place in 35% of the referred patients; they improved an average of 3.2 points. The moderate improvement might be explained by the fact that it concerned patients with chronic disorders, already treated conservatively for a long time. Success was not related to a specific symptom, diagnosis or treatment, only the five patients with fecal incontinence due to small rectal capacity did not improve. Deterioration in 8% of the patients was mainly due to the fluctuating course of the chronic complaints combined with their reluctance to follow the advice. In 80% of patients, advice was followed. Medication and
physiotherapy were the least applied therapies (Table 3). Some disagreement between advised and followed therapy could be explained by the fact that patients considered fibres a diet instead of medication. Physiotherapy was advised in 44 patients (26%) and effectuated in 32 (73%).

Ten years ago this was only respectively 18% and 67%. Increasing interest in pelvic floor disorders and special training for physiotherapists has certainly contributed to the change in attitude towards physiotherapy. Although therapeutic advice was given after AFE, actual improvement in symptoms is not necessarily caused by AFE. A placebo effect due to the referral to a specialized centre and the knowledge present in a 3rd referral centre may play a role. This is comparable with biofeedback studies for fecal incontinence, were the added value of the biofeedback was very difficult to separate from the received specialized care and treatment.

The examination was generally well tolerated, except in two patients with fistulas who reported the examination as painful. This was caused by local injection of hydrogen peroxide into the external fistula opening in order to visualize the fistula tract. It was remarkable that ten years later referred for sacral neuromodulation elsewhere and ultimately underwent sphincter repair. Two patients were identified as suitable candidates for a sphincter repair without severe neuropathy leading to atrophy can be identified as suitable candidates for a sphincter repair.

In our group of incontinent patients, only 12 (18%) ultimately underwent sphincter repair. Two patients were later referred for sacral neuromodulation elsewhere and eleven patients were treated with SECCA® (radio frequent energy application to the external sphincter).
Women who experienced a 3rd degree sphincter rupture are indicated for AFE, even without complaints. There are always some damage to the external anal sphincter and appropriate advice concerning defaecation regulation, physiotherapy and possible future cesarean section can be discussed.

Most patients with constipation were referred for assessment of anismus/hyper tonic pelvic floor or rectocele. Generally AFE is not needed in these patients. Both anismus and a rectocele can be diagnosed by proper rectal examination\(^4,5,25,26\). When prolapse complaints dominate a defecography is indicated to demonstrate a possible enterocele as this can be corrected surgically. In patients with constipation, correction is not indicated in accidentally found intussusception since the obstructed defecation will not improve\(^6,7\). AFE is indicated when (partial) colectomy is considered to be informed about the continence reserve. For patients with fistulas anal endosonography demonstrates the fistula tracts and anal manometry will establish the continence reserve\(^6,10-12\). In patients with soiling (anal secretion), medical history, good physical and rectal examination and an additional proctoscopy have proven sufficient to establish a diagnosis\(^3\), without the need for AFE, as was shown again in our patients. For patients with pain, AFE does not contribute\(^13\). Suspected discrete abnormalities e.g. an occult abscess, could not be demonstrated in our study as well. Sometimes a fissure is found in these patients, diagnosed on the basis of the medical history and rectal examination. In patients with a fissure, high pressures are usually found using manometry, but this does not alter therapy\(^14\). Only in those who where conservative measures have failed and will undergo surgery AFE seems indicated. In patients with haemorrhoids, anal manometry can also reveal high pressures and anal endosonography can demonstrate a thickened mucosa; however, these findings have no influence on therapy\(^15,16\). AFE is indicated in patients with an enterostoma when re-anastomosis is considered. In some rare disorders like anal atresia AFE can also be indicated to document anorectal problems and help choose a specific therapy.

In conclusion, referral for AFE was indicated in 65%, communication and education to colleagues seems warranted. Indications are fecal incontinence without diarrhea, 3rd degree sphincter rupture, pre-operative for stoma or re-anastomosis, fistula, fissures or constipation. Anal ultrasound is always indicated in patients with fistula, anal manometry. Rectal compliance is indicated when impaired continence reserve is suspected. Generally, in patients with constipation and soiling the medical history, physical examination and additional proctoscopy is sufficient and anal manometry is not necessary.

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