

Diagnostic work-up for faecal incontinence in daily clinical practice in the Netherlands

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ABSTRACT

Background: To study variation in Dutch hospitals in applying diagnostic and treatment options for faecal incontinence.

Methods: Surgeons, gastroenterologists, internists and gynaecologists were contacted by phone or mail and requested to complete a questionnaire. The questionnaire asked for general information about patients with faecal incontinence, the use and availability of diagnostic techniques, the use of incontinence scores and therapeutic options.

Results: In total 306 specialists were contacted and data were collected from 203 specialists from 86 hospitals (response rate 66%). The most frequently applied diagnostics were sigmoidoscopy (64%), endoanal sonography (58%), evacuation proctography (56%) and/or anorectal manometry (51%). The choice seemed to be related to the availability of the techniques. Sigmoidoscopies were performed significantly more often in local hospitals ($p < 0.001$), while in academic medical centres significantly more endoanal MRI examinations were conducted ($p < 0.05$). The most stated treatment option was physiotherapy (90%), followed by dietary measures (83%), medication (71%) and surgery (68%). However, in general, combinations of treatment options were used.

Conclusions: A substantial variety exists in the diagnostic work-up of faecal incontinence. In general, at least one anorectal functional test and an imaging technique are the diagnostic techniques of choice. Pelvic floor physiotherapy is the first choice in conservative treatment.

KEYWORDS

Anorectal functional test, diagnostic work-up, endoanal sonography, faecal incontinence, manometry, MRI, therapy, survey

INTRODUCTION

Faecal incontinence is defined as 'the involuntary loss of flatus, liquid or solid stool that is a social or hygienic problem.'¹ The incidence and prevalence of faecal incontinence in the Netherlands are not exactly known.² The estimated prevalence is about 100,000 subjects in the Netherlands. The actual prevalence may be even higher due to underreporting as a consequence of the social stigma of this disorder.³ The main causes of faecal incontinence are obstetric trauma (anal sphincter and/or pudendal nerve damage) and anorectal surgery (anal sphincter trauma).⁴⁻⁶ Apart from medical history and physical examination, there are several diagnostic techniques that can be performed: anorectal functional testing, endoscopy and imaging.⁷⁻⁹ Anorectal functional tests comprise anorectal manometry (measurement of sphincter pressure in rest, during squeeze and straining), measurement of pudendal nerve terminal motor latency (PNTML) (to establish pudendal nerve injury), electromyography (EMG) (conventional EMG to identify the quality of sphincter tissue as well as to determine whether the muscle contracts or relaxes; single-fibre EMG to identify denervation-reinnervation potentials indicative of nerve injury), rectal capacity measurement (to detect the threshold of the first detectable sensation, sensation of urgency and maximum tolerable volume) and sensory testing (to determine the sensitivity of the anal canal and rectum).^{10,11}

A sigmoidoscopy can be performed to exclude organic disease, such as a benign or malignant obstructing lesion or inflammation.¹⁰ With imaging techniques, such as endoanal sonography and magnetic resonance imaging (MRI), both internal and external anal sphincter abnormalities will be assessed.⁷ Evacuation proctography (defaecography) involves imaging of the rectum and observation of the process, rate, and completeness of rectal evacuation.¹⁰

At present there is no consensus on the best diagnostic techniques for patients with faecal incontinence in the Netherlands. As a consequence of the increase in number and availability of diagnostic modalities, variation in diagnostics exists and an unambiguous strategy is lacking.¹⁰ To assess if and to what extent variation exists in diagnostic work-up and treatment of patients with faecal incontinence in daily clinical practice in the Netherlands, we developed a survey. We restricted ourselves to an inventory of diagnostic modalities and treatment in secondary and tertiary centres.

MATERIALS AND METHODS

From October 2002 to April 2004 surgeons, gastroenterologists, internists and gynaecologists from all Dutch hospitals were informed about the survey by phone. If approach by phone turned out to be impossible, information was sent

out by (digital) mail. For every hospital a questionnaire was sent per discipline to the most experienced specialist in the field of faecal incontinence.

The questionnaire comprised five sections. In the first, physicians were asked for general information about patients with faecal incontinence, such as how often these patients were referred to the respondent, and the age, and gender of the referred patients. In the second section information was requested about the selection of diagnostic tests which were used as routine work-up in patients with faecal incontinence. Options were anorectal functional tests, endoscopy and imaging techniques (*table 1*). In addition to the options for routine diagnostic techniques, in the third part questions were asked about the availability of these techniques to gain insight into where the techniques were performed. The respondent had to indicate whether the diagnostic test in question could be performed in the respondent's own hospital or if referral was needed. The fourth section was about the use of an incontinence score to determine the severity of incontinence. Respondents could choose between the Parks, Vaizey, Wexner, Pescatori, or Millar scores, and/or the American Medical System score.¹² If an incontinence score was used, the respondent was asked whether the score influenced the choice of diagnostic and therapeutic options. The final section contained questions on the therapeutic options used (conservative therapy (dietary measures, medication, pelvic

Table 1 Options for diagnostic techniques together with the availability of diagnostic equipment and referral of patients with faecal incontinence

	Options for diagnostics*	Availability of diagnostics	Referral n (%)
Diagnostic techniques	n (%)	n (%)	
Endoscopy			
Sigmoidoscopy	120 (64)	166 (89)	2 (1)
Anorectal functional tests			
Anorectal manometry	96 (51)	71 (38)	72 (39)
Rectal capacity measurement	42 (22)	44 (24)	48 (26)
PNTML	37 (20)	47 (25)	43 (23)
Anal sensibility measurement	32 (17)	33 (18)	47 (25)
Rectal sensibility measurement	31 (17)	23 (12)	46 (25)
Conventional electromyography	26 (14)	57 (31)	26 (14)
Fine needle electromyography	6 (3)	24 (13)	22 (12)
Imaging techniques			
Endoanal sonography	108 (58)	86 (46)	60 (32)
Evacuation proctography	104 (56)	136 (73)	31 (17)
Endoanal MRI	25 (13)	28 (15)	31 (17)
Phased-array MRI	25 (13)	56 (30)	10 (5)
MR defaecography	3 (2)	11 (6)	13 (7)

*The chosen diagnostic is the routine diagnostic work-up in patients with faecal incontinence. The routine diagnostic work-up could be performed in the respondent's own hospital or in a referring centre. PNTML = pudendal nerve terminal motor latency; MRI = magnetic resonance imaging.

floor physiotherapy), surgery or another kind of therapy). All nonrespondents received one more reminder by phone and if necessary, a new questionnaire was sent out. If there was no response after three questionnaires had been sent out, a final nonresponse was determined. (Details of the questionnaire can be obtained from the corresponding author.)

Analyses were performed with descriptive statistics. Differences between groups were calculated with χ^2 test. The results were statistically analysed with SPSS 11.5. for Windows (SPSS Inc. Standard Version). We analysed the response per specialist instead of per hospital.

RESULTS

Response

In total 306 physicians were contacted (91 surgeons, 74 gastroenterologists, 24 internists and 117 gynaecologists) from the 100 Dutch hospitals (we did not take into account categorical hospitals such as cancer institutes and outpatient clinics). The response rate was 66% (n=203) from 86 hospitals and one private clinic. Sixteen percent (n=33 questionnaires) of the response rate originated from academic medical centres. There were differences in response rate per medical specialist: the response rate of surgeons and gastroenterologists was higher (76 and 72% respectively) than that of internists and gynaecologists (58 and 57% respectively). Seventeen (29%) responding gynaecologists referred their patients almost directly to another medical specialist or hospital. For the majority of physicians (75%) patients with faecal incontinence were sometimes referred, while only 12% indicated having these patients referred regularly and 3% often. Sixteen questionnaires (8%) had to be excluded from analysis since the respondent reported no referral of patients with faecal incontinence or referred these patients immediately to another specialist. Consequently, there were 187 questionnaires remaining for analysis, from 80 different hospitals and of one private clinic. The majority of physicians (92%) indicated that they treated their patients with faecal incontinence on an interdisciplinary and/or multidisciplinary basis.

Patients

Physicians indicated that on average 87% of the patients with faecal incontinence were female. On average almost half of these patients (47%) were more than 65 years of age. Age as well as gender was not significantly influenced by the numbers of patients referred to the physician.

Diagnostic techniques

The range of routine diagnostic techniques applied in patients with faecal incontinence varied from none to 11

examinations. On average 3.5 examinations were performed as the routine diagnostic work-up. In *table 1* the results of differences in options of diagnostic testing are shown. The majority of the respondents (64%) indicated the routine use of sigmoidoscopy. The most frequently applied imaging techniques were endoanal sonography (58%) and evacuation proctography (56%). Of all anorectal functional tests, anorectal manometry (51%) was most often used. The use of these techniques seems to be linked to the availability of the diagnostic techniques. The other diagnostic techniques were not performed on a regular basis.

Sigmoidoscopy and evacuation proctography were available for most of the respondents. The highest percentages of referral were for endoanal sonography and anorectal manometry (32 and 39% respectively). The most commonly used combinations of diagnostic techniques were endoanal sonography with anorectal manometry (41%), and sigmoidoscopy with evacuation proctography (41%). Twelve percent of all respondents reported that they did not perform any kind of additional testing; 38% mentioned not performing any anorectal functional tests and 3% reported that they did not make use of any kind of imaging technique. When comparing the routinely performed diagnostics in academic medical centres with those performed in local hospitals, physicians in local hospitals reported significantly more use of sigmoidoscopy ($p < 0.001$), while physicians in academic medical centres reported significantly more use of endoanal MRI examinations ($p < 0.05$) (*table 2*).

Table 2 Significant differences between academic medical centres and local hospitals

	Sigmoid- oscopy	Endoanal MRI	Incontinence score
University hospital	15%	29%	60%
	$p < 0.001$	$p < 0.05$	$p = 0.001$
Local hospital	73%	11%	28%

Incontinence score

Thirty-one percent of the respondents used an incontinence score; 13.5% indicated that they always used a score and 17.5% sometimes. A score was significantly more in use in academic medical centres compared with local hospitals ($p = 0.001$) (*table 2*). The most applied incontinence score was the Parks score (44%), followed by the more recently introduced Vaizey score (28%). The selection of diagnostic tests and therapeutic treatment options were influenced by an incontinence score in 6%.

Therapeutic treatment options

The most reported treatment option by the respondents was pelvic floor physiotherapy (90%), followed by dietary

measures (83%), medication (71%) and surgery (68%). A combination of treatment options was most frequently reported. Fifty-four percent of the respondents indicated that they applied dietary measures, medication, pelvic floor physiotherapy as well as surgery as treatment options. In 7% (academic medical centres) vs 26% (local hospitals) surgery was not considered a treatment option as patients only received conservative treatment. Other therapies, such as sacral neuromodulation and anorectal or oral water enemas, were part of potential treatment options in 7% of the respondents.

DISCUSSION

In the Netherlands the most performed diagnostics in patients with faecal incontinence are sigmoidoscopy, endoanal sonography, evacuation proctography and anorectal manometry. Since sigmoidoscopy is performed to exclude local pathology such as tumours, and evacuation proctography is not a diagnostic technique specifically for faecal incontinence,⁷ it can be concluded that most applied diagnostic tests in patients with faecal incontinence in secondary and tertiary centres are anorectal manometry (anorectal functional test) and endoanal sonography (imaging technique). Significantly more sigmoidoscopies were performed in local hospitals ($p < 0.001$), while endoanal MRI examinations were significantly more frequent in academic medical centres ($p < 0.05$). It is possible that availability does play a role, as well as the referral pattern. Almost every physician in a local hospital performs a sigmoidoscopy to exclude malignancy or proctitis, for example, while in general patients are referred to an academic medical centre if comprehensive anorectal functional testing and/or endoanal MRI is needed. There was a considerable variation in the use of the other diagnostic modalities.

Anorectal functional tests

Anorectal manometry appeared to be the most commonly applied anorectal functional test; it was relatively widely available and had the highest percentage of referral. PNTML, rectal capacity measurement, and anal and rectal sensory testing were part of routine diagnostic testing to a lesser extent. Nevertheless, approximately 25% of the respondents referred their patients for these tests. It seems that these functional tests are included in the work-up when more extensive diagnostic is mandatory. Conventional electromyography was reported to be part of the available diagnostic techniques by 31% of all respondents, but only 14% performed it as a routine procedure. Fine needle electromyography was not regarded as routine. These tests are not considered to have any substantial value and to be outdated. The performance of EMG for

the detection of an external anal sphincter defect has been replaced by the availability of other techniques, such as endosonography or MRI.^{10,13} For establishing pudendal nerve injury, PNTML measurement will be performed when considered appropriate.⁷ The technique has been suggested for distinguishing between muscle weakness caused by pudendal nerve injury and muscle weakness caused by muscle injury in patients with faecal incontinence, but has a poor correlation with clinical symptoms and histological findings. Therefore, the clinical usefulness is controversial.¹⁰

Imaging techniques

Endoanal and phased-array MRI are part of the routine diagnostic work-up for more than 10% of respondents. Endoanal sonography and endoanal MRI are comparable techniques for evaluating external anal sphincter abnormalities. For evaluation of the internal anal sphincter complex, there is no consensus about the most accurate technique.^{8,14,15} However, the sensitivity and specificity for identifying external anal sphincter atrophy with MRI is higher than for endoanal sonography.⁸

MR defaecography is hardly available. Besides, the accuracy and reproducibility of conventional defaecography is not (yet) established and the technique is still in development.¹⁴

Incontinence score

Several incontinence scores have been developed.^{7,8,12} Nevertheless, it appears that these scores are rarely used in daily practice. This is probably because the registration of scoring is often a complex matter and the consequences of use, other than for scientific research, have not been clearly pointed out. This study showed that scoring systems according to Parks and Vaizey are the most applied scores in the Netherlands for patients with faecal incontinence. Possible explanations are that the score according to Parks is the most uncomplicated one and the score according to Vaizey is the most complete scoring system.¹²

Treatment options

A combination of treatments was predominantly reported, comprising various conservative treatment options (pelvic floor physiotherapy, dietary measures, medication), if necessary complemented with surgery. Of all therapeutic options, pelvic floor physiotherapy was the most widely applied (90%). According to Kamm pelvic floor physiotherapy and surgery are the two most utilised treatment options if dietary measures and/or medication fail.¹⁶ However, in this study the respondents reported that they more often used pelvic floor physiotherapy as initial therapy than other conservative measures. Nevertheless, we must consider that previous conservative treatment may have been prescribed elsewhere by others.

Limitations

Potential limitations of this study should be taken into account. One limitation was that the majority of the respondents reported a relatively infrequent referral of patients with faecal incontinence, which was defined as a range from 1 to 24 patients a year. Because of the wide range, it is possible that differences exist in selected diagnostic and therapeutic options between physicians with one to five referrals a year compared with those with 20 to 24 referrals on a yearly basis.

In some of the participating hospitals this questionnaire was completed by several medical specialities while in others it was completed by only one speciality. Since this questionnaire was completed for the greater part by different medical specialities divergently, we assume it is justified considering that all hospitals have the same weighting.

This study shows that substantial variety exists in the diagnostic work-up for faecal incontinence. In general, at least one anorectal functional test and an imaging technique are the diagnostic techniques of choice. Besides, there are differences in work-up between local hospitals and academic medical centres, partly related to the availability of equipment. In the literature, guidelines for the evaluation of faecal incontinence are described.^{10,17-19} In summary they all recommend, next to a detailed clinical assessment, appropriate physiological and imaging tests of the anorectum. These three sources of information are complementary. The anorectal physiology testing of choice in the presented guidelines were anorectal manometry and endoanal sonography, conform the results of our study. Furthermore, between guidelines there was variation concerning the remaining diagnostic modalities.

To reduce variability we encourage developing guidelines for the diagnostic work-up of faecal incontinence in the Netherlands. We recommend that the scope of the guidelines is aimed at simplification of the diagnostic path in patients with faecal incontinence, based on scientific evidence. We want to emphasise the importance of evidence-based guidelines to reduce inadequate use as well as both overuse and underuse. As a consequence, an efficient diagnostic work-up in patients with faecal incontinence can be developed.

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