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ORIGINAL ARTICLE

FECAL INCONTINENCE SCORING IN RELATION TO THE INDICATIONS AND RESULTS OF SURGERY, APPLICATION OF A NEW SCORE; MANSOURA FECAL INCONTINENCE SCORE (MFIS)

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Abstract

Aim: To create a simple, reproducible fecal incontinence scale and establishing its sensitivity and validity.

Method: The data of 144 patients with different degrees of fecal incontinence were analyzed retrospectively using four established scales and a newly devised scale which considered incontinence to mucous as a separate and independent entity. The patients were divided into two groups according to the new scale. Group one (n = 32) included patients with minor degree fecal incontinence (incontinence to flatus and / or mucous) with proved sphincter defect who were treated by biofeedback and group two (n = 112) included patients complaining of major degrees of fecal incontinence (liquid and solid stool) who were managed surgically.

Results: All four scales correlated highly and significantly with the new scale. All except one score changed significantly in response to biofeedback and surgical treatment. The new scale showed the greatest change, at the highest level of significance and correlated best with the clinical assessment and Pescatori scoring.

Conclusion: The newly devised scoring system is better to be applied in our locality because of religious reasons, it is reliable in measuring the change of continence after surgery and has high clinical validity and utility.

Keywords: Anal incontinence; grading systems.

INTRODUCTION

Fecal incontinence (FI) is defined as the involuntary passage of stools through the anus. Fecal incontinence is not a disease entity. It is as much a symptom as abdominal pain or per rectal bleeding.[1]

Patients suffering from FI are frequently social hermits because they are too embarrassed to discuss their problems with their friends or their physicians. They have been found to live in a restricted world, often describing it as being similar to imprisonment. The limits to their world are often dictated by access to toilets, the need to carry a change of clothing with them at all times, and attempts to conceal the problem from family and friends alike.[2]

Baseline evaluation of symptoms described by a patient presenting with FI is fundamental in order to establish severity of continence dysfunction. Thereafter, more

information about the pathophysiology of FI can be gleaned from instrumental examination. The most appropriate treatment depends on the underlying disease.[3]

Clinical assessment of severity of FI varies between clinicians according to their expertise.[4] The aim of severity scores is two fold: they help determine symptom severity and allow comparison of results of the different available treatments.[5]

The effect of FI on lifestyle adds information which may best indicate the need for treatment. This includes the need to use pads or plugs and the ability or confidence to perform work and leisure activities. Muslim Prayers are very careful about any leakage, so, incontinence to mucous is very distressing and push the patient to change his underwear and to clean himself with each praying. These factors are all taken into account when a focused history is taken from a patient with fecal incontinence, and this has been used for comparison with the established and new scales.

Aim of the work: To create a simple, reproducible fecal incontinence scale and establishing its sensitivity and validity in determining the type of surgery and the outcome of different surgical modalities for treatment of FI.

PATIENTS AND METHODS

The data of patients with FI who were treated from January 2000 to January 2008 were analyzed retrospectively. The Ethics Committee of Mansoura University approved the study protocol. All patients in the study gave written informed consent.

Inclusion criteria:

Patients complaining of FI with:

1- Simple sphincteric defect: Due to previous surgery for anal fistula, previous vaginal delivery, or perineal trauma.

2- Sphincteric defect not amenable for simple repair due to the presence of multiple defects, wide gaping, excess scaring, failed OASR or congenital underdevelopment of the external anal sphincter (major fecal incontinence) as a result of previous surgery for congenital megacolon, high imperforate anus, or perineal trauma. Major FI (end stage FI) is defined as incontinence to solid stool more than once per week.

Exclusion criteria:

Post-haemorroidectomy & post-fissurectomy FI, FI due to neurological causes and idiopathic FI.

According to complexity of sphincteric defect and grade of fecal incontionence, the patients were divided into two groups:

Group I: Patients complaining of minor degree FI (incontinence to flatus and/or mucous) with proved simple sphincter defect who were treated by biofeedback (32 patients)

Group II: Patients complaining of traumatic fecal incontinence who were managed surgically (112 patients)

All patients were subjected to:

I) History:

1- Type of material the patient is incontinent to; gas, mucous, liquid stool, or solid stool and frequency of incontinence episodes.

2- Incontinence being either passive (patient unaware of the leakage) or stress incontinence (failure to stop the leakage even if attempting to do so) and the duration the patient can prevent incontinence after the urge.

3- Protective mechanism the patient uses; e.g. wearing pads or anal plugs, taking constipating medications, or being always near a toilet.

4- Effect of incontinence on quality of life; e.g. participation in creative activities, work, or enjoying time with friends and family; being no, mild, moderate or sever.

5- Obstetric history as well as a history of previous anorectal surgery or trauma.

II) ***Incontinence scores*** (Pescatori,[6] Wexner,[7] Vaizey,[4] AMS)[8] and the newly introduced score (Mansoura score, Table 1) were estimated from theses data.

III) Endoanal ultrasonography (EAUS):

To assess site, location and extent of sphincter defects.

III) Treatment:

1- Biofeedback for patients with minor degree FI (group I, 32 patients).

2- Sphincter repair for patients with sphincteric defects amenable for repair. 46 Patients treated by overlapping anal sphincter repair (OASR), 6 patients treated by either X plasty or Z plasty for deficient perineum following obstetric or accidental trauma.

3- Gluteoplasty for patients with major fecal incontinence. 10 patients were treated by distally based gluteoplasty which was replaced by proximally based gluteoplasty by which 50 patients were treated hoping for better results.

Table 1. The newly devised Score (Mansoura scoring system).

A	Incontinent to flatus	1	Once / week	2
		2	> Once / week	3
		3	> Once / day	4
B	Incontinent to mucus	1	Once / week	3
		2	> Once / week	4
		3	> Once / day	5
C	Incontinent to liquid stool	1	Once / week	4
		2	> Once / week	5
		3	> Once / day	6
D	Incontinent to solid stool	1	Once / week	5
		2	> Once / week	6
		3	> Once / day	7

Grades:
Total score:
(Normal: 0-1, Mild: 2-3, Moderate: 4-5, Sever: 6-7).

IV) Follow up:

3, 6, & 12 months postoperatively the patients were evaluated for:

1- Type and frequency of fecal incontinence.

2- The duration the patient can prevent incontinence after the urge.

3- Change in quality of life and the use of protective mechanisms.

4- Incontinence scores (Pescatori, Wexner, Vaizey, AMS and Mansoura).

Statistical analysis: The statistical analysis of data was done by using excel program and SPSS (Statistical Package for Social Science) version 10. The description of data was done in form of mean ± SD for quantitative data. The analysis of data was done to test the statistical significant difference between groups using Student t-test to compare between 2 groups. P value < 0.05 was considered significant. For correlation between two groups of data the Pearson correlation was used.

RESULTS

- Patient's ages in group I ranged from 14 to 70 years old, with mean age of 37.47 years (SD ± 16.66). They were 20 males (62.5%) and 12 females (37.5%), male to female ratio 1.7: 1.

- Patient's ages in group II ranged from 2 to 65 years old, with mean age of 20.59 years (SD ± 14.88). They were 77 males (68.8%) and 35 females (31.3%), male to female ratio 2.2: 1.

Mansoura incontinence score was calculated for patients with minor degree fecal incontinence before and after biofeedback Table 2. It is observed that the lower scores respond better to biofeedback.

As regard patients with repairable sphincter defects who were treated by OASR and those with major fecal incontinence who were treated by gluteoplasty, Table 3. summarizes their pre- and post- operative Mansoura score.

Table 4 summarize the sensitivity of different scoring systems to change after surgery. There were significant changes for all scores.

Tables 5 summarizes the correlation of Mansora scoring system with other scores (Pescatori, Wexner, Vaizey and AMS) in the assessment of cases with fecal incontinence preoperatively and postoperatively. There were significant correlation between Mansora scoring system and other scores. The highest correlation was with Pescatori score, and the lowest was with the AMS score.

Table 2. Pre- and post-biofeedback Mansoura scores of patients with minor degree fecal incontinence and sphincteric defect (n = 32).

Biofeedback	Total Number	Total improvement	Partial improvement	No improvement
All patients	32	21 (65%)	5 (16%)	6 (19%)
Patients with score 2 & 3	19	16 (84%)	2 (11%)	1 (5%)
Patients with score 4 & 5	13	5 (38.5%)	3 (23%)	5 (38.5%)

Table 3. Pre- and post-operative results and Mansoura scores of patients with fecal incontinence (OASR(*) & Gluteoplasty).

	Total Number	Total improvement	Partial improvement	No improvement
OASR(*) (n = 52)				
All patients	52	12 (23.1%)	37 (71.2%)	3 (5.7%)
Patients with score 5	9	7 (77.8)	2 (22.2)	0
Patients with score 6	22	4 (18.2%)	17 (77.3%)	1 (4.5%)
Patients with score 7	21	1 (4.8%)	18 (85.7%)	2 (9.5%)
Gluteoplasty (n = 60)				
All patients	60	16 (26.7%)	28 (46.7%)	16 (26.7%)
Patients with score 6	29	12 (41.4%)	9 (31.0%)	8 (27.6%)
Patients with score 7	31	4 (12.9%)	19 (61.3%)	8 (25.8%)

(*) (Overlapping anal sphincter repair).

Table 4. Change in scoring systems (Pescatori, Wexner, Vaizey, AMS and Mansora) after OASR(*) & Gluteoplasty.

Scoring system	Mean preoperative score (± SD) (N= 52)	Mean postoperative score (± SD) (N= 52)	P value
OASR(*)			
Pescatori	5.23 (± 0.73)	2.75 (± 1.79)	< 0.0001
Wexner	17.06 (± 3.50)	6.73 (± 5.73)	< 0.0001
Viazey	20.48 (± 4.20)	8.15 (± 6.82)	< 0.0001
AMS	101.13 (± 18.28)	43.94 (± 38.94)	< 0.0001
Mansoura	6.23 (± 0.73)	3.32 (± 2.17)	< 0.0001
Gluteoplasty			
Pescatori	5.51 (± 0.50)	3.11 (± 2.13)	< 0.0001
Wexner	18.10 (± 2.05)	8.75 (± 7.16)	< 0.0001
Viazey	21.62 (± 2.55)	10.47 (± 8.55)	< 0.0001
AMS	107.70 (± 11.15)	56.57 (± 44.51)	< 0.0001
Mansoura	6.51 (± 0.50)	3.77 (± 2.55)	< 0.0001

(*) (Overlapping anal sphincter repair).

Table 5. Correlation of Mansoura scoring system with other scores before and after OASR and Gluteoplasty.

Scoring system	Preoperative		Postoperative	
	Correlation	P value	Correlation	P value
OASR(*)				
Pescatori	1.000	< 0.0001	0.986	< 0.0001
Wexner	0.913	< 0.0001	0.915	< 0.0001
Vaizey	0.908	< 0.0001	0.919	< 0.0001
AMS	0.886	< 0.0001	0.905	< 0.0001
Gluteoplasty				
Pescatori	1.000	< 0.0001	0.995	< 0.0001
Wexner	0.964	< 0.0001	0.946	< 0.0001
Vaizey	0.976	< 0.0001	0.946	< 0.0001
AMS	0.836	< 0.0001	0.948	< 0.0001

(*) (Overlapping anal sphincter repair).

DISCUSSION

Minor degrees of fecal incontinence (incontinence to flatus or mucous) are common, especially in the elderly, and most of these patients can be conservatively managed with satisfactory results.[9]

Minor degrees of fecal incontinence are usually discovered accidentally during evaluation of other conditions e.g. recurrent anal fistula. Our policy is not to operate on these patients and most of them improve with biofeedback or can tolerate their symptoms and cope with it. Our results indicate that biofeedback is more effective when incontinence is mild. With mean follow-up period of 34.5 ± 13.8 months, Lee et al[10] found that improvements of incontinence after completion of biofeedback therapy was major (15.4%), fair (35.9%), minor (35.9%), and none (12.8%). Among patients who showed major or fair improvements (responder group), all maintained the symptom improvements through the long-term follow-up periods.

Our results are better than those obtained by Leroi et al[11] as 30% of his patients gave a good clinical response (i.e. was free of symptoms or had major improvement, with only an occasional residual episode of minor incontinence). This is attributed to differences in inclusion criteria in his study. There was no relationship between the clinical results of biofeedback therapy and the initial severity of fecal incontinence, pudendal neuropathy, or external sphincter defect.

The aim of scoring is to help determining symptom severity and allow comparison of results of the different available treatments. To achieve the second goal, scoring system should be sensitive to changes in severity of incontinence after treatment.[5]

Browning and Parks[12] introduced their simple scoring system for fecal incontinence. Their scale only assessed whether the patient was incontinent for solid or liquid stool, or flatus. A patient with daily loss of large volumes of liquid stool was scored as less severely incontinent than one with infrequent loss of a small amount of both solid and liquid stool. Mansoura scoring took into consideration mucous discharge and assessed the daily frequency as the amount lost is related mainly to feeding habits of the patients.

Millar et al[13] scoring took into account both the degree and frequency of incontinence which was modified by Pescatori et al[6] to increase the sensitivity of the frequency scale. The scale was limited to a score out of six points and did not take account of the amount of stool lost. On evaluating the outcome of treatment with the dynamic graciloplasty, other authors[14,15] used similar scales.

Wexner[7] scoring system took into account usage of pads and lifestyle alteration as well as the consistency and frequency of incontinence. The American Medical Systems scoring[8] has been used to evaluate the newly designed artificial bowel sphincter. It included consistency of stool lost, frequency, and effect on lifestyle. However it was complex and the final scores ranged from 0 to 120 with a choice of six different frequencies of incontinence.

Our patients were homogenous in the severity and pathophysiology of their incontinence and the change in the score was significant (P value < 0.0001). The change in other scoring systems for each group of patients was also significant.

The Validity and sensitivity to change after surgery of four of scoring systems was established by Vaizey et al.[4] There were significant correlations between the mean clinical impressions and all the incontinence scoring systems. Postoperatively, there were significant correlations between improvement by all incontinence grading systems and the investigators' assessment of improvement.

Mansoura scoring correlated significantly with other previously validated scores. The highest correlation was with Pescatori score, and the lowest was with the AMS score. This strong correlation was considered as a validation for our score in assessing the severity of fecal incontinence and in assessing the change after surgery.

The results of our study consists with Vaizey results proving the usefulness of fecal incontinence score in the assessment of change after surgery which is important when comparing different modalities of treatment for fecal incontinence or when comparing different studies about one modality.

Clinical assessment of severity of fecal incontinence varies between clinicians according to their expertise. This causes difficulties when comparing results of published data, often making comparisons of treatment modalities meaningless

We avoided the use of diary questionnaire to avoid loss of patient's follow up, lack of personal communication, negligence of the patients and personal under or overestimation.

In conclusion this study has established the validity of Mansoura scoring system in selecting patients for surgery and its reliability in measuring the change of continence after surgery. Existing scales serve as useful and reproducible measures for comparison of patients and treatments. Mansoura scoring system is better to be applied because of religious reasons and it is reliable in measuring the change of continence after surgery, so, the newly devised scale has shown high clinical validity and utility.

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