Factors Predicting Patient Follow-Up in Clinic After Anorectal Manometry for Defecatory Disorders in a Community Hospital


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Anorectal manometry (ARM) diagnoses anorectal sensorimotor disorders, and biofeedback therapy (BT) is an evidence-based treatment. We conducted a retrospective study at a community hospital to assess factors predicting patient follow-up and symptoms improvement after ARM. Analyzing 96 patients, we found those recommended both pharmacological treatments and Kegel exercises alongside biofeedback therapy (BT) showed better follow-up compared to BT alone (58.8% vs. 9.7%, p<0.01). A history of sexual abuse (14 vs. 25 weeks, p=0.04), co-existing urinary issues (27.8% vs. 56.6%, p=0.03) and anal hypo-contractility (23% vs. 55%, p=0.03), were significant predictors of longer follow-up duration and lesser symptom improvement respectively. Our study highlights that a multi-faceted approach to treatment ensures higher follow-up rates among patients undergoing ARM for anorectal disorders. Additionally, recognizing and accommodating patient-specific factors that influence outcomes is crucial for providing tailored multidisciplinary support and more intensive therapy. This study aims to explore the factors influencing patient follow-up rates and the timing of follow-up visits in a gastroenterology clinic after first ARM at a safety net hospital. Thereby addressing a critical gap in literature affecting the effective management of these disorders.

INTRODUCTION

Defecatory disorders (DD) and fecal incontinence (FI) affects about 10-25% of the population, significantly impacting quality of life and posing a substantial burden on healthcare.[1,2] High-resolution anorectal manometry (ARM) in conjugation with balloon

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Table 5. PERT Dosing Guidelines

Age	Range	Upper Limit
Infants	1000-2500 lipase units/kg/feed	10,000 lipase units/kg/day
1-4 years	1000-2500 lipase units/kg/meal*	10,000 lipase units/kg/day
4+ years	500-2500 lipase units/kg/meal*	10,000 lipase units/kg/day

**Snack dose is half of a meal dose*

expulsion test (BET) is crucial for comprehensive evaluation of anorectal and facilitating diagnosis of anorectal sensorimotor disorders.[3] While treatment modalities include a combination of conservative, pharmacological, and surgical approaches, biofeedback therapy (BT) is often preferred as an evidence-based first line option.[4] However, the utility of these diagnostic and therapeutic tools is often compromised by logistical barriers such as limited availability, accessibility issues, and most importantly, patient motivation especially at grass-root levels. These obstacles hinder appropriate and effective management.

Materials and Methods

We retrospectively reviewed consecutive patients who underwent high-resolution ARM for diagnosis at our institution between January 1, 2019, and December 31, 2023.

We documented the indication, date of the ARM study, diagnosis and recommendations per treating gastroenterologists. Follow-up visit dates in the gastroenterology clinic were recorded, and symptom improvement was assessed based on visit documentations.

We examined the association between variables of interest using univariate analysis. These variables included demographic characteristics, ARM indications, type of insurance coverage (public or private), ARM findings, recommended treatments, and outcome measures (patient follow-up and time to follow-up visit). Categorical variables were analyzed using Fisher's exact test, while continuous variables were analyzed using the Wilcoxon rank-sum test. A p-value of less than 0.05 considered statistically significant. All analyses were performed using JMP statistical software.

Results

Over the 5-year study period, 96 patients had ARM at our institution. Of these, 6 could not complete the study due to discomfort and 4 had age-appropriate normal results. The final cohort consisted of 86 patients, with 56 patients (65%) not having a BET done. A pre-study colonoscopy was performed for 79 (92%) patients. Majority of the individuals were women (83%), with a mean age of 49.4 years (SD; ±16). The mean BMI of the cohort was 31.5 kg/m^2 (±9). The most common indication for ARM was chronic constipation (53%) followed by fecal incontinence (28%). Several individuals had a history of previous abdominal surgeries, substance use, and psychiatric illnesses. Detailed interpretations of anorectal function as assessed with ARM, along with baseline demographic characteristics are outlined in **Table 1**.

Based on ARM findings, patients who were recommended BT alone had significantly lower rates of follow-up in clinic compared to those who were recommended pharmacologic treatment and Kegel exercises in combination with BT (9.7% vs. 58.8%, $p<0.01$) (**Figure 1**). Of the total patients that were referred to BT i.e., 48, only 15 patients completed an average of 4 (±2) BT sessions. Among patients who did complete a follow up appointment after initial ARM, patients with a history of sexual abuse had a significantly longer duration to first follow-up compared to other individuals (25 weeks vs.14 weeks, $p=0.04$). Additionally, those with co-existing urinary symptoms and ARM finding of anal hypo-contractility reported less frequent subjective symptom improvement when compared to the others (27.8% vs. 56.6% and 23% vs. 55% respectively, $p=0.03$). There were no significant correlations between outcomes measures and patients age, sex, race, insurance type, or histories of psychiatric illness/surgical interventions (data not shown).

DISCUSSION

Our study enhances understanding of factors influencing patient follow-up after ARM in a community hospital, offering new insights into the management of benign anorectal disorders,

Table 1. Indications for Anorectal Manometry in patients with anorectal disorders, demographic variables and diagnosis parameters.

Indications		Chronic Constipation (n=46)	Fecal Incontinence (n=24)	IBS (n=9)	Rectal Prolapse (n=4)	Chronic Anorectal Pain (n=3)
ARM Findings						
Anal Hypotension		3	17	5	3	1
Anal Hypo-contractility		8	6	2	2	0
Rectal Hyposensitivity		11	6	2	1	0
Rectal Hypersensitivity		11	6	3	2	2
Dyssynergia		13	5	1	1	0
Demographic Variables						
Sex	Women (n=71)	40	17	9	3	2
	Men (n=15)	6	7	0	1	1
Age (years)	<50	26	8	5	2	2
	>50	20	16	4	2	1
Race	African American	20	10	3	2	2
	Caucasian	21	14	3	2	1
	Other	5	0	3	0	0
Medical and Surgical History						
Substance abuse (n=21)		8	8	3	1	1
Psychiatric illness (n=34)		20	10	1	2	1
Smoking (n=23)		8	12	1	1	1
Previous Surgery (n=23)		23	16	6	1	2
Urinary Symptoms (n=22)		11	8	0	2	1
Sexual Abuse (n=17)		8	6	1	1	1

Substance abuse including intravenous drug use, alcohol dependence and marijuana.
Psychiatric illnesses including depression, anxiety, panic disorder, post-traumatic disorder, schizophrenia and psychosis.
Previous surgical history of cholecystectomy, hemorrhoidectomy, hysterectomy, colectomy, perineal or bladder repair.

which are prevalent yet often inadequately treated.[5] We found that patients recommended BT alone were six times less likely to follow up in the GI clinic compared to those prescribed additional conservative management (9.7% vs. 58.8%, $p<0.01$). This may be attributed to patient's negative perception of a referral alone as dismissal or symptom discounting, leading to reduced trust and hence follow-up.[6] Previously better outcomes in FI/DD have been demonstrated through the integration of pelvic floor exercises and pharmacologic agents compared to singular treatment strategies.[7-9] Our results highlight the necessity of continued use of combined interventions, irrespective of previous trials, not only to optimize BT outcomes but also for ensuring

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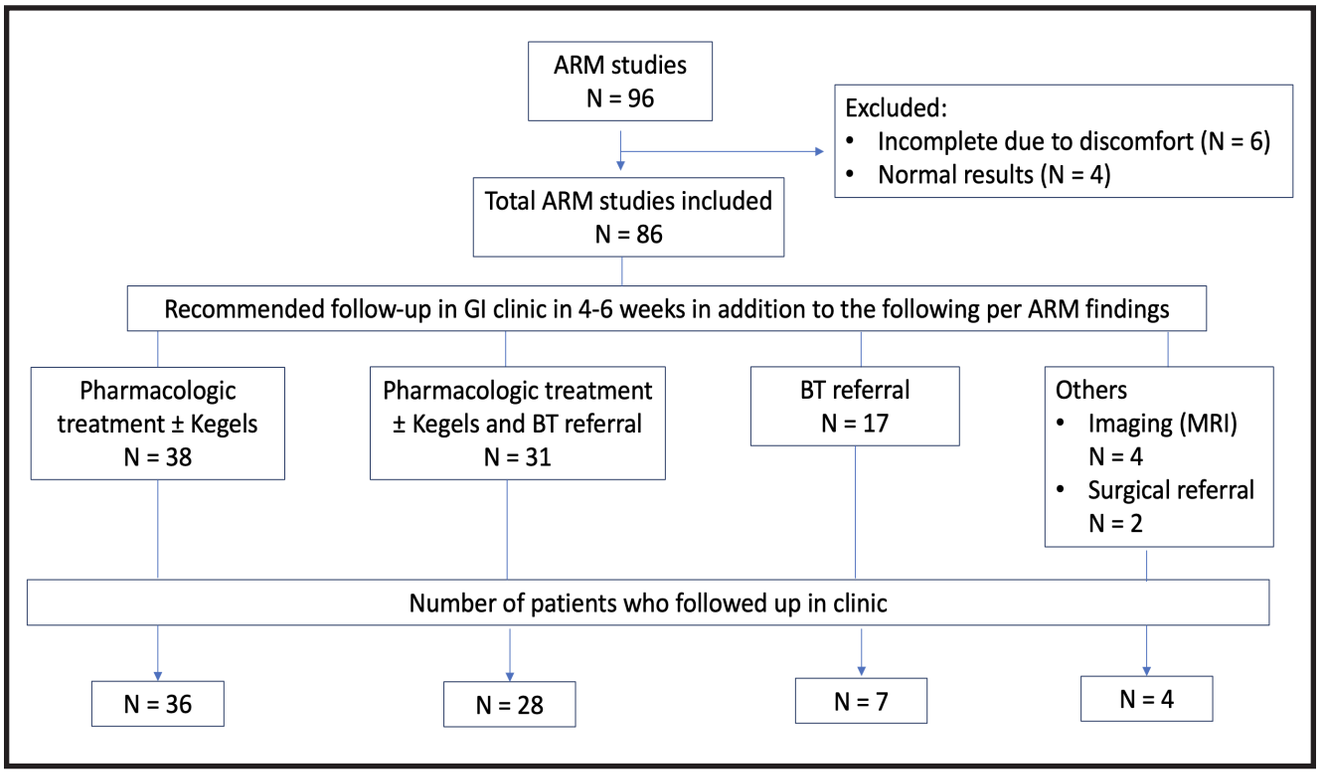

Figure 1. Flow diagram depicting follow-up of patients after initial high-resolution anorectal manometry study.
Abbreviations: ARM, anorectal manometry; GI, gastroenterology; BT, biofeedback therapy; MRI, magnetic resonance imaging

patient treatment adherence. In our cohort, only a fraction of patients recommended BT attended sessions, possibly due to financial constraints, convenience, inadequate perceived improvement, or other illnesses taking precedence.[10,11]

Patient-specific factors also played a key role in follow-up outcomes. Notably, those with a history of sexual abuse took twice as long to follow up, possibly due to logistical barriers or reluctance to undergo further invasive procedures. Although previous studies suggested no direct correlation between such histories and BT outcomes, it most definitely has an indirect impact by affecting follow-up or drop-out rates.[12] Interestingly no significant associations were found between follow-up rates and type of insurance coverage or histories of substance use/psychiatric illnesses.

The majority of our study population underwent colonoscopies prior to ARM, likely as part of colorectal cancer screening, given their mean age of over 45 years. This provides reassurance about comprehensive care. Additionally, patients with concurrent urinary symptoms and anal hypocontractility reported less frequent symptom improvement, aligning with existing literature.[1]

While our study was retrospective and involved a limited number of patients, it mirrors real-world experiences and elucidates the challenges commonly encountered in managing anorectal disorders and administering successful BT programs outside of controlled clinical trial settings at highly specialized centers. We highlight some key challenges in fully utilizing BT's potential within community healthcare settings. To address these, it is essential to continue multimodal management, educate patients about the rationale for their referral, reinforce continuity of care, and emphasize the therapeutic alliance with biofeedback therapists. Additionally, recognizing and accommodating patient-specific factors that may influence outcomes, such as urinary incontinence and history of sexual abuse, is crucial

for providing tailored multidisciplinary support and more intensive therapy. That said, there is a clear need for further prospective studies to explore patient perspectives on obstacles to follow-up and adherence to BT, assessing its effectiveness in practice.

In conclusion, our study encourages a multifaceted treatment approach that integrates conservative management and BT, promoting higher follow-up rates. Additionally, an individualized approach after ARM is pivotal in optimizing treatment efficacy. ■

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Answers to this month's crossword puzzle:

1 S	T	2 R	O	3 M	A	4 L	■	5 M	E	6 K	■	7 D	I	8 P
P	■	H	■	E	■	E	■	E	■	E	■	O	■	A
9 H	Y	O	I	D	■	10 S	T	E	11 A	T	O	S	I	S
I	■	■	■	I	■	I	■	12 T	W	O	■	I	■	S
13 N	E	14 U	R	A	15 X	O	N	■	16 A	N	E	M	I	A
G	■	N	■	17 N	O	N	■	18 D	Y	E	■	E	■	G
19 O	R	G	S	■	20 U	S	A	■	■	■	21 S	T	Y	E
M	■	U	■	■	T	■	■	■	■	22 P	■	E	■	■
23 Y	I	E	L	24 D	■	25 D	I	26 S	27 C	H	28 A	R	G	29 E
E	■	N	■	30 O	U	I	■	31 C	O	R	D	■	■	L
32 L	I	T	E	R	■	33 L	A	R	G	E	■	34 A	C	E
I	■	■	■	M	■	U	■	E	■	35 N	36 A	G	■	M
37 N	I	38 T	39 R	A	T	E	■	40 E	41 P	I	S	O	D	E
■	■	42 I	O	N	■	N	■	43 N	E	C	K	■	■	N
44 A	P	P	E	T	I	T	E	■	C	■	45 S	A	L	T