Recovery from hemorrhoids and anal fissure without surgery

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ABSTRACT

Background/Aims: *An anal fissure (AF) is a linear tear in the distal anal canal and is one of the most common causes of anal pain. Hemorrhoidal disease (HD) is a symptomatic growth and distal displacement of normal anal cushions. Numerous studies have addressed the contributing factors of these conditions, yet the results remain controversial. In this study, we hypothesize that increasing patients' awareness of hidden risk factors could reduce the rate of HD and AF.*

Materials and Methods: *A questionnaire-based controlled study was planned. After power analysis, patients with HD (n=60) and AF (n=60) were enrolled consecutively into the study group and compared with the control group (n=60) of healthy individuals. The survey was designed to assess the participants' toilet and dietary habits and anxiety risk. Odds ratios were calculated and a binary logistic regression model was constructed to identify associated factors.*

Results: *Hard stools, spending more than 5 minutes in the toilet, frequent straining during defecation, and increased spice intake were more frequent in the patients with HD; and hard fecal consistency, time elapsed in toilet greater than 5 min, straining during defecation, and high anxiety risk were more frequent in the patients with AF as compared to the control group (p<0.05).*

Conclusion: *Possible associations were identified between habitual factors or conditions (i.e., fecal consistency, the time elapsed in the toilet, straining during defecation) and anxiety and benign anorectal diseases (i.e., HD and AF). Patients should be advised about these hidden threats.*

Keywords: *Toilet habits, dietary habits, anxiety, hemorrhoidal disease, anal fissure*

INTRODUCTION

Benign anorectal diseases [e.g., hemorrhoidal disease (HD) and anal fissure (AF)] rank among the most common diagnoses in general surgery practices (1, 2). Up to 4% of the population suffers from hemorrhoidal problems, and the average lifetime risk of AF has been reported as 7.8% in the United States (3, 4). The etiopathogenesis of HD and AF remain unclear; however, some theories implicating age-related changes in the connective tissue, hormonal influences, and hemodynamic changes have been proposed for HD. Straining and constipation have been reported as common influential parameters and possible contributory factors in the development of HD and AF (2, 3). It is thought that AF occurs via direct trauma during defecation with the passage of hard stools or diarrhea. It has been proposed that 25% of patients with AF also have chronic constipation (4-6).

Although the roles of toilet and dietary habits and anxiety in HD and AF have been questioned in various reports, these associations have not been addressed in sufficient detail. Here we examine the association between these factors and benign anorectal diseases (HD and AF).

MATERIALS AND METHODS

A controlled, cross-sectional, questionnaire-based study was designed. The institutional review board approved the study, and the universal principles of the 1964 Declaration of Helsinki and its later amendments were applied. The study protocol was approved by the local ethical committee. STrengthening the Reporting of OBservational studies in Epidemiology (STROBE) guidelines were used when reporting this observational study (7).

Survey participants

Patients admitted to the surgical outpatient clinic and diagnosed with benign anorectal disease (HD and AF) were enrolled consecutively into the study as the HD and AF groups, respectively. The control group consisted of healthy individuals. The following inclusion criteria were applied: first- to second-grade hemorrhoids according to Goligher's classification for HD; acute fissure for AF; and not having chronic medical conditions, such as liver, pulmonary, and cardiac diseases for all groups (8). Patients were included in the study only after obtaining their approval. Demographical data, including age and gender, were recorded.

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Sample size

We estimated that with a sample size of 149 patients, the study would have 95% power to show a 50% difference in the rate of the primary outcome, with a 2-sided type I error rate of 8%. An additional 31 patients were recruited to overcome dropouts, refusals, and exclusions. The study was completed with 60 patients for each group.

Questionnaire

The survey was formed to address three main topics: toilet habits, dietary habits, and anxiety scale (Table 1). All survey questions were explained to the participants in detail, and participants were asked about their status during the previous year. For toilet type, we selected that which was used on more than 50% of toilet visits. Stool consistency was assessed by the Bristol stool scale. Bristol type 1 and 2 were assessed as 'hard' and the other types as 'soft'. Straining during defecation was categorized as frequent if present at almost every defecation or having a sense of incomplete evacuation every time. Anxiety risk was determined using a self-rating anxiety scale (SAS), which consisted of 20 items and was used for self-measurement of anxiety. Each of the items was ranked on a four-point Likert scale. Total SAS score was calculated by the summation of responses. A cut-off raw score of 36 was defined as the level showing the presence of clinically significant anxiety symptoms according to the original study by Zung (9).

Table 1. Questionnaire of the study.

Topics	Questions
1. Toilet habits	Preferred toilet type (squat, sitting)
	Stool consistency (soft, hard)
	Frequency of toilet paper usage (always, rare-never)
	Elapsed time in the toilet (≤5 minutes, >5 minutes)
	Frequency of straining during defecation and incomplete evacuation (frequent, rare)
2. Dietary habit	Preferred meal choice (mainly meat, mainly vegetable)
	Frequency of spice usage (frequent, rare-never)
	Cigarette smoking (yes, no)
	Alcohol consumption (yes, no)
3. Self-rating anxiety scale	20 items with four Likert type

Statistical analysis

Statistical calculations were performed using the Statistical Packages for the Social Sciences (SPSS) 22 (IBM Corp., Armonk, NY, USA). Variables are expressed as mean±standard deviations (SD) or as medians (range) depending on their distribution. Categorical variables were expressed as frequencies and percentages. The chi-squared and Fisher's exact tests were used for comparison of continuous parametric variables. Odd ratios of toilet behavior information, dietary information, and anxiety risk for HD and AF were calculated. Normality was assessed using the Kolmogorov-Smirnov test. The t-test was used for comparison of parametric variables with a normal distribution. The statistical results were presented with a 95% confidence interval (CI). The differences were considered statistically significant if the P value was less than 0.05.

To identify associated factors, a binary logistic regression model was fitted to determine the strength of association between the presence of HD and AF (as dependent variables), and gender, age, toilet choice, fecal consistency, toilet paper usage, time elapsed in toilet, straining in defecation, dietary choice, cigarette smoking, alcohol, spice intake, and anxiety risk (as independent variables). A univariate analysis was used as an initial step to select covariates for further consideration in the logistic regression.

RESULTS

A total of 180 patients were included in the study. The study group included 120 patients (60 in the HD group, 60

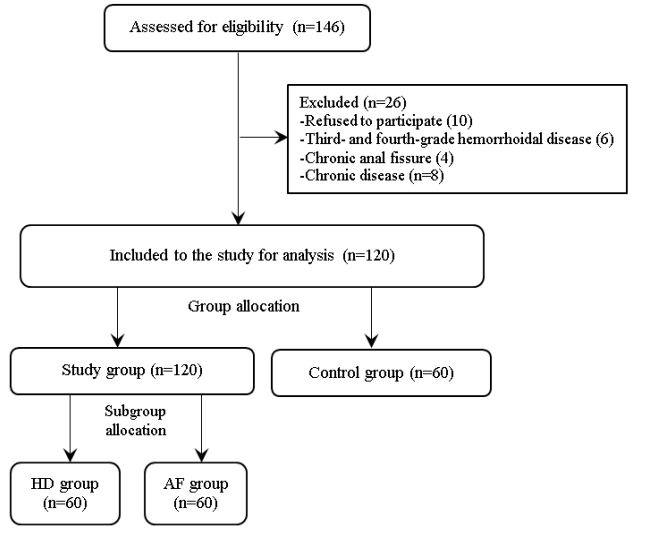

Figure 1. Flow diagram of the study.
HD: Hemorrhoidal disease; AF: Anal fissure

Table 2. Study statistics.

	Group control n=60	Group HD n=60	p (Control vs. HD) OR (CI)	Group AF n=60	p (Control vs. AF) OR (CI)
Demographic information					
Age (Mean ± SD)	38.3 ± 13.0	38.9 ± 14.6	†0.835 N/A	34.4 ± 10.6	†0.077 N/A
Gender					
Male/Female(Ratio)	36/24 (1.5)	44/16 (2.8)	‡0.175 1.83 (0.85-3.96)	35/25 (1.4)	‡1.00 0.93 (0.45-1.93)
Toilet behavior information	n (%)	n (%)	p‡ OR (CI)	n (%)	p‡ OR (CI)
Toilet choice					
Sitting toilet	28 (46.7)	33 (55)	0.465	26 (43.3)	0.361
Squatting toilet	32 (53.3)	27 (45)	0.72 (0.35-1.47)	34 (56.7)	0.67 (0.33-1.37)
Fecal consistency					
Hard	17 (28.3)	34 (56.7)	0.003*	31 (51.7)	0.015*
Soft	43 (71.7)	26 (43.3)	0.30 (0.14-0.63)	29 (48.3)	0.37 (0.17-0.79)
Toilet paper					
Always	52 (86.7)	43 (71.7)	0.07	48 (80)	0.463
Rare-never	8 (13.3)	17 (28.3)	0.39 (0.15-0.99)	12 (20)	0.62 (0.23-1.63)
Time elapsed in toilet					
>5 minutes	26 (43.3)	54 (90)	0.001*	42 (70)	0.005*
≤5 minutes	34 (56.7)	6 (10)	0.08 (0.03-0.22)	18 (30)	0.39 (0.15-0.69)
Straining during defecation					
Frequent	9 (15)	40 (66.7)	<0.001*	46 (76.7)	<0.001*
Never-Rare	51 (85)	20 (33.3)	11.33 (4.66-27.57)	14 (23.3)	18.62 (7.36-47.07)
Dietary information	n (%)	n (%)	p‡ OR (CI)	n (%)	p‡ OR (CI)
Cigarette smoking					
Yes	15 (25)	24 (40)	0.118	21 (35)	0.319
No	45 (75)	36 (60)	2.00 (0.92-4.36)	39 (65)	1.62 (0.73-3.56)
Alcohol usage					
Yes	50 (83.3)	51 (85)	1.00	48 (80)	0.814
No	10 (16.7)	9 (15)	1.13 (0.42-3.02)	12 (20)	0.80 (0.32-2.02)
Spice usage					
Frequent	13 (21.7)	25 (41.7)	0.030*	20 (33.3)	0.220
Rare-never	47 (78.3)	35 (58.3)	2.58 (1.16-5.75)	40 (66.7)	1.81 (0.80-4.09)
Dietary choice					
Meat	24 (40)	26 (43.3)	0.853	19 (31.7)	0.447
Vegetable	36 (60)	34 (56.7)	1.15 (0.55-2.37)	41 (68.3)	0.69 (0.33-1.47)
Anxiety information	n (%)	n (%)	p‡ OR (CI)	n (%)	p‡ OR (CI)
SAS tool					
Anxiety risk present	21 (35)	28 (46.7)	0.265	36 (60)	0.010
Anxiety risk absent	39 (65)	32 (53.3)	1.63 (0.78-3.39)	24 (40)	2.79 (1.33-5.84)

SD: Standard deviation; OD: Odds ratio; CI: 95% confidence interval; N/A: Not applicable;
† t-test
‡ Fisher's exact test
*p<0.05

Table 3. Regression analysis.

	Binary logistic regression analysis for HD					95% CI for OR	
	B	SE	Wald	p	OR	Lower	Upper
Fecal consistency (Hard)	1.133	0.513	4.877	0.027 *	3.11	1.14	8.49
Time elapsed in toilet (>5 minute)	1.922	0.547	12.352	<0.001 *	6.84	2.34	19.97
Straining during defecation (Frequent)	-2.146	0.525	16.709	<0.001 *	0.12	0.04	0.33
Spice usage (Frequent)	-0.617	0.550	1.259	0.262	0.54	0.18	1.59
Constant	-0.257	0.469	0.301	0.583	0.77		
	Binary logistic regression analysis for AF					95% CI for OR	
	B	SE	Wald	p	OR	Lower	Upper
Fecal consistency (Hard)	0.080	0.544	0.022	0.883	1.08	0.37	3.15
Time elapsed in toilet (>5 minute)	0.655	0.493	1.768	0.184	1.93	0.73	5.06
Straining during defecation (Frequent)	-3.046	0.540	31.833	<0.001 *	0.05	0.02	0.14
SAS (Anxiety risk present)	-1.412	0.574	6.063	0.014 *	0.24	0.08	0.75
Constant	1.679	0.685	6.009	0.014	5.36		

HD: Hemorrhoidal disease; AF: Anal fissure; B: Regression coefficient; SE: Standard error; OR: Adjusted odds ratio; CI: Confidence interval *p<0.05 HD and AF as the dependent and remaining parameters as independent variables.

in the AF group) and the control group comprised of 60 patients. A flow diagram of the study is shown in Figure 1.

The univariate analysis of the HD group vs. control group is summarized in Table 2. There were no differences between the groups in terms of age, gender, toilet type, toilet paper usage, cigarette smoking, alcohol consumption, dietary choice, and anxiety risk (P values of 0.835, 0.175, 0.465, 0.07, 0.118, 1.00, 0.853, and 0.265, respectively). Having hard fecal consistency, time elapsed in the toilet greater than 5 min, frequent straining during defecation, and frequent spice intake were more common in the HD group (p values of 0.003, 0.001, <0.001, and 0.030, respectively), with the odds ratios of 0.30 (95% CI, 0.14-0.63), 0.08 (95% CI, 0.03-0.22), 11.33 (95% CI, 4.66-27.57), and 2.58 (95% CI, 1.16-5.75), respectively.

In binary logistic regression analysis of HD vs. control, hard fecal consistency, time elapsed in the toilet greater than 5 min, and frequent straining during defecation were found to be independent risk factors for HD, with odds ratios of 3.11 (95% CI, 1.14-8.497), 6.84 (95% CI, 2.34-19.97), and 0.12 (95% CI, 0.04-0.33), respectively (p=0.027, <0.001, and <0.001, respectively) (Table 3).

The univariate analysis of the AF group vs. control is summarized in Table 2. There was no difference between the groups in terms of age, gender, toilet type, toilet paper usage, cigarette smoking, alcohol consumption, spice intake, and dietary choice (P values of 0.077, 1.00, 0.361, 0.463, 0.319, 0.814, 0.220, and 0.447, respectively). Having hard fecal consistency, time elapsed in the toilet greater than 5 min, frequent straining during defecation, and having anxiety risk were more common in the HD group (P values of 0.015, 0.005, <0.001, and 0.010, respectively), with the odds ratios of 0.37 (95% CI 0.17-0.79), 0.39 (95% CI 0.15-0.69), 18.62 (95% CI 7.36-47.07), and 2.79 (95% CI 1.33-5.84), respectively.

In binary logistic regression analysis of AF vs. control, frequent straining during defecation and having anxiety risk were found to be independent risk factors for AF with odds ratios of 0.05 (95% CI, 0.02-0.14) and 0.24 (95% CI, 0.08-0.75), respectively (P values of <0.001, and 0.014, respectively) (Table 3).

DISCUSSION

In the literature, various studies have addressed the relationship between benign anorectal disease and toilet and dietary habits. Symptomatic HD has been related to older age, pregnancy, prolonged sitting, straining, and chronic constipation even though it is causal (3). In this study, we revealed an association between benign anorectal diseases (e.g., HD and AF) and some behavioral factors (e.g., toilet habits, dietary habits, and anxiety).

A squat toilet (also known as a squatting toilet) is a toilet used by squatting, rather than sitting. The traditional posture for defecation was squatting, and this method continues to be used by most of the world's population.

The posture for defecation has been changed by Western industrialization. The use of the pedestal toilet with a sitting position has been common in Europe and other places for the last 100 hundred years (10, 11). There are many proposed advantages for squatting during defecation. Squatting makes elimination faster, easier, and more complete; and securely seals the ileocecal valve between the colon and the small intestine (11-13). As squatting reduces the pressure required for defecation, it has been recommended to alleviate constipation associated with benign anorectal diseases (e.g., HD and AF) (12-14). In our study, no association was detected between benign anorectal diseases (e.g., HD and AF) and toilet types. Our aim was not to support or reject squatting or sitting toilet strategies, but to examine toilet habits. We hypothesized that using a sitting toilet is a risk for constipation, as well as for HD and AF. However, there have been many controversies regarding this causality. Nevertheless, future studies with rigorous design and with more participants are required to investigate this issue properly.

In 1989, Dehn et al. (15) proposed a possible association between prolonged sitting on the toilet and hemorrhoids. Nelson et al. (16) investigated confounders associated with benign anorectal disease and found that extended time for defecation showed no apparent association with hemorrhoid or benign anorectal disease symptoms. However, other possible factors (e.g., type of toilet) were not evaluated together in these studies. In our study, we found that most of the patients who had HD or AF spend a long time in the toilet. Also, we found that almost half of the patients with HD and AF who spend a long time in the toilet use the pedestal toilet with a sitting position. Nevertheless, we were unable to conclude whether the pedestal toilet helps individuals to sit in the toilet for longer times or spending longer time is associated with HD or AF. Therefore, further studies are required to determine whether the extended time for defecation with squatting or sitting have a role in these anorectal diseases.

It has been proposed that symptomatic hemorrhoid is associated with straining and chronic constipation (3). It is known that local trauma after straining during defecation, such as the passage of hard stool or prolonged diarrhea, is the most important predisposing factor for developing AF (17, 18). Helpful measures to prevent AF include avoiding straining during defecation, thereby avoiding trauma to the anus (18, 19). In our study, hard fecal consistency was detected in 56.7% and 51.7% of HD and AF patients, respectively. Hard fecal consistency was significantly more frequent in both conditions relative to the control group. Also, straining during defecation was detected in 66.7% and 76.7% of HD and AF patients, respectively. Therefore, hard fecal consistency and straining during defecation might be regarded as etiological factors for the development of benign anorectal pathologies due to their presence in more than half to two-thirds of the patients.

Many dietary factors, including low-fiber diet, spicy foods, and alcohol intake have been proposed to aggravate HD, but the presented data has been inconsistent (18-20). Cigarette smokers are more prone to experience constipation and dry stool; this condition aggravates hemorrhoids in most patients (3, 21). In our study, no differences were detected in terms of toilet paper usage, alcohol intake, cigarette smoking, and dietary choice for HD and AF relative to the control group. Frequent spice intake was more frequent in the HD group than controls, with odds ratios of 2.58.

It has been though that HD and AF are not directly caused by stress, anxiety, and depression. However, patients might develop these diseases only when their psychological conditions affect their digestive tract, which leads to either diarrhea or constipation (22-24). Goldstein et al. (25) claimed that reading in the toilet acts as an unconscious relaxation technique that contrasts the implications of emotional stress and allows an easier defecation process. However, the authors could not confirm this hypothesis and did not make any attempt to determine or measure the psychological status of the patients. Interestingly, reading in the toilet also causes greater time spent in the toilet, which is a known contributing factor for the etiopathogenesis of benign anorectal diseases. In our study, we used Zung's SAS tool to determine the psychological status of the patients (9). Anxiety risk was detected in almost half of the patients with HD and AF. However, a significant relationship and the possible association of anxiety were detected only in the AF group.

Our study has some limitations. We assessed confounders that might be associated with benign anorectal disease. Straining during defecation is not easily categorized as frequent and rare, and stool consistency as soft and hard, and their definitions might vary among subjects; nevertheless, these conditions should be evaluated. It is not clear whether abnormal bowel habits are the cause or effect of these anorectal diseases. Although it is difficult to accurately assess toilet habits, this was directly addressed in our questionnaire for the 12 months prior to enrollment in the study. Therefore, we could say that the above habits were the cause of these anorectal diseases

with a chance of possible controversies in this causality. The main limitation was that there were possible difficulties in interpretation of survey questions. Some of the patients mentioned that they had been compelled to use both toilet types (squatting and sitting) under certain circumstances. Therefore, we asked for the most commonly used toilet type. However, we cannot rule out the possibility that a rare use of another toilet type causes the anorectal disease. The determined associations might be interpreted as a cause-and-effect relationship, or this might be a coincidence. To eliminate any bias about this issue, future studies with a larger volume and statistical analyses would be of interest. Although this study was conducted in one hospital in one region, the results should be generalizable to other areas.

CONCLUSION

Hard fecal consistency, spending more than 5 minutes in the toilet, and frequent straining during defecation were identified as independent risk factors for HD, and frequent straining as an independent risk factor during defecation as that for AF. Anxiety was determined as an associated factor in AF. Preventive measures for the above factors should be considered in the management of HD and AF.

Ethics Committee Approval: Ethics committee approval was received for this study from the Ethics Committee of Umraniye Training and Research Hospital (UEAH-2014/65).

Informed Consent: Written informed consent was obtained from the patients who participated in this study.

Peer-review: Externally peer-reviewed.

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