

## SURVEILLANCE

## Risk factors special to eastern culture for the development of anal fissure

Serap Erel<sup>2</sup>, Didem Adahan<sup>1</sup>, Kemal Kismet<sup>2</sup>, Ayse Caylan<sup>1</sup>, Yusuf Tanrikulu<sup>2</sup>, Mehmet Ali Akkus<sup>2</sup>

Ankara Training and Research Hospital, Family Medicine Department, MOH, Ankara, Turkey.

erelserap@yahoo.com

**Abstract:** *Aim:* To reveal the effect of diet, bowel functions and toilet habits on the development of anal fissure.

*Methods:* One hundred patients complaining of anal fissure were included to the case group; and one hundred age- and gender-matched patients referred for other reasons except for anorectal complaints were included to the control group. The information was obtained by face to face interviews using questionnaires.

*Results:* Statistically significant differences were found in coffee, fruit, and meat consumption between the groups. The patients suffering from anal fissure avoided paprika consumption. The rate of anal fissure incidence was higher in squat toilet users.

*Conclusion:* This study is the first study which evaluates the risk factors such as paprika consumption and squat toilet usage that are specific to Eastern culture. Further studies including large numbers of population are needed to evaluate different risk factors for anal fissure development (Tab. 2, Ref. 11). Full Text (Free, PDF) [www.bmj.sk](http://www.bmj.sk).

**Key words:** anal fissure, risk factors, pepper consumption, squat toilet, constipation.

Anal fissure is the linear, longitudinal split in the lining of the distal anal canal that extends from below the dentate line to the anal verge. It is most commonly seen in young and middle-aged adults. Anal fissures can be classified as either acute or chronic. Most acute forms heal spontaneously but a proportion progress to the chronic form and these usually fail to heal without some form of pharmacological or surgical interventions (1).

Despite extensive research, the etiology and pathogenesis of fissures remain poorly understood. It is generally agreed that trauma to the anal canal is an important initiating factor, and this may occur following the passage of hard feces or sometimes following explosive diarrhea. Constipation is traditionally said to be a causative factor in anal fissures by repeatedly traumatizing the lining of the anal canal. However, a history of constipation preceding the onset of anal fissure is seen in only 25 percent of cases. Although trauma may initiate the formation of the tear, it has been suggested that anal hypertonia may play a part in perpetuating the fissure, leading to chronicity. The most recently popularized theory is that ischemia is important in fissure development. Excessive resting pressures may reduce anodermal blood flow by compressing blood vessels as they pass through the hy-

per tonic sphincter, resulting in painful ischemic ulceration or fissure (1).

There are some studies which investigated the risk factors and clinical manifestations of anal fissure (2–4). Although it is generally accepted that anal fissure is likely to result at least partly from an inappropriate diet, and dietary manipulations might reduce the incidence (2); the data received from these different studies are conflicting. In the present study, we aimed to reveal the effects of diet, bowel functions, and toilet habits on the development of anal fissure; especially red pepper (paprika) consumption and the use of squat toilet, which are special to Eastern countries and have not been investigated in any studies before.

### Methods

A total of 100 patients, referred to the Ankara Training and Research Hospital 4th General Surgery outpatient clinic with anal fissure between June 2005–January 2006 were included in the case group; age and gender-matched 100 patients referred to the same clinic for other reasons except anorectal complaints were included to the control group of the study. The information about the frequency of consumption of specific foods and beverages, bowel functions and toilet habits of the patients obtained by face to face interviews by performing questionnaires. Bowel functions were assessed by using Rome II criteria. The permission to conduct the study was obtained from the ethic committee of the hospital. The patients were informed about the purpose of the study and verbal consent was obtained before data collection. All interviews were conducted by the same investigator.

<sup>1</sup>Ankara Training and Research Hospital, Family Medicine Department, MOH, Ankara, Turkey, and <sup>2</sup>Ankara Training and Research Hospital 4th General Surgery Department, MOH, Ankara, Turkey

**Address for correspondence:** Serap Erel, MD, S.B. Ankara Egitim ve Arastirma Hastanesi 4. Cerrahi Klinigi, 06340, Ulucanlar/Ankara, Turkey. Phone: +90.312.5953000, Fax: +90.312.363 33 96

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**Tab. 1. The paprika consumption rates of the groups.**

	Patient group (n)	Control group (n)
Rare	63	34
Occasional	24	36
Frequent	13	30
Total	100	100

The statistical analyses were done with the chi-square test using Statistical Package for Social Science 13.0 for Windows (SPSS Inc., Chicago). *p* values of 0.05 or lower were considered to be statistically significant.

## Results

Seventyfivepercent of the patients were female and 25 percent were male in gender. There was no statistically significant difference between groups when compared according to cigarette smoking and alcohol consumption ( $p=0.48$  and  $p=0.52$ ). However, significant difference was found between groups with regard to coffee consumption ( $p=0.0001$ ). The consumption of coffee was higher in the control group than the patient group. There was no significant difference between groups for tea consumption ( $p=0.11$ ). No significant difference was found in the type and amount of the bread consumption ( $p=0.73$ ). The groups also did not differ significantly with the regard to vegetable consumption ( $p=0.18$ ). However, significant difference was found between groups in consumption of raw fruits that was significantly higher in controls than in the patient group ( $p=0.006$ ). When the groups were compared with regard to meat consumption, two or more meat consumptions per week was higher in controls than the patients and this difference was statistically significant ( $p=0.009$ ).

Red pepper (paprika) consumption was significantly different between the groups ( $p=0.0001$ ). It was higher in controls than the patients. A total of 63 percent of the case group did not eat paprika, compared with 34 percent of the control group (Tab. 1).

Although there was no significant difference when the groups were compared for the type of the toilet they use, the usage of Turkish type squat toilet was higher in the patient group (89 percent versus 79 percent).

When the bowel functions were classified as normal, diarrhea, and constipation; a statistical test could not be applied because of the low number of the patients with diarrhea. However; when the cases with diarrhea were not taken in to consideration, significant difference was found between the groups ( $p=0.0001$ ). The constipation rate of the patient group was higher than the control group (Tab. 2).

## Discussion

Anal fissure is a common disorder, but its exact incidence is not known. The main symptoms include anal pain and bleeding. The pain typically occurs during and after defecation; chronic

**Tab. 2. The comparison of the groups according to bowel functions.**

Bowel Functions	Patient group (n)	Control group (n)
Normal	25	82
Constipation	69	17
Diarrhea	6	1
Total	100	100

anal fissure patients can have pain lasting many hours after defecation. Bleeding from anal fissures tends to be bright red and scanty. The majority of anal fissures occur in the midline, usually posterior. If they occur off the midline, fissures need evaluation for an underlying diagnosis; such as Crohn's disease, HIV/AIDS and associated secondary infections, ulcerative colitis, tuberculosis, syphilis, leukemia, or cancer. Signs of chronicity include the sentinel tag, hypertrophied papilla, fibrosis, and visualization of bare internal sphincter muscle at the fissure base (5). The diagnosis of anal fissure is suspected from the patient's history and is confirmed by physical examination. When the diagnosis is in doubt, examination under anesthesia is warranted, particularly to exclude the presence of an occult perianal abscess. Off-the-midline fissures, especially multiple, painless fissures and fissures that fail to heal, also require further evaluation (6).

The cause of anal fissure has been debated for many years. Trauma, usually because of passage of a large or hard stool, is believed to be a common initiating factor. However; some patients offer no such history, others simply experience a bout of diarrhea. Although the exact mechanism surrounding the pathophysiology of anal fissures has not been clearly established, current theories revolve around the tonicity of the anal sphincter and anal blood flow. Anorectal manometry tests have demonstrated that internal anal sphincter tone as measured by the resting pressure is elevated in fissure patients vs controls. As fissures are most commonly seen in the posterior midline, inadequate blood flow to this region has been hypothesized to also play a role in the development of fissures. Hypertonic sphincter decreases blood flow in terminal vessels, diminishes perfusion pressure to the anoderm, and leads to ischemic ulceration (6, 7).

Another conflicting subject about anal fissures is the risk factors of this disease. There are a lot of studies that investigated the clinical manifestations and risk factors of the anal fissure (2-4, 8). Jensen et al (2) found increased risk of fissure with the consumption of white bread, sauces thickened with roux, and bacon or sausage when patients were compared with controls. In contrast, frequent consumption of raw fruits, vegetables, and whole-grain bread was associated with markedly decreased risk of chronic fissure-in-ano. There was no association between butter, egg, fish, or beef and development of disease. Additionally, no significant difference was found in alcohol, coffee, or tea consumption between patients and controls.

As the breakfast is the most common source of fiber intake (especially cereal fiber) in the western world, Ahmed et al (4) investigated the association between breakfast and minor anal

complaints; and demonstrated that failure to eat breakfast was strongly associated with a higher incidence of hemorrhoids and anal fissure. Dietary fiber has been used in the symptomatic treatment of anal complaints with various degrees of success attributed to softer, more bulky stools with faster transit times and less necessity to strain at stool. Many investigators detected the relationship between the fiber intake and found that physical activity and increasing fiber intake were associated with substantial reduction in the prevalence of constipation (9–11). Nakaji et al (11) suggested that rice, which accounts for the largest proportion of daily dietary fiber intake in Japan, demonstrated a preventive effect on constipation in both sexes.

Since the passage of hard stool has been associated with the development and persistence of anal fissures, ensuring adequate water and fiber is a mainstay of initial therapy. Bulking agents can lead to symptomatic relief and fissure healing with no risk and minimal cost. It is important to keep in mind that although many fissures do not heal with conservative therapy alone, adequate fiber and fluid intake should be a part of all fissure therapies (7). In our study, significant difference was found in constipation rates between the groups ( $p=0.0001$ ), it was higher in patient group. The consumption of coffee, fruit, and meat decreased the probability of fissure development. No significant difference was detected between the types of bread, the consumption of vegetables, alcohol, tea and the development of anal fissure ( $p>0.05$ ).

Bowel habits are difficult to study objectively because of their highly private nature and negative associations. In the past, most knowledge of bowel habits was drawn from limited data on small groups of subjects such as nurses, jail prisoners, elderly people, or students. More recently, studies aimed at investigating functional gastrointestinal disorders have yielded data on large numbers of subjects by means of telephone interviews or mailed questionnaires. In a recent study, bowel habits were assessed objectively and prospectively in a sample of the general population over a relatively long period of time. The average defecation frequency was once per day and was similar between males and females. However, higher frequencies of straining at stool, a feeling of incomplete emptying, and/or difficult evacuation, and manual maneuvers to facilitate defecation were reported by females compared to males (8). Although there was no significant difference between the defecation frequencies of control and patient groups ( $p>0.05$ ) in our study, constipation rates (hard stool and straining during defecation) were found to be significantly higher in patient group ( $p=0.0001$ ). As the trauma to the anal canal following the passage of hard feces is an initiating factor for anal fissure, our data were in accordance with previous studies in the literature (2, 3, 8).

There are no studies which investigated the correlation between anorectal problems and red pepper (paprika) consumption that is characteristic for Eastern food culture. In the present study, we asked for frequency of paprika consumption and found higher rates in control group compared with patient group ( $p=0.0001$ ). We concluded that patients with anorectal complaints did not prefer to eat this kind of foods due to hesitation of increasing complaints with these foods.

We also examined the relationship between development of anal fissure and usage of Turkish type squat toilet which is also a part of Eastern culture. Although there wasn't a significant difference between the groups ( $p>0.05$ ), anal fissure development rates were higher in patients using squat toilet. This difference might be due to the extensive flexion of pelvic floor, higher intraabdominal pressure than sitting position and the reflection of this higher pressure to anal canal during defecation, and changed anorectal angle due to squat position.

We examined the risk factors, especially specific to Eastern culture, for the development of anal fissure; and found that the patients suffering from anal fissure avoided paprika consumption because it increased their complaints, and the rate of anal fissure was less in throne users. Since this study is the first one which evaluates these risk factors, the data are not sufficient to make suggestion. Further studies including large numbers of population are needed for drawing any conclusion.

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