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Physiotherapy Approaches in Individuals with Functional Defecation Disorders: Literature Review

Fonksiyonel Defekasyon Bozukluğu Olan Bireylerde Fizyoterapi Yaklaşımları: Literatür Derlemesi

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Abstract

Constipation is a gastrointestinal syndrome that causes symptoms such as decreased defecation frequency, straining, hard stools, and abdominal discomfort. It is considered the most common syndrome among gastrointestinal syndromes. Constipation is known to reduce quality of life by causing depression, anxiety, sleep disturbance and sexual dysfunction. It is classified as primary and secondary constipation according to the cause of its occurrence. Secondary constipation occurs due to reasons other than the gastrointestinal system. Primary constipation is basically divided into acute constipation and chronic constipation. Chronic constipation is examined under three subheadings: normal transit time constipation, slow transit time constipation and functional defecation disorders. Functional defecation disorder is characterized by excessive straining, hard stools, a feeling of inadequate evacuation, a feeling of blockage in the anorectal region, the use of manual support, defecation less than 3 times a week, and infrequent defecation without the use of laxatives. Functional defecation disorders do not respond to standard treatments and lifestyle modifications and Biofeedback therapy are recommended as first step treatment. This review includes a literature review of the physiotherapy methods and their effects, particularly examining functional defecation disorders caused by the pelvic floor muscles and anal sphincters.

Keywords: Constipation, functional defecation disorders, pelvic floor physiotherapy

Özet

Konstipasyon; defekasyon sıklığının azalması, ıkınma, sert feçes ve abdominal rahatsızlık gibi semptomlara neden olan bir gastrointestinal sendromdur. Gastrointestinal sendromlar arasında en yaygın sendrom olarak kabul edilmektedir. Konstipasyonun depresyon, anksiyete, uyku bozukluğu ve cinsel disfonksiyonlara neden olarak yaşam kalitesini azalttığı bilinmektedir. Oluşum nedenine göre primer ve sekonder konstipasyon olarak sınıflandırılmaktadır. Sekonder konstipasyon, gastrointestinal sistem harici sebeplerle ortaya çıkmaktadır. Primer konstipasyon ise, temel olarak akut konstipasyon ve kronik konstipasyon olarak ayrılmaktadır. Kronik konstipasyon; normal transit süreli konstipasyon, yavaş transit süreli konstipasyon ve fonksiyonel defekasyon bozuklukları olarak üç alt başlıkta incelenmektedir. Fonksiyonel defekasyon bozukluğu aşırı ıkınma, sert dışkılama, yetersiz boşaltım hissi, anorektal bölgede blokaj hissi, manuel destek kullanımı, haftada 3 defadan az defekasyon ve laksatif kullanmadan defekasyonun nadir olması ile karakterizedir. Fonksiyonel defekasyon bozukluklarının standart tedavilere cevap vermemektedir, yaşam tarzı değişiklikleri ve Biofeedback terapisi ilk basamak tedavi olarak önerilmektedir. Bu derleme özellikle pelvik taban kaslarının ve anal sfinkterlerin neden olduğu fonksiyonel defekasyon bozukluklarını irdeleyerek kullanılan fizyoterapi yöntemleri ve etkileri ile ilgili literatür taramasını içermektedir.

Anahtar Kelimeler: Konstipasyon, fonksiyonel defekasyon bozuklukları, pelvik taban fizyoterapisi

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1. Introduction

Constipation is one of the most common gastrointestinal complaint and refers to a person's dissatisfaction and/or difficulty during bowel movements. Altough constipation is defined as infrequent bowel movements; excessive straining, hard and fragmented stool, lack of a feeling of complete evacuation, feeling of blockage in the anorectal area and the use of manual maneuvers for defecation are also important symptoms of constipation (Evans, 2016; Garrett & Ogilvie, 2022; Włodarczyk et al., 2021). The prevalence of constipation is 12-19% (Evans, 2016; Włodarczyk et al., 2021). Constipation is classified as primary and secondary constipation according to its cause. Secondary constipation occurs due to extraintestinal reasons. Endocrine and metabolic disorders such as diabetes, hypothyroidism, hypercalcemia; neurological diseases such as spinal cord injury, Multiple Sclerosis, Parkinson's Disease; psychological diseases such as depression and anxiety and the use of pharmacological agents that trigger constipation are the most common causes of secondary constipation (Garrett & Ogilvie, 2022; Włodarczyk et al., 2021). Primary constipation is basically divided into two groups: acute constipation and chronic constipation. Acute constipation occurs due to diet, lack of fluid consumption and inactivity and is temporary. Chronic constipation is idiopathic and does not occur due to a single cause (Evans, 2016). Chronic constipation is classified under 3 subheadings based on colonic transit time and anorectal functions: 1) Constipation with normal transit time, 2) Constipation with slow transit time, 3) Functional defecation disorders (functional constipation). It is reported that individuals with gastrointestinal disorders experience deterioration in many areas of life such as depression, anxiety, sleep disorders and health-related quality of life (Belsey et al., 2010; Bouchoucha, 2021; Yamamoto et al., 2021; Zhao et al., 2011). Since constipation has negative effects in many aspects of life, it is important to treat it. This review examines physiotherapy approaches used in the treatment of functional defecation disorders especially caused by pelvic floor muscle dysfunction.

2. Pathophysiology and Symptoms of Functional Defecation Disorders

Defecation disorders include a constant feeling of rectal fullness, painful and prolonged defecation, a feeling of incomplete evacuation, and severe straining. Patients often use manual maneuvers to perform defecation. Colonic transit testing is usually normal, but markers appear to persist in the rectosigmoid colon. Defecation disorders may occur due to physiological abnormalities of the pelvic floor muscles and anal sphincters, as well as pathological anatomical disorders such as rectal prolapse, rectocele, enterocele, and anal stenosis (Włodarczyk et al., 2021). Pathological anatomical disorders cause mechanical obstruction whereas physiological abnormalities cause functional obstruction. Functional defecation disorders may develop due to physiological reasons as a result of insufficient propulsive force for defecation or inappropriate contraction of the pelvic floor muscles and/or anal sphincters. In functional defecation disorders caused by pelvic floor muscles and/or anal sphincter dysfunctions, both rectal internal pressure and anal canal pressure increase during defecation. Therefore, feces can not be pushed from the rectum to the anal canal and defecation can not occur due to the functional obstruction. There is a lack of coordination between abdominal and pelvic floor muscles (Siah, 2018; Skardoon et al., 2017).

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Rome IV criteria are frequently used for the diagnosis of functional constipation. According to Rome IV criteria, symptoms must have started at least 6 months before diagnosis and have continued for the last 3 months. Rome IV diagnostic criteria are shown in Table 1 (Kaya & Kaçmaz, 2016;; Skardoon et al., 2017; Włodarczyk et al., 2021).

Table 1. Diagnostic criteria for functional constipation according to Rome IV criteria

1. Must contain two or more of the following:
a. Excessive straining for more than 25% of defecation
b. More than 25% of defecation consists of feces in the form of lumps
c. Feeling of inadequate evacuation in more than 25% of defecations
d. Feeling of obstruction in the anorectal region for more than 25% of defecation
e. Use of manual maneuvers in more than 25% of defecation
f. Spontaneous defecation less than 3 times per week
2. Soft stools are rare without the use of laxatives.
3. Lack of sufficient criteria for irritable bowel syndrome

Studies examining the symptoms of patients with functional defecation disorders like dyssynergic defecation, the most common complaints were reported to be excessive straining, lack of a feeling of complete evacuation, and a feeling of blockage during defecation (Rao et al., 2004; Ghoshal et al., 2016). It has been reported that Dyssynergic defecation, which is a type of functional defecation disorder, is more common in male patients and that excessive straining and bleeding during defecation are the most common symptoms of this disease. In female patients, the most common symptoms were found to be excessive straining, use of manual maneuvers, and hard stools (Jain et al., 2018).

Although the cause of functional defecation disorders is not fully understood, genetic factors, lifestyle habits, microbiota, anorectal factors, psychological and behavioral factors have been reported to be risk factors (Vriesman et al., 2019; Zhang et al., 2022).

3. Diagnostic Methods in Functional Defecation Disorders

Both symptoms and physiological tests are defined as the gold standard method for diagnosing functional defecation disorder. It is reported that medical history and physical examination are sufficient to identify functional defecation disorder, but physiological tests should be performed in patients who are planned to undergo surgery or who do not respond to treatment (Bharucha et al., 2006; Skardoon et al., 2017).

3.1. Medical History

Constipation is defined differently by patients and healthcare professionals, so it is important to take a detailed history. The patient's understanding of the definition of constipation should be questioned. Pre-illness bowel habits, factors that change bowel habits, excessive straining, feeling of insufficient

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evacuation, use of manual maneuvers, feeling of abdominal discomfort, time spent for defecation and stool consistency should be noted. Bristol Stool Scale is frequently used in clinics and studies to question stool shape. Symptoms, duration and frequency of symptoms should be noted. Rome IV criteria defined for functional constipation can be used to query symptoms. Colonoscopy should be requested from patients at risk of colon cancer. Colon cancer risk factors are shown in Table 2 (Garrett & Ogilvie, 2022). Patients with colon cancer risk factors should be referred to the relevant physician before starting treatment. Additionally, medications used, herbal supplements, other illnesses and previous surgeries, if any, should be noted (Garrett & Ogilvie, 2022; Włodarczyk et al., 2021).

Table 2. Colon cancer risfactors

• Unintentional weight loss of more than 10% in the last 3 months
• Bloody stool
• Positive family history of inflammatory bowel disease or colon cancer
• Rectal tenesmus
• Iron deficiency anemia
• Jaundice
• New onset of symptoms after age 50
• Positive fecal occult blood test
• Cachexia

3.2. Physical Examination

Inspection and palpation of the abdominal area should be performed in detail. During abdominal examination, swelling, distension and the presence of a mass should be evaluated. During anorectal and pelvic floor examination, the presence of fissures, hemorrhoids and rectal prolapse should be evaluated, and perineal movements should be observed (Garrett & Ogilvie, 2022). During digital rectal examination pelvic floor muscle and external anal sphincter muscle tone at rest and contraction, movement occurring in the pelvic floor and external anal sphincter with straining, presence of a mass, presence of a rectocele, and the length of the anal canal should be evaluated (Skardoon et al., 2017; Włodarczyk et al., 2021).

3.3. Physiological Tests

The most commonly used physiological tests for the diagnosis of functional constipation are Balloon Expulsion Test, MR defecography, Anal Manometer and pelvic floor EMG measurements (Kaya & Kaçmaz, 2016; Rao & Patcharatrakul, 2016; Skardoon et al., 2017).

4. Physiotherapy and Rehabilitation Approaches in Functional Defecation Disorders

The ICS (International Continence Society) Pelvic Floor Clinical Evaluation Group defined overactive pelvic floor muscles in 2005 as muscles that are incapable of relaxation or muscles that contract

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involuntarily in situations where relaxation is required, such as micturition and defecation (Messelink et al., 2005). The IUGA (International Urogynecological Association) and ICS have attempted to standardize this definition. However, in the medical literature, instead of the term overactive pelvic floor muscles, definitions such as hyperactive pelvic floor syndrome, hypertonic pelvic floor syndrome, pelvic floor tension myalgia, high tone pelvic floor, shortened pelvic floor, levator ani/puborectal syndrome, and pelvic floor that cannot relax are used (Padoa et al., 2021). This definition indicates that patients with functional defecation disorders due to pelvic floor and/or anal sphincter muscle dysfunctions have overactive pelvic floor muscles. Therefore, treatment approaches should target relaxation of the pelvic floor muscles. There are no specific programs in the literature for the treatment of functional defecation disorders. For this reason, it is treated with standard treatment protocols of chronic constipation. There is evidence that patients with functional defecation disorders, unlike other types of constipation, do not respond to medical and standard treatments and that Biofeedback and pelvic floor physiotherapy should be applied as first-line treatment (Chiarioni et al., 2006; Rao et al., 2007).

4.1. Lifestyle Changes

Increasing the consumption of fibrous food and water, recommending fiber supplements when necessary, and exercising regularly can be effective on constipation. Colonic transit time is accelerated by increasing stool weight with a high-fiber diet. Fiber supplements are recommended for patients who can not get enough fiber. However, fibrous foods can cause bloating, distension and gassing. There are studies reporting that fiber consumption has low/no effect on patients with slow transit constipation and patients with constipation due to pelvic floor dysfunction (Evans, 2016; Zutshi &Oliveira, 2022). It is known that patients with constipation often try to solve their problems by using laxatives. Lifestyle changes should also aim to reduce laxative use. There are conflicting results in studies on the relationship between physical activity level and constipation. However, studies have shown that the incidence of constipation is 3 times higher in sedentary individuals than in individuals with high levels of physical activity. Exercise is recommended for individuals with constipation due to its positive effects on general health components (Włodarczyk et al., 2021; Zutshi &Oliveira, 2022).

4.2. Patient Education

It is important to give the patient information about the disease. Information should be given about the etiology of the disease, the anatomy and physiology of the pelvic floor muscles, and the function of the pelvic floor muscles during defecation. Patients should be encouraged to make changes by explaining the gains that can be achieved through lifestyle changes (Garrett & Ogilvie, 2022;, 2022; Rao & Patcharatrakul, 2016; Zutshi &Oliveira).

4.3. Defecation Training

The aim of defecation training is to ensure the perception of normal defecation. It aims to correct the patient's incorrect behavior regarding defecation. Information is given about not postponing defecation and reducing long stays in the toilet due to insufficient evacuation. Training is provided in 5-6 sessions lasting 30 minutes each. Patients are advised to defecate 30 minutes after meals and twice a day for no more than 5 minutes. It should be noted that the amount of straining during defecation should not be

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excessive. The patient should be asked to strain no more than 50-70% of the maximum straining amount. Diaphragmatic breathing should be taught to improve propulsion. With diaphragmatic breathing, the internal abdominal pressure is voluntarily increased and the defecation reflex is initiated. Voluntarily stimulated defecation reflex is not as effective as the naturally occurring defecation reflex. For this reason, it is known that defecation training, especially after meals, provides more effective results by stimulating reflex activities more. Squatting or knees above hip level is an appropriate position for effective defecation. In this position, the lumbar lordosis becomes flatter, the pelvic floor muscles relax easily and defecation occurs with the help of gravity. Studies have shown that patients strain less and evacuate more effectively in an appropriate defecation position (Rao et al., 2010; Rao & Patcharatrakul, 2016;).

4.4. Pelvic Floor Physiotherapy

In the treatment of functional defecation disorder, the next step after patient education should be pelvic floor physiotherapy. The goal of pelvic floor physiotherapy is to eliminate the functional disorder caused by paradoxical contraction or inadequate relaxation of the pelvic floor muscles. Electrical stimulation, massage, Biofeedback applications, exercise training and transrectal/transvaginal applications are used to achieve these goals (Zutshi & Oliveira, 2022).

4.4.1. Electrical Stimulation

Defecation can be stimulated by providing neuromodulation of the colon and pelvic floor with electrical stimulation. There are studies in the literature using different current types (Gallegos-Orozco et al., 2012; Iacona et al., 2019). Electrogalvanic stimulation is applied with an anal probe placed in the anal canal. The aim of this application is to cause fatigue in the muscle by providing current flow at a level that the patient can tolerate. The recommendation for application is as follows: first week, 3 days/week; second week, 2 days/week and then 1 day/week. It may cause pain, rectal irritation and bleeding. The superiority of electrogalvanic stimulation over Biofeedback treatment has not been demonstrated in patients with functional defecation disorders (Zutshi & Oliveira, 2022), but it has been reported that transanal electrogalvanic stimulation provides improvement in cases with chronic constipation (Chiarioni et al., 2004). Interferential current can be used in the treatment of pain and constipation by stimulating superficial and deep nerve fibers. It has been reported to be effective in reducing symptoms in patients with constipation due to irritable bowel syndrome (Coban et al., 2012). However, its effect on functional constipation is unknown. Transcutaneous electrical nerve stimulation (TENS) is a type of stimulation that stimulates nerves with low-frequency current through electrodes placed on the skin. It can be used to reduce abdominal pain and accelerate colonic transit time in patients with constipation. These effects have been demonstrated in patients with pediatric constipation (Chase et al., 2005).

4.4.2. Massage

Abdominal massage can speed up colon transit time, stimulate peristalsis, and reduce pain and discomfort common in patients with constipation (Sinclair, 2011). The study results in the literature show that abdominal massage can provide effective results in patients with slow-transit and chronic functional constipation. Massage is a feasible method in patients with constipation because it has no side effects,

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is an accessible treatment, and is low cost. It has been reported that patients require less pharmacological agents after abdominal massage treatment (Choi et al., 2021).

4.4.3. Biofeedback

Biofeedback applications are based on 'operant conditioning' techniques and aims to relax the pelvic floor muscles and anal sphincters during increased intra-abdominal pressure. Biofeedback can be applied by various methods; Manometric Biofeedback, EMG Biofeedback, neuromuscular exercises with balloons. Although the number and duration of sessions are determined individually for the patient, the applications are generally performed once every 2 weeks for 1 hour. On average, 4-6 sessions are sufficient. It is reported that supportive exercises may be beneficial in the 6th week and 3-6-12 months after treatment is completed, but no study supporting this has been found in the literature (Rao, 2001; Skardoon et al., 2017). There are studies showing that Biofeedback applications are superior to standard treatment, placebo Biofeedback, laxative use and diazepam use in patients with functional defecation disorders (Chiarioni et al., 2006; Heymen et al., 2007; Rao et al., 2007). In the literature, it has been shown that transanal stimulation applications combined with Biofeedback are more effective in reducing the severity of constipation and improving the quality of life in patients with functional defecation disorders compared to standard medical treatment (Cadeddu et al., 2015). It has been determined that Biofeedback training performed in a personalized way provides more effective results than the application performed with a fixed program (Xu et al., 2022).

4.4.4. Exercise

The aim of exercise training in functional constipation that develops due to excessive contractions of the pelvic floor muscles or anal sphincters should be to increase the relaxation ability of these muscles. The pelvic floor muscles and diaphragm muscle work synergistically. For this reason, pelvic floor relaxation exercises are given in combination with diaphragmatic breathing. It is also known that the pelvic floor muscles stretch differently in different positions (Talasz et al., 2011). It is thought that pelvic floor relaxation exercises combined with diaphragmatic breathing and applied in different positions may be effective on overactive pelvic floor muscles, but although it is frequently recommended in clinical settings, no study has been found on this subject. In the literature, pelvic floor relaxation exercises are referred to as 'Reverse Kegel' and 'Down Training'.

4.4.5. Transvaginal/Transrectal Manual Applications

Although there are studies reporting that transrectal/transvaginal manual applications may also be effective in patients with constipation and pelvic pain, there are no studies in the literature regarding this method in patients with functional defecation disorders (Fitzgerald & Kotarinos, 2003; Rosenbaum & Owens, 2008). Transvaginal/Transrectal manual applications include trigger point therapy, muscle-relaxation technique, postisometric relaxation and reciprocal inhibition methods. During transvaginal/transrectal manual applications, the goal is to release trigger points in the pelvic floor muscles. In trigger point treatment, pressure is applied until the tissue barrier is formed and this application is continued until relaxation is felt. Trigger point therapy can be used alone or combined with other methods. The muscle-relax technique is based on the assumption that muscle tension decreases

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after a voluntary contraction. In this method, the area where tension is felt in the pelvic floor muscles is targeted. The physiotherapist moves the muscle internally to the point where muscle restriction is felt, and the patient is asked to perform isotonic contraction against internal manual resistance. The relaxation that occurs in the muscle is increased over time with the support of the physiotherapist. The muscle-relax technique forms the basis of the postisometric relaxation technique. The difference between them is that the contraction performed in the postisometric relaxation technique is isometric. Reciprocal inhibition describes the relaxation of an agonist muscle during contraction of the antagonistic muscle. While manual application is made to the pelvic floor trigger points, the patient is asked to contract his antagonist abdominal muscles to initiate the Valsalva maneuver. With the relaxation of trigger points, relaxation occurs in the pelvic floor muscles (Fitzgerald & Kotarinos, 2003; Rosenbaum & Owens, 2008). Although manual techniques are frequently used in current pelvic floor physiotherapy practices, there is not enough data on this subject in the literature. There are studies in the literature investigating the effects of trigger point therapy, myofascial relaxation and transvaginal/transrectal massage methods on pelvic floor dysfunctions caused by overactive pelvic floor muscles (Ascanelli et al., 2021; Lukban & Whitmore, 2000; Thiele; 1937). It has been determined that transrectal/transvaginal massage applications provide relief in pelvic floor-related pain and improve pelvic floor muscle tone and functions (Oyama et al., 2004; Thiele, 1937; Weiss, 2001). Studies examining the effect of postisometric relaxation technique on pelvic floor dysfunctions reported that pelvic pain and urological complaints decreased, sexual functions and quality of life improved (Fitzgerald et al., 2012; Fiztgerald et al., 2013).

5. Conclusion

Although constipation is a common complaint in clinics, it is usually treated with standart protocols like medication. It has been shown that functional defecation disorders caused by pelvic floor muscles and anal sphincters, such as dyssynergic defecation, anismus, and levator ani syndrome, do not respond to standard treatments. Therefore, examining constipation in detail, determining the type of constipation and creating an appropriate treatment program can help patients' complaints be better resolved. Although there are studies in the literature examining the effects of physiotherapy applications on constipation, the type of constipation has generally not been distinguished in the studies. Future studies examining the effects of different physiotherapy applications according to constipation types may guide clinical practice.

Authors Contributions

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Conflict of Interest

The authors declare that there is no conflict of interest.

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