Journal of MEDICINE–24
August 2026, Volume 3, Issue 2, pp. 17−24
DOI: https://doi.org/10.36719/3104-4700/5/17-24

Structural and Functional Defecographic Findings in Obstructed Defecation Syndrome: A Retrospective Study of 146 Patients

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Abstract. *Objective: Obstructed Defecation Syndrome (ODS) consider as a complex disorder associated with structural and functional abnormalities of the pelvic floor. Our study aimed to evaluate radiology defecography findings in patients with ODS, determine the prevalence of structural and functional abnormalities, and assess the coexistence of these disorders in a retrospective cohort of 146 patients in our hospital. Methods: A retrospective study was conducted 146 patients who underwent fluoroscopic defecography between 2013 and 2025 with symptoms suggestive of Obstructed Defecation Syndrome (ODS). Demographic characteristics and defecographic findings were analyzed. Structural abnormalities, including rectocele, intussusception, rectal prolapse, enterocele, sigmoidocele, and megarectum, as well as functional abnormalities such as pelvic floor dyssynergia were evaluated. Data were analyzed using SPSS software and presented as frequencies, percentages, and descriptive statistics. Results: Abnormal defecographic findings were identified in the majority of patients. Rectocele was the most common abnormality, observed as an isolated finding in 15.1% of patients, while significant and minimal rectocele were detected in 6.8% and 3.4% of cases, respectively. Intussusception was present in 8.2% of patients and frequently coexisted with rectocele. Functional abnormalities, particularly pelvic floor dyssynergia, were also observed and commonly accompanied structural defects. Normal defecographic findings were reported in only 5.5% of patients, indicating a high diagnostic yield of defecography in the evaluation of ODS. Conclusion: Defecography provides a comprehensive assessment of Obstructed Defecation Syndrome by simultaneously evaluating structural and functional pelvic floor abnormalities. The frequent coexistence of these abnormalities highlights the importance of an integrated diagnostic approach and supports individualized management strategies for patients with ODS.*

Keywords: *Obstructed Defecation Syndrome, defecography, rectocele, intussusception, pelvic floor dyssynergia*

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Received: 16 April 2026; Accepted: 20 July 2026; Published online: 15 August 2026

Introduction

Obstructed Defecation Syndrome (ODS) is a common and clinically challenging subtype of chronic constipation characterized by difficulty in rectal evacuation despite the urge to defecate. Patients typically experience excessive straining, prolonged defecation time, a sensation of incomplete evacuation, anorectal blockage, and the need for digital assistance. These symptoms can significantly impair quality of life and are often associated with considerable physical and psychological distress (Rao & Patcharatrakul, 2016; Bharucha et al., 2006; Mellgren, 2022; Ciriza et al., 2020; Van Gruting et al., 2021).

The pathophysiology of ODS is complex and multifactorial, involving both structural and functional abnormalities of the pelvic floor. Structural disorders include rectocele, internal rectal prolapse (intussusception), enterocele, sigmoidocele, and rectal prolapse, whereas functional abnormalities are commonly represented by pelvic floor dyssynergia and impaired relaxation of the puborectalis muscle (Altomare & Giuratrabocchetta, 2013; Mellgren et al., 1994). In many patients, these abnormalities coexist, making it difficult to determine the relative contribution of each factor to symptom development and severity.

Accurate identification of the underlying abnormalities is essential for appropriate treatment selection. Clinical examination and symptom assessment alone are frequently insufficient because many pelvic floor disorders share similar clinical manifestations. Additional diagnostic investigations, including anorectal manometry, balloon expulsion testing, and imaging studies, are therefore often required to establish the diagnosis and guide management (Mahieu et al., 1984).

Defecography remains one of the most valuable diagnostic tools for the evaluation of patients with ODS. Unlike static imaging modalities, defecography provides dynamic visualization of the entire defecation process, allowing simultaneous assessment of anatomical defects and functional abnormalities. The technique enables detection of rectocele, intussusception, pelvic floor dyssynergia, rectal prolapse, and other disorders that may not be apparent during routine clinical examination (Shorvon et al., 1989; Kelvin et al., 2000).

Although dynamic magnetic resonance imaging has emerged as an alternative imaging modality, fluoroscopic defecography continues to be widely used because of its accessibility, reproducibility, cost-effectiveness, and ability to reproduce physiological defecation conditions (Kelvin et al., 2000; Dvorkin et al., 2005; Ciriza et al., 2020; Parry et al., 2025). Furthermore, defecography plays an important role in treatment planning by helping clinicians distinguish between patients who may benefit from conservative management and those who require surgical intervention.

The aim of this study was to evaluate defecographic findings in patients with Obstructed Defecation Syndrome, determine the prevalence of structural and functional pelvic floor abnormalities, and assess the coexistence of these abnormalities in a retrospective cohort of 146 patients.

Materials and Methods

This retrospective observational study included 146 consecutive patients referred to a tertiary care center between 2013 and 2025 with symptoms suggestive of Obstructed Defecation Syndrome (ODS). The study was conducted in accordance with institutional ethical standards and the principles of the Declaration of Helsinki.

Inclusion criteria comprised patients presenting with chronic constipation associated with symptoms of outlet obstruction, including excessive straining during defecation, a sensation of incomplete

evacuation, prolonged defecation time, anorectal discomfort, and the need for digital or manual assistance. All patients underwent fluoroscopic defecography as part of their diagnostic evaluation.

Patients with a history of colorectal surgery, colorectal malignancy, inflammatory bowel disease, neurological disorders affecting bowel function, or incomplete clinical or radiological data were excluded.

The study population consisted of 141 women (96.6%) and 5 men (3.4%). The mean age was 41.4 ± 1.1 years (range, 20–65 years). The highest proportion of patients was observed in the 30–39-year age group, followed by the 50–59 and 40–49-year age groups (Figures 1 and 2).

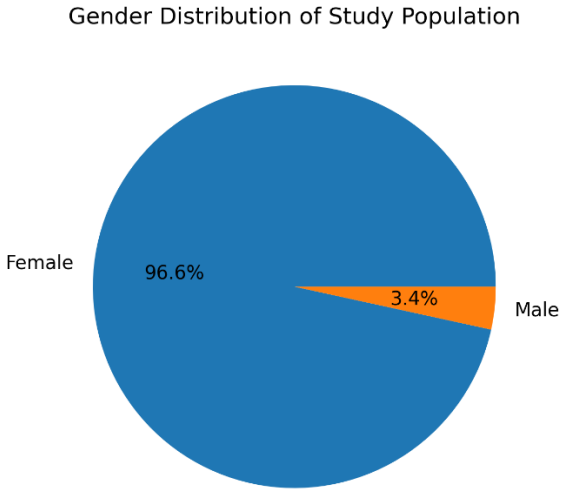

Figure 1
Gender distribution of the study population

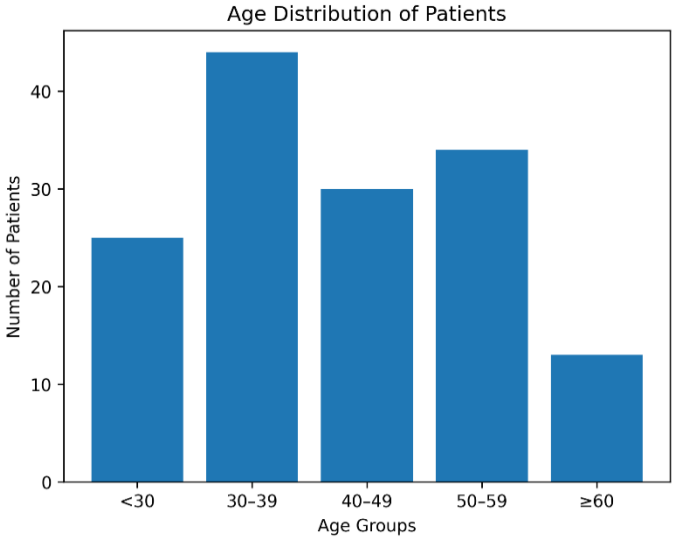

Figure 2
Age distribution of patients undergoing defecography

Defecography Technique

A standardized fluoroscopic defecography protocol was applied in all patients. Prior to the examination, a semi-solid barium paste was instilled into the rectum to simulate physiological stool consistency. In selected cases, additional vaginal or small-bowel contrast opacification was performed when clinically indicated.

Patients were examined in a seated position on a radiolucent commode. Dynamic fluoroscopic imaging was obtained during resting, squeezing, straining, and evacuation phases, allowing real-time assessment of pelvic floor function and anorectal dynamics.

The following parameters were evaluated:

- Rectocele size and evacuation characteristics;
- Presence and degree of intussusception;
- Rectal prolapse;
- Enterocele and sigmoidocele;
- Megarectum;
- Pelvic floor dyssynergia (anismus);
- Anal sphincter insufficiency;
- Completeness of rectal evacuation.

All examinations were interpreted by experienced radiologists. Defecographic findings were classified as structural or functional abnormalities and recorded for subsequent analysis.

Statistical Analysis

Statistical analysis was performed using IBM SPSS Statistics software (IBM Corp., Armonk, NY, USA). Continuous variables were expressed as mean ± standard deviation (SD), whereas categorical variables were presented as frequencies and percentages. Descriptive statistical methods were used to evaluate demographic characteristics and the prevalence of structural and functional abnormalities detected on defecography. The distribution of defecographic findings was analyzed and summarized using frequency tables and graphical presentations.

Ethics Statement

The study was conducted in accordance with the principles of the Declaration of Helsinki. Patient confidentiality was maintained throughout the study, and all data were anonymized prior to analysis. Due to the retrospective design of the study and the use of anonymized data, informed consent was not required.

Results

Defecography identified abnormalities in the majority of patients, confirming its diagnostic value in the evaluation of Obstructed Defecation Syndrome (ODS).

Prevalence of Structural Abnormalities

Structural abnormalities were identified in most patients, highlighting the important role of anatomical factors in ODS.

Rectocele was the most prevalent abnormality in this cohort. It was identified as an isolated finding in 15.1% of patients, while significant rectocele was observed in 6.8% and minimal rectocele in 3.4% of patients. The distribution of rectocele severity demonstrated a heterogeneous presentation, ranging from minimal anatomical changes to clinically significant defects associated with impaired evacuation. Rectocele was frequently observed in combination with other pelvic floor abnormalities rather than as an isolated condition.

Intussusception was another commonly observed abnormality. Combined rectocele–intussusception pathology was identified in 8.2% of patients. The frequent coexistence of these abnormalities suggests that multiple pelvic floor disorders may contribute to the clinical presentation of ODS.

Less frequently observed abnormalities included enterocele, sigmoidocele, megarectum, anal sphincter insufficiency, and rectal prolapse. Although less common, these findings may be clinically relevant in selected patients and should be considered during diagnostic evaluation.

Overall, the high prevalence of combined structural abnormalities observed in this study supports the concept that ODS is often associated with multiple coexisting anatomical defects rather than a single isolated abnormality.

Functional Abnormalities

Functional abnormalities of the pelvic floor were also identified and frequently coexisted with structural defects. Pelvic floor dyssynergia was observed in several patients and was characterized by paradoxical contraction or inadequate relaxation of the pelvic floor musculature during attempted defecation. In most cases, dyssynergia was identified in combination with structural abnormalities such as rectocele and intussusception.

Impaired relaxation of the puborectalis muscle and incomplete rectal evacuation were also observed. These findings are consistent with functional outlet obstruction and may contribute to symptoms such as excessive straining and incomplete evacuation. The coexistence of functional and structural abnormalities highlights the importance of comprehensive pelvic floor assessment in patients with ODS.

Normal Findings

Normal defecographic findings were observed in only 5.5% of patients. This low proportion of normal studies indicates that most patients with clinically suspected ODS demonstrated identifiable abnormalities on dynamic imaging. Patients with normal defecographic findings may represent a subgroup with functional disorders not fully characterized by fluoroscopic assessment alone.

Coexistence of Structural and Functional Abnormalities

A notable finding of this study was the frequent coexistence of structural and functional abnormalities. Rectocele was commonly observed together with intussusception and pelvic floor dyssynergia. These findings suggest that ODS is frequently associated with multiple pelvic floor disorders occurring simultaneously rather than a single isolated abnormality.

The identification of combined abnormalities may be clinically important because successful management often requires consideration of both structural and functional components of pelvic floor dysfunction. These findings support the use of defecography as a comprehensive diagnostic tool in the evaluation of patients with ODS.

Discussion

The present study provides a comprehensive evaluation of defecographic findings in 146 patients with Obstructed Defecation Syndrome (ODS). The most important finding was the high prevalence of abnormal defecographic findings, with normal examinations observed in only 5.5% of patients. Rectocele was the most common abnormality, occurring as an isolated finding in 15.1% of patients, while significant and minimal rectocele were identified in 6.8% and 3.4% of cases, respectively. Furthermore, combined significant rectocele and intussusception were observed in 8.2% of patients, highlighting the frequent coexistence of pelvic floor abnormalities in ODS (Fig. 3).

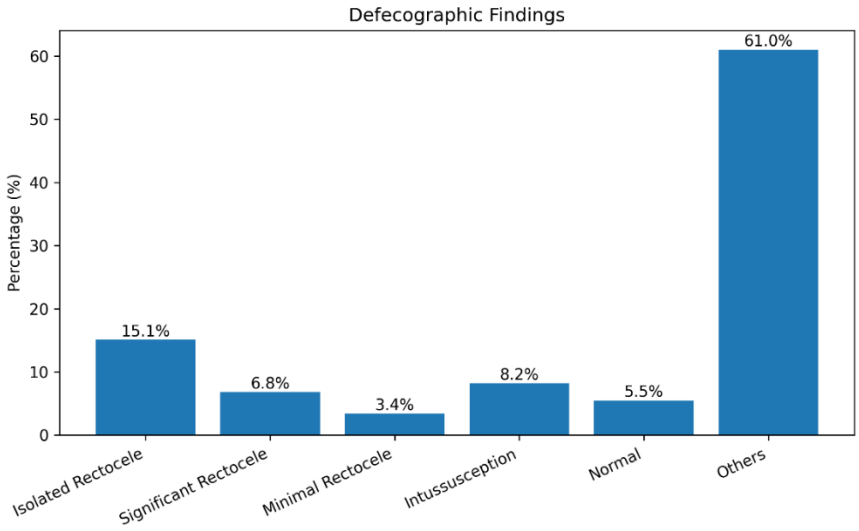

Figure 3
Distribution of defecographic findings. Less frequent findings were grouped as "Others" for clarity.

Consistent with previous reports, rectocele emerged as the predominant structural abnormality in our cohort (Altomare & Giuratrabocchetta, 2013; van Dam et al., 1999). However, an important observation of the present study was that combined abnormalities were encountered more frequently than isolated findings. This supports the concept that ODS is a multifactorial and heterogeneous disorder in which multiple structural and functional abnormalities may contribute to impaired rectal evacuation.

The frequent coexistence of rectocele and intussusception observed in our study is in agreement with previous investigations describing overlapping pelvic floor disorders in patients with obstructed defecation (Dvorkin et al., 2005; Jeong et al., 2020). Chronic straining, increased intra-abdominal pressure, and progressive weakening of pelvic floor support structures have been proposed as potential mechanisms contributing to the development of these abnormalities. Rather than representing isolated entities, these disorders may occur simultaneously and contribute to the complex clinical presentation of ODS. Functional abnormalities were also identified in several patients. Pelvic floor dyssynergia was observed either as an isolated finding or in combination with structural abnormalities, emphasizing the importance of assessing both anatomical and functional components of pelvic floor dysfunction. These findings support the value of defecography as a dynamic imaging modality capable of evaluating structural abnormalities and functional pelvic floor behavior during evacuation.

Compared with clinical examination alone, defecography provides additional information regarding rectocele, intussusception, pelvic floor dyssynergia, rectal prolapse, and other abnormalities that may influence patient management. The low proportion of normal examinations observed in the present study further supports its usefulness in the diagnostic workup of patients with suspected ODS.

From a clinical perspective, the identification of both structural and functional abnormalities may contribute to more individualized treatment planning. Patients with predominant functional abnormalities may benefit from conservative approaches such as biofeedback therapy and pelvic floor rehabilitation, whereas patients with clinically significant structural defects may be considered for surgical treatment when appropriate (Büyükaşık et al., 2020; Mellgren, 2022). Therefore, comprehensive evaluation of pelvic floor disorders remains essential for optimal patient management. A major strength of this study is the evaluation of a relatively large cohort of 146 patients undergoing defecography for symptoms suggestive of ODS. In addition, both structural and functional abnormalities were assessed, allowing a broader characterization of defecographic findings in this patient population.

Clinical Implications

The findings of this study suggest that clinicians should anticipate the presence of multiple coexisting pelvic floor abnormalities rather than isolated defects when evaluating patients with ODS. Defecography provides valuable information regarding both structural and functional abnormalities and may assist in treatment planning, patient selection, and comprehensive diagnostic assessment.

Limitations

Several limitations should be acknowledged. First, the retrospective design may have introduced selection bias. Second, the study was conducted at a single tertiary referral center, which may limit the generalizability of the findings. Third, quantitative assessment of certain defecographic parameters was limited, and universally accepted measurement criteria remain lacking. In addition, complementary investigations such as anorectal manometry and balloon expulsion testing were not routinely available for comparison. Finally, long-term clinical follow-up was not performed, preventing assessment of the relationship between defecographic findings and treatment outcomes. Future prospective multicenter studies with larger patient populations, standardized assessment criteria, and integration of complementary functional investigations are needed to further clarify the role of defecography in the evaluation and management of ODS.

Conclusion

Defecography is a valuable diagnostic modality in the comprehensive evaluation of Obstructed Defecation Syndrome (ODS), providing simultaneous assessment of structural and functional pelvic floor abnormalities. The findings of the present study demonstrate that ODS is frequently associated with multiple coexisting abnormalities rather than isolated defects. Rectocele was the most common abnormality, while the frequent coexistence of rectocele, intussusception, and pelvic floor dyssynergia highlights the multifactorial nature of the disorder. By enabling real-time visualization of the defecatory process, defecography provides important information regarding pelvic floor dynamics and facilitates the identification of both anatomical and functional causes of obstructed defecation. These findings support the use of defecography as an important component of the diagnostic workup of patients with suspected ODS.

The frequent occurrence of combined abnormalities observed in this study emphasizes the importance of a comprehensive diagnostic approach and may contribute to more individualized patient

management. Further prospective studies with standardized assessment criteria and long-term follow-up are warranted to better define the clinical implications of defecographic findings in patients with ODS.

Declaration of Competing Interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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