

# Indications and Results of Endoanal Ultrasonography in Anal Pathology

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## Abstract

Anal disease encompasses a diverse array of disorders, including conditions such as sphincter defects, anorectal fistulas and abscesses, unexplained chronic anal pain. The objective of this study is to assess the diagnostic value of endoscopic ultrasound (EUS) in the context of anal diseases. A total of 58 patients who benefited from an EUS, over a period between January 2018 and april 2023. Mean age was 43,4 years with a sex ratio (M: F) of 0.4. The main indication for EUS is dominated by fecal incontinence (FI) in 53% of patients, followed by the anoperineal manifestations of Crohn's disease in 22%. Among patients with perineal Crohn's disease (CD), fistulas were observed in 47% of CD cases. anovaginal or rectovaginal fistulas (ARVFs) were visualized in 9% of all cases. In patients presenting with fecal incontinence (FI), EUS identified defects in the internal and external anal sphincters. EUS is a highly sensitive technique for assessing anal anatomy and diagnosing of anal diseases.

**Keywords:** Endoscopic ultrasound, Anal disease, Fecal incontinence, Anorectal suppuration, Sphincter defect.

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## INTRODUCTION

Endoanal ultrasonography is a non-invasive technique that allows a precise study of the anal sphincter system. This examination allows to complete the assessment of continence disorders and anorectal infections, tumors of the anus and unexplained perineal pain. The results of anal endoscopic ultrasound (EUS) can have a significant impact on the treatment, making EUS an essential examination tool in the pretreatment evaluation of various anorectal disorders. The aim of this study is to evaluate the diagnostic contribution of (EUS) in anal disease about a descriptive study of 58 patients.

## MATERIALS AND METHODS

Our work consists of a retrospective descriptive study of 58 patients who benefited from an EUS for various proctological symptom, over a period between January 2018 and april 2023.

All EUS were performed using a flexible radial EUS probe with or without a linear probe (Pentax®) and ultrasonic processors (Aloka Hitachi®). Patients were prepared with cleansing enemas

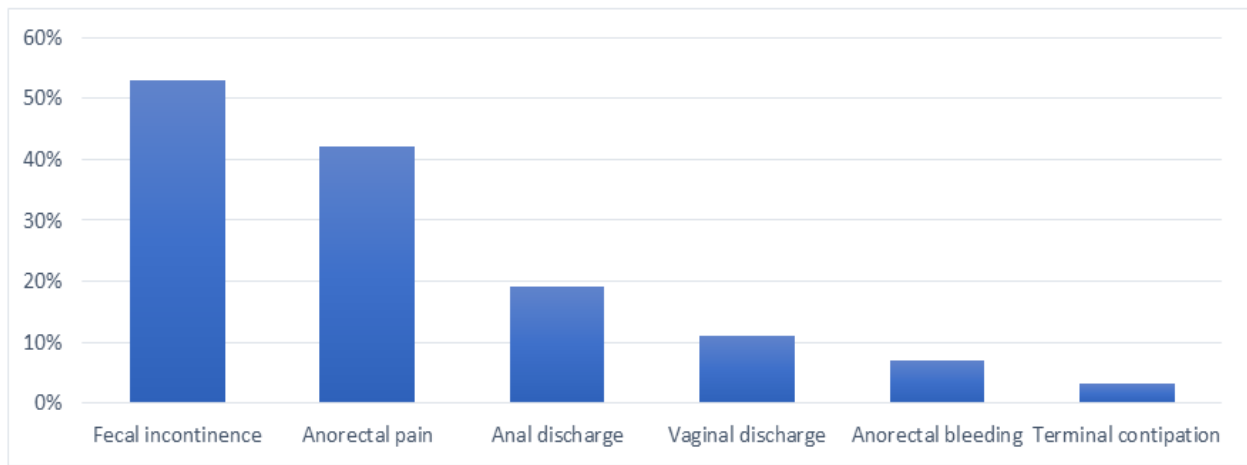
Poorly prepared patients and those with rectal tumors were excluded.

## RESULTS

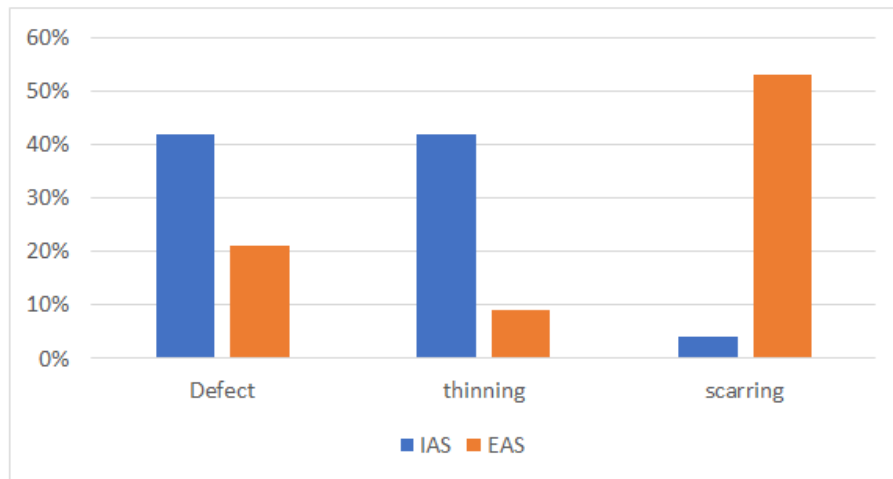
The mean age of our patients was 43.4 years, with a sex ratio (M: F) of 0.4. Proctalgia and fecal incontinence are the most frequent sign in our study (Fig 1).

Indications for EES are dominated by fecal incontinence (FI) in 53% of patients, followed by the anoperineal manifestations of Crohn's disease in 22%.

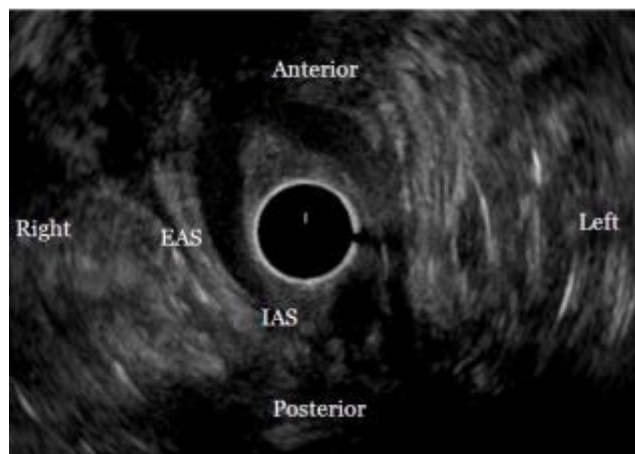
Mean age of patients with FI was 49 years (range 19–76 years) predominately females (92%), a history of perianal surgery was found in 47% of patients and 27% of women were multiparous. EEA showed a defect of internal anal sphincter (IAS) in 42%, and external anal sphincter (EAS) defect in 21% of cases (Fig 1). Anorectal manometry was performed in 50% of incontinent patients, and revealed sphincter hypotonia in 91% of cases, dyssynergia in 67% and a defect in voluntary contractions in 33%.



**Fig 1: Distribution of clinical symptoms in our study**



**Fig 2: Sphincter status on EUS in case of FI**

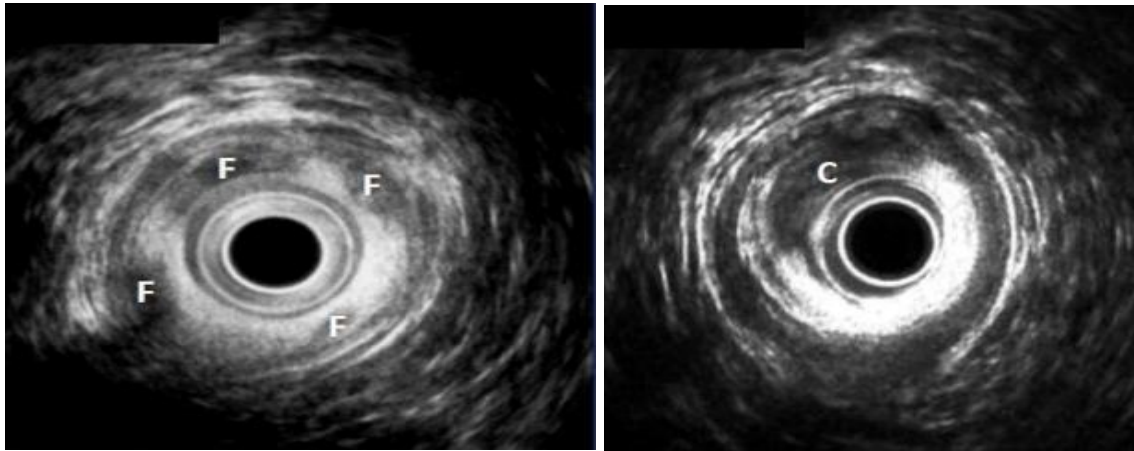


**Fig 3: EUS showing a posterior defect of IAS and both thinning and scarring of EAS**

The second indication of EUS was anorectal suppurations were identified in 36% of all cases. In our study, 24% of patients had a CD. Their mean age was

38 years (27-70 years) and their sex ratio was 1. EUS showed fistulas in 47% of cases (Figure 5), abscesses in 31%, and sphincter lesions in 38.5%.

Nonspecific anal fistulas were found in 12% of cases, with a mean age of 46 years and a slight male predominance in 58% of cases.



**Fig 4: EUS revealing intersphincteric fistulas (F) and an intersphincteric collection (C)**

Anovaginal or rectovaginal fistulas (ARVFs) unrelated to CD were objectified in 9% of cases. Their mean age was 34 years and 85% was due to post-partum, patients are primiparous in 60% of cases. EES identified an anovaginal fistula in 67% of cases and a rectovaginal fistula in 33% of cases. All patients had associated anal sphincter lesions.

In 3,4% of cases, EUS was able to rule out organic causes of terminal constipation. In 26% of cases, no abnormal findings on EUS.

## DISCUSSION

Endoanal endoscopic ultrasound (EUS) is a highly sensitive diagnostic tool for assessing various proctologic conditions [1], including fecal incontinence, perineal Crohn's disease, anal fistulas, abscesses, and anal tumors.

Fecal incontinence is a common problem that significantly affects the quality of life for patients [2]. According to a study conducted in the United States, fecal incontinence was found to be prevalent among women across all age groups, with a higher prevalence observed in women over the age of 70, followed by those between the ages of 55 and 69 [3]. Among women, obstetrical trauma is identified as the primary cause of anal incontinence, and a substantial number of patients with fecal incontinence also reported a history of proctologic surgery [4]. In our study, we observed a prevalence of fecal incontinence among women, particularly in the age group of 40 to 50 years. Additionally, 47% of the patients had a history of perianal surgery, and 27% of the women had experienced multiple pregnancies.

EUS is widely regarded as the gold standard method for evaluating sphincter function in cases of FI, as most studies consistently demonstrate its remarkable

100% sensitivity in detecting sphincter defects [2]. In our study, a total of 53% of the patients presented a FI and EUS successfully identified internal anal sphincter defects in 42% of them, along with external anal sphincter defects in 21%.

Abscesses and anorectal fistulas rank among the primary ailments detected in adults [5]. Our investigation revealed that anorectal suppurations were observed in 36%, with 24% of them being associated with Crohn's disease and the remaining 12% being unrelated to Crohn's disease.

In the majority of cases, anal fistulas are cryptogenic, they are caused by an infection in the Hermann and Desfosses anal glands [6]. EUS allows for the visualization of the fistula's anatomical structure and is especially adept at identifying the internal opening. Utilizing 3D EUS, we can obtain views of the fistula tracts by reconstructing images in multiple planes. This aids in distinguishing between low transsphincter, high transsphincter, or suprasphincter fistula tracks

Endoanal EUS plays a crucial role in the examination of perianal Crohn's disease, particularly in cases involving complex and recurrent fistulas, as recommended by the guidelines of the European Crohn's and Colitis Organization and the American Gastrointestinal Association [7]. In our study, fistulas were identified in 47% of perineal Crohn's disease cases, abscesses in 31%, and sphincter lesions in 38.5%. A meta-analysis revealed that endoanal EUS has a sensitivity of 0.87 and a specificity of 0.43 for detecting fistulas in perianal Crohn's disease [8]. Additionally, anal EUS can be used to guide therapy decisions and evaluate the effectiveness of treatments.

ARVFs are relatively uncommon, comprising approximately 5% of all anorectal fistulas [9]. The

leading cause of ARVFs, predominantly trauma-related, is obstetric trauma, followed by Crohn's disease [10]. In our study, 85% of ARVFs unrelated to CD were attributed to obstetric trauma. Endoanal EUS enables the identification of the location and characteristics of ARVF tracts, as well as the assessment of the internal and external anal sphincters [11]. For ARVFs associated with obstetric trauma, it is recommended to perform anal EUS along with anorectal manometry to evaluate the integrity of the anal sphincters [12].

## CONCLUSION

Endoanal EUS represents a non-invasive exploration of proctological disorders. It is deemed essential in our study and in the literature as the examination of choice for exploring the anal canal, particularly in cases of fecal incontinence, cryptogenic anorectal suppurations, and Crohn's disease, additionally it helped the establishment of correlations between proctological symptoms and various anal disorders.

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