

Solitary Rectal Ulcer Syndrome in Pakistan: A Prospective Study Highlighting Gender and Age Patterns

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ABSTRACT

Background: Solitary Rectal Ulcer Syndrome (SRUS) is a rare, chronic disorder of the pelvic floor associated with defecatory dysfunction.

Objective: This prospective observational study aimed to evaluate the clinical, endoscopic, and histopathological features of SRUS, with an emphasis on sex-specific differences in presentation and risk factors.

Methodology: One hundred and thirty-eight (138): 85 female and 53 male patients diagnosed with SRUS were recruited from the department of Gastroenterology at Thumbay University Hospital, Ajman, UAE, between 2019 and 2024. They included patients with rectal bleeding, pain, bowel-habit changes, or self-digitation. Clinical assessment, endoscopy and histopathology of the rectal biopsies were conducted. The SPSS version 26 was used in the analysis of data, and the gender-based comparison was assessed with the help of chi-square tests.

Results: The majority of patients were aged 21–30 years (36.2%). Rectal bleeding was the most frequent symptom (74.1% females, 77.4% males), followed by rectal pain (51.8% females, 44.3% males) and altered bowel habits (17.6% females, 17.0% males). Self-digitation was reported in 92.0% of females and 89.6% of males. Endoscopy revealed solitary ulcers in 64.7% of females and 63.2% of males, while proctitis was present in 61.2% and 62.3%, respectively. Histopathology showed crypt distortion (32.9% females, 46.2% males), fibromuscular obliteration (48.2% females, 60.4% males), and surface ulceration (48.2% females, 50.9% males). No statistically significant differences were observed between sexes.

Conclusion: SRUS predominantly affects young adults, with a slight female preponderance. Rectal bleeding is the most common symptom, and histopathological changes, including fibromuscular obliteration and crypt distortion, are frequent. Recognition of clinical and tissue-level features is essential for accurate diagnosis and management.

Keywords: Solitary Rectal Ulcer Syndrome, Endoscopy, Histopathology, Sex Differences, Rectal Bleeding

INTRODUCTION

Solitary Rectal Ulcer Syndrome (SRUS) is a rare, chronic inflammatory disease of the rectum and pelvic floor, whose clinical, endoscopic, and histopathological appearances have a continuum^{1–4}. Originally described in the middle of the 20th century, SRUS is still the least known, with the estimate standing at 1 per 100,000 in the general population, yet it is often underdiagnosed because of its generalized symptoms. The syndrome occurs mainly in young adults, and can manifest in the second to fourth decades of life with at best a female preponderance across cohorts.

SRUS has a clinical presentation of rectal bleeding, mucus, chronic constipation, tenesmus, and in some cases rectal pain^{5–7}. These characteristics tend to resemble other anorectal conditions like hemorrhoids, inflammatory bowel disease or colorectal malignancy, making it difficult to diagnosis. Self-digitation or excessive straining during defecation is also a characteristic clinical feature in most patients and it is associated with pathogenesis involving mucosal trauma and rectal prolapse causing chronic ischemia and development of ulcers⁸. The effective interaction between the defecatory mechanism and structural alterations of the rectal mucosa justifies the multidisciplinary diagnosis, with a focus on the comprehensive clinical examination, endoscopy, and histopathological research^{9–10}.

SRUS may endoscopically appear as a single ulcer, multiple ulcers, polypoid lesions, or diffuse mucosal erythema similar to proctitis¹¹. The ulcer is typically located on the anterior rectal wall, approximately 5–10 cm from the anal verge, although variations exist^{12–13}. Histopathological examination remains the cornerstone of diagnosis, with key features including fibromuscular obliteration of the lamina propria, crypt architectural distortion, and surface ulceration¹⁴. These changes

are considered pathognomonic, differentiating SRUS from inflammatory bowel disease or neoplasia^{15–16}. Regardless of these peculiarities, the heterogeneity of the presentations often leads to delayed or misdiagnosis underlining the necessity of increased clinical sensitivity^{1–18}.

Despite this, sex-related differences in clinical presentation, endoscopic appearance, and histopathology have not been fully clarified though SRUS presents in both sexes^{19–20}. In other investigations, males have been proposed to experience more intense fibromuscular alterations, which might be indicative of changes in pelvic floor activities and straining patterns. In contrast, females can have more mucosal inflammation, which might be determined by hormonal or anatomical conditions. These differences are vital to thoroughly evaluate to improve management approach and prognosis forecasting.

Treatment of SRUS includes behavioral therapy (such as biofeedback therapy and nutrition modifications) and surgical therapy (in refractory cases) that can include a rectopexy or a local excision²¹. However, the treatment outcomes remain uneven, and the relapse is observed in up to 30 percent, which only proves the necessity of early diagnosis and the elaboration of a specific treatment plan. Moreover, the scientific curiosity about studying the molecular and histopathological surrogates of SRUS grows, and it holds prospects to enlighten about the pathophysiology of the disorder and potential specific targeted interventions.

In Pakistan, the information on SRUS is scarce, and the majority of the research is based on small and single-centre cohorts, limiting the study of demographic trends, clinical presentation, and histopathological variability. A prospective, longitudinal analysis of patients who present with SRUS can give important information about age and sex distribution, symptoms, endoscopic appearance, and tissue alterations. These studies play a central role in informing clinicians in proper diagnosis, proper management and better outcomes of patients.

The study will strive to fill these gaps by assessing prospectively the overall clinical, endoscopic, and histopathological features of the SRUS in a Pakistani cohort, paying special attention to the sex-specific differences in risk factors and phenotype. The organized description of the features in question makes the study expand the knowledge of SRUS, diagnose the case, and give the background of the future research on a certain intervention and its long-term results.

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METHODOLOGY

This prospective observational cohort was to evaluate the clinical, endoscopic, and histopathological of Solitary Rectal Ulcer Syndrome (SRUS) along with the peculiarities of gender. One hundred and thirty-eight patients (85 females and 53 males) diagnosed with SRUS were recruited to the department of Gastroenterology at Thumbay University Hospital, Ajman, UAE, between 2019 and 2025. Every patient presenting with the complaint of rectal bleeding, pain, bowel habits or self-digitation change were included, but not patients with inflammatory bowel disease, colorectal malignancy, or any other anorectal pathology. Clinical assessment was done on all participants, which involved testing of symptoms and digital rectal testing. Endoscopic examination was carried out in the form of flexible sigmoidoscopy or colonoscopy where the type of ulcers, proctitis or other mucosal changes were documented. HISTO Parenchyma samples of impacted rectal mucosa were taken to undergo histopathological examination with special attention to crypt distortion, fibromuscular obliteration and surface ulceration. The SPSS version 26 was used to analyze the data, and descriptive statistics were presented as frequencies and percentages. Chi-square tests were used to make gender based comparisons and p-values less than 0.05 were regarded as statistically significant.

RESULTS

One hundred and thirty-eight patients were utilized in number, consisting of 85 (61.6) females and 53 (38.4) males. The youngest age group (21-30 years) was most affected (50 patients, 36.2%), then came 31-40 years (30 patients, 21.7%). The average age of the research population was 30.1 SD +7.2 years old.

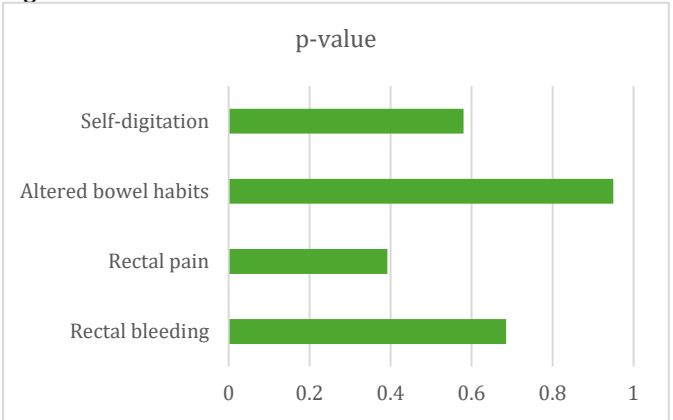
Clinical Features

The most frequent presenting symptom was rectal bleeding, with 77.4 and 74.1 percent of males and females, respectively, reporting it (p=0.685). Since the overall percent of rectal pain was 44.3 and 51.8 in males and females respectively (p=0.392), altered bowel habits were reported in 17.0 and 17.6 percent of males and females respectively (p=0.950). Eighty-nine point six percent of males and 92.0 percent of females reported self-digitation (p=0.580). The clinical symptom differences between men and women were not statistically significant.

Table 1: Clinical Manifestations of SRUS by Gender

Clinical Feature	Males (n=53)	Females (n=85)	p-value
Rectal bleeding	41 (77.4%)	63 (74.1%)	0.685
Rectal pain	23 (44.3%)	44 (51.8%)	0.392
Altered bowel habits	9 (17.0%)	15 (17.6%)	0.950
Self-digitation	47 (89.6%)	78 (92.0%)	0.580

Figure 1



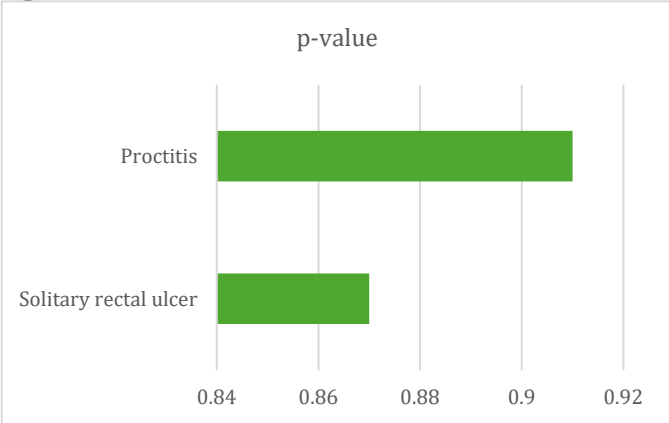
Endoscopic Findings

Solitary rectal ulcer was observed in 63.2% of males and 64.7% of females (p=0.870). Proctitis was present in 62.3% of males and 61.2% of females (p=0.910).

Table 2: Endoscopic Findings of SRUS by Gender

Endoscopic Finding	Males (n=53)	Females (n=85)	p-value
Solitary rectal ulcer	33 (63.2%)	55 (64.7%)	0.870
Proctitis	33 (62.3%)	52 (61.2%)	0.910

Figure 2



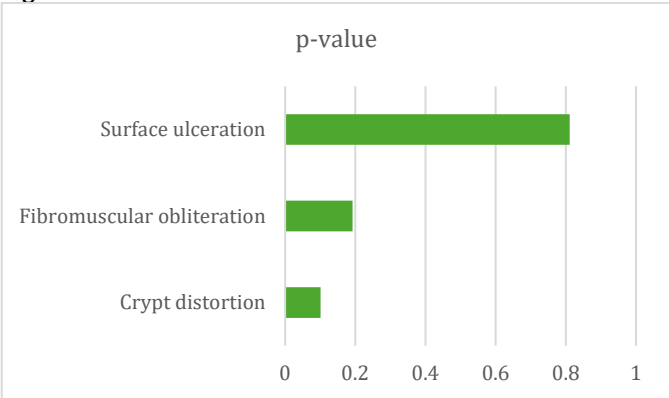
Histopathological Findings

Crypt distortion was found in 46.2% of the males and 32.9% of the females (p=0.101). In males, fibromuscular obliteration was observed in 60.4% and 48.2% of males and females respectively (p=0.192) and surface ulceration in 50.9% and 48.2% of males and females respectively (p=0.811).

Table 3: Histopathological Features of SRUS by Gender

Histopathological Feature	Males (n=53)	Females (n=85)	p-value
Crypt distortion	25 (46.2%)	28 (32.9%)	0.101
Fibromuscular obliteration	32 (60.4%)	41 (48.2%)	0.192
Surface ulceration	27 (50.9%)	41 (48.2%)	0.811

Figure 3



In general, there were no statistically significant gender differences in clinical, endoscopic, or histopathologic characteristics, but the trends indicate that the fibromuscular obliteration and the crypt distortion is slightly higher in men.

DISCUSSION

Solitary Rectal Ulcer Syndrome (SRUS) is a relatively ill-understood and not well-known condition whose clinical presentation can be similar to other disorders of the anorectum and therefore can be hard to properly diagnose in time. SRUS was more common in females in this prospective study, as reported elsewhere that indicated a female predominance, which is probably due to pelvic floor anatomy and defecatory behavior differences. Most of the patients were young adults aged 21 (30) years, which brings out the effects of lifestyle choices and chronic straining among this group. The most frequent symptom was rectal bleeding, which occurred in more than 70 percent in both sexes and is consistent with the previous multicenter reports that

reported bleeding and mucous discharge as typical manifestations. Endoscopic examination identified single ulcers in about 64% of individuals with the rest having proctitis or multiple lesions, which supports the diverse endoscopic presentation of SRUS and the need to use biopsy to make a definitive diagnosis. Histopathologically, fibromuscular obliteration and crypt distortion were stronger in males which were not statistically significant, though, indicating some slight sex-specific variations in tissue remodelling that need to be further investigated in mechanistic studies. The prevalence of self-digitation of both sexes highlights the pathogenicity of chronic mechanical trauma, which is consistent with modern pathophysiological theories that attribute too much straining, rectal prolapse, and mucosal ischemia. Notably, our results highlight that gender has no restrictions on SRUS and clinicians must have a high index of suspicion with patients who report rectal bleeding and defecatory dysfunction irrespective of the sex. New multicentric studies including functional imaging and molecular markers in large population should help answer the question about underlying mechanisms and enhance the accuracy of diagnosis, which will then be used to implement specific therapeutic strategy.

CONCLUSION

According to the present study, SRUS is not only slightly more common in females but is also found in young adults (21-30 years old). Rectal bleeding is the most frequent manifestation followed by pain and altered bowel movements. The solitary rectal ulcers

are best identified under endoscopic observation, and fibromuscular obliteration, crypt displacement and surface rupture are prevalent in histopathology. There were no significant gender-differences, though there were slight inclinations suggesting greater histopathological changes in the males. Rapid control of the disease, as well as enhanced patient outcomes, presupposes the adequate diagnosis, facilitated by the early detection of clinical, endoscopic, and histological features and systematic assessment. The findings underscore the need to conduct larger, multicentric studies to elaborate more on the pathophysiology, gender peculiarities, and optimal modes of treatment to come up with as per SRUS.

Authors' Contribution

SM, MAH: Concept & study design, data collection and drafting of the manuscript.

KMR: Data entry, statistical analysis, interpretation of the results.

FH: Manuscript editing and critical revision of the manuscript.

All authors approved the final version of the manuscript to be published.

Conflict of Interest

The authors declared no conflict of interest.

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Data Availability

Data is available with authors and can be provided on request.

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