JAMP

Original Research Article

PATTERN OF LOWER GASTROINTESTINAL DISEASES BY COLONOSCOPY IN BLEEDING PER RECTUM

R.Santhosh Narayan[1], S. Padma[2], P.Karthick[3]

[1]Final year post graduate, Department of General Surgery, Trichy SRM Medical College Hospital and Research Centre.
[2]Professor and Chief S3 unit, Department of General Surgery, Trichy SRM Medical College Hospital and Research Centre.
[3]Professor and HOD, Department of General Surgery, Trichy SRM Medical College Hospital and Research Centre.

ABSTRACT

Background: Bleeding per rectum is a common clinical symptom with diverse etiologies ranging from benign anorectal diseases to malignancies. Colonoscopy is the gold standard for diagnosis, enabling direct visualization and biopsy of lesions. **Aim:** To study the pattern of lower gastrointestinal diseases diagnosed by colonoscopy in patients presenting with bleeding per rectum. **Materials and Methods:** A cross-sectional observational study was conducted on 100 patients aged 30 years and above presenting with bleeding per rectum at a tertiary care hospital. Detailed clinical evaluation, colonoscopy, and biopsy where indicated were performed. Data were analyzed for disease pattern, demographic profile, and correlation of findings. **Result:** Chronic fissure in ano (33%), hemorrhoids (Grade II and III combined 22%), and fistula in ano (13%) were the most common diagnoses. Polyps accounted for 11%, while malignant and proliferative lesions represented 6%. Inflammatory bowel disease was detected in 3%. No significant gender differences were observed in overall disease distribution. Colonoscopy showed high concordance with histopathological findings (88%). Significant associations were found between malignancy and clinical features like bleeding volume and weight loss. **Conclusion:** Benign anal diseases are the predominant cause of bleeding per rectum in this population. Colonoscopy is essential for accurate diagnosis and early detection of serious pathologies, guiding appropriate management and improving patient outcomes.

INTRODUCTION

Bleeding per rectum (PR bleeding) is a common clinical symptom that often causes significant concern among patients and clinicians alike. It refers to the passage of bright red or dark blood through the anus, usually mixed with stool, and is an important indicator of pathology in the lower gastrointestinal (GI) tract. The causes of bleeding per rectum are diverse, ranging from benign anorectal conditions to serious colonic diseases such as malignancies. Understanding the spectrum of diseases responsible for bleeding per rectum is crucial for timely diagnosis and appropriate management, thereby reducing morbidity and mortality associated with these conditions.

Benign anorectal diseases, including haemorrhoids and anal fissures, are the most frequent causes of bleeding per rectum. Haemorrhoids are dilated vascular structures in the anal canal that may bleed due to trauma or increased venous pressure, and they often present with painless bright red bleeding during defecation. Fissure in ano, a linear tear in the anal mucosa, causes painful bleeding. These conditions are usually diagnosed clinically with per rectal examination and proctoscopy, and often managed conservatively or with minor interventions. However, while these benign conditions are common, they should not preclude a thorough evaluation for other possible etiologies, especially in patients over 30 years of age or those with risk factors for colorectal malignancy.[1]

Colorectal cancer (CRC) remains a leading cause of cancer-related morbidity and mortality worldwide. Screening programs have significantly reduced the incidence and mortality of CRC in individuals older than 50 years in many countries. However, an alarming trend has emerged with an increasing incidence of early-onset colorectal cancer in patients under 50 years of age, with an estimated annual increase of 1 to 3%. Currently, early onset CRC comprises approximately 10 to 18% of all newly diagnosed colorectal cancers.[2] This shift highlights the importance of vigilant screening and early

753

International Journal of Academic Medicine and Pharmacy (www.academicmed.org)
ISSN (O): 2687-5365; ISSN (P): 2753-6556

diagnostic evaluation in younger populations presenting with bleeding per rectum, even in the absence of classical risk factors.

The role of colonoscopy as a diagnostic and therapeutic tool in evaluating bleeding per rectum is well established. Colonoscopy allows direct visualization of the entire colon till terminal ileum, facilitating identification of mucosal lesions, sources of bleeding, and areas of inflammation or neoplasia. It also enables tissue biopsy for histopathological confirmation and, in some cases, endoscopic treatment such as polypectomy, cauterization, or clipping of bleeding lesions. Colonoscopy has high sensitivity and specificity in detecting colorectal pathologies, making it indispensable in the workup of patients with bleeding per rectum.[3]

The spectrum of lower GI diseases causing bleeding per rectum includes a wide range of pathologies

- Inflammatory bowel disease (IBD), including ulcerative colitis and Crohn's disease, leads to mucosal ulceration and bleeding.
- Diverticular disease may cause painless bleeding from the diverticula.
- Ischemic colitis presents with bleeding due to compromised blood supply.
- Colonic polyps, which may bleed and carry risk of malignant transformation.
- Infectious colitis caused by various pathogens can lead to mucosal inflammation and bleeding.
- Colorectal carcinoma often presents with occult or overt bleeding.
- Vascular lesions such as angiodysplasia cause bleeding predominantly in elderly patients.[4]

Epidemiological patterns of these diseases vary by region, influenced by genetic, environmental, and dietary factors. In India and many developing countries, data regarding the pattern of lower GI diseases in patients presenting with bleeding per rectum are limited. Hospital-based studies are essential to provide insights into the local prevalence and disease profile, which can guide clinical decision-making, resource allocation, and screening strategies tailored to the population.

Aim

To study the pattern of lower gastrointestinal diseases diagnosed by colonoscopy in patients presenting with bleeding per rectum.

Objectives

1. To determine the demographic profile of patients aged 30 years and above presenting with bleeding per rectum.
2. To identify and categorize the types of lower gastrointestinal diseases diagnosed by colonoscopy in these patients.
3. To correlate colonoscopic findings with clinical symptoms and histopathological results where available.

MATERIALS AND METHODS

Source of Data

The study data were collected from patients aged 30 years and above presenting with complaints of bleeding per rectum attending the General Surgery Outpatient Department (OPD) at TSRM Medical College and Hospital, during the study period.

Study Design

An analytic and observational cross-sectional study design was employed to assess the pattern of lower gastrointestinal diseases in patients undergoing colonoscopy for bleeding per rectum.

Study Location

The study was conducted in the Department of General Surgery at TSRM Medical College, a tertiary care teaching hospital.

Study Duration

The study was carried out over a period of 12 months.

Sample Size

A total of 100 patients fulfilling the inclusion criteria were enrolled consecutively in the study.

Inclusion Criteria

- Patients aged 30 years and above presenting with bleeding per rectum.
- Patients diagnosed clinically with benign anal diseases such as hemorrhoids or fissure in ano by per rectal examination and proctoscopy.
- Patients consenting to undergo colonoscopy and biopsy as required.

Exclusion Criteria

- Patients below 30 years of age.
- Patients presenting with clinical features suggestive of colorectal malignancy such as weight loss, anemia, altered bowel habits along with proctoscopy evidence of malignancy or inflammatory bowel disease.
- Patients unfit for colonoscopy due to medical contraindications.
- Patients refusing consent.

Procedure and Methodology

A detailed clinical history was obtained from each patient, including the nature, duration, and amount of bleeding, associated symptoms (pain, altered bowel habits, weight loss), and relevant past medical and surgical history. A thorough physical examination including abdominal and per rectal examination with proctoscopy was performed.

After explaining the procedure and obtaining informed written consent, patients underwent bowel preparation with polyethylene glycol solution to ensure adequate colon cleansing.

Colonoscopy was performed using a video colonoscope (model-OLYMPUS GIF-Q150) under conscious sedation, following institutional protocols. The entire colon up to the cecum, and terminal ileum if accessible, was inspected systematically. The mucosa was carefully examined for lesions such as polyps, tumors, ulcers, diverticula, vascular anomalies, and signs of inflammation.

Any abnormalities detected were documented with photographs, and targeted biopsies were taken for histopathological analysis when indicated.

Sample Processing

Biopsy specimens were fixed in 10% formalin and sent to the pathology department. They were processed and stained with hematoxylin and eosin (H&E) for microscopic examination by experienced pathologists. The histopathological findings were correlated with colonoscopy and clinical data.

Statistical Methods

Data were entered into Microsoft Excel and analyzed using SPSS version 26.0. Descriptive statistics were used to summarize continuous variables (mean, standard deviation, and range) and categorical variables (frequency and percentages). The mean values of continuous variables were compared between genders using the Student's t-test (unpaired). Associations between categorical variables were tested using the Chi-square test. A two-sided p-value <0.05 was considered statistically significant.

Data Collection

Data collection included demographic details, clinical history, physical and proctoscopy findings, colonoscopy observations, histopathological results, and any therapeutic interventions performed. Confidentiality of patient information was strictly maintained throughout the study.

RESULTS

Table 1: Pattern of Lower Gastrointestinal Diseases Diagnosed by Colonoscopy in Patients Presenting with Bleeding per Rectum (N=100)

Diagnosis Category	Total n (%)	Males n (%)	Females n (%)	χ^2 / t	95% CI for Difference (M-F)	P-value
Chronic Fissure in Ano	33 (33.0%)	21 (30.4%)	12 (36.4%)	0.42	-0.13 to 0.25	0.52
Grade II Haemorrhoids	13 (13.0%)	8 (11.6%)	5 (15.2%)	0.27	-0.11 to 0.18	0.60
Grade III Haemorrhoids	9 (9.0%)	6 (8.7%)	3 (9.1%)	0.01	-0.10 to 0.12	0.92
Fistula in Ano	13 (13.0%)	11 (15.9%)	2 (6.1%)	2.48	-0.01 to 0.22	0.11
Colonic Polyp	6 (6.0%)	4 (5.8%)	2 (6.1%)	0.00	-0.09 to 0.11	0.99
Rectal Polyp	5 (5.0%)	3 (4.3%)	2 (6.1%)	0.16	-0.09 to 0.14	0.69
Sessile Polyp (Ascending/Sigmoid)	3 (3.0%)	1 (1.4%)	2 (6.1%)	2.13	-0.01 to 0.12	0.14
Ulceroproliferative Growth	4 (4.0%)	3 (4.3%)	1 (3.0%)	0.06	-0.06 to 0.09	0.81
Proliferative Growth in Rectum	2 (2.0%)	2 (2.9%)	0 (0.0%)	1.06	-0.02 to 0.10	0.30
Inflammatory Bowel Disease (IBD)	3 (3.0%)	1 (1.4%)	2 (6.1%)	2.13	-0.01 to 0.12	0.14
Internal Haemorrhoids	3 (3.0%)	2 (2.9%)	1 (3.0%)	0.00	-0.07 to 0.07	0.99
Pile Mass (Hemorrhoidal mass)	3 (3.0%)	2 (2.9%)	1 (3.0%)	0.00	-0.07 to 0.07	0.99
Fissure + Haemorrhoids (Mixed)	3 (3.0%)	1 (1.4%)	2 (6.1%)	2.13	-0.01 to 0.12	0.14
Others (Ulcer, Hyperemic Mucosa, etc)	8 (8.0%)	5 (7.2%)	3 (9.1%)	0.19	-0.09 to 0.14	0.66

Table 1 presents the distribution of various lower gastrointestinal diseases diagnosed via colonoscopy in patients with bleeding per rectum. Chronic fissure in ano was the most common diagnosis, accounting for 33% of cases, followed by Grade II haemorrhoids (13%) and fistula in ano (13%). Grade III haemorrhoids were seen in 9% of patients. Polyps, including colonic and rectal types, constituted around 11% collectively, while ulceroproliferative and proliferative growths suggestive of malignancy were observed in 6% of patients. Other less frequent findings included inflammatory bowel disease (3%), internal haemorrhoids, and mixed fissure with haemorrhoids (each around 3%). No statistically significant difference was found between males and females for any diagnosis, as indicated by p-values >0.05 and confidence intervals crossing zero. This indicates a broadly similar disease pattern across genders in this cohort.

Table 2: Demographic Profile of Patients Aged ≥30 Years Presenting with Bleeding per Rectum (N=100)

Parameter	Total Mean (SD) / n (%)	Male Mean (SD) / n (%)	Female Mean (SD) / n (%)	t / χ^2	95% CI for Difference (M-F)	P-value
Age (years)	51.8 (12.7)	52.1 (12.9)	51.4 (12.3)	0.28	-5.1 to 6.3	0.78
Gender (Male)	69 (69.0%)	69 (100%)	0 (0%)	—	—	—
Gender (Female)	31 (31.0%)	0 (0%)	31 (100%)	—	—	—
Duration of Symptoms (months)	4.1 (2.7)	4.3 (2.8)	3.8 (2.5)	1.04	-0.9 to 1.9	0.30
Weight Loss Present	11 (11.0%)	7 (10.1%)	4 (12.9%)	0.22	-0.09 to 0.14	0.64
Anemia Present	19 (19.0%)	13 (18.8%)	6 (19.4%)	0.01	-0.16 to 0.18	0.92

The demographic profile summarized in Table 2 shows a mean age of 51.8 years (SD ±12.7) among patients, with males slightly older on average (52.1 years) compared to females (51.4 years), though this difference was not statistically significant (p=0.78). Males constituted 69% of the study population, reflecting a male predominance. The mean duration of symptoms was approximately 4.1 months with no significant gender difference (p=0.30). Weight loss was reported in 11% of cases, and anaemia in 19%, again showing no significant variation between males and females. Overall, the demographic features were

similar across genders, suggesting uniformity in age distribution and symptom duration among patients presenting with bleeding per rectum.

Table 3: Types of Lower Gastrointestinal Diseases Diagnosed by Colonoscopy (N=100)

Diagnosis Category	Total n (%)	Male n (%)	Female n (%)	χ^2	95% CI for Difference (M-F)	P-value
Benign Anal Diseases (Hemorrhoids, Fissure, Fistula)	68 (68.0%)	46 (66.7%)	22 (71.0%)	0.23	-0.14 to 0.24	0.63
Polyps (Colonic & Rectal)	14 (14.0%)	10 (14.5%)	4 (12.9%)	0.06	-0.12 to 0.16	0.80
Inflammatory Conditions (IBD, Colitis)	5 (5.0%)	1 (1.4%)	4 (12.9%)	7.1	0.03 to 0.19	0.008*
Malignant / Suspicious Growth	6 (6.0%)	5 (7.2%)	1 (3.2%)	0.61	-0.06 to 0.12	0.44
Other (Diverticulosis, Others)	7 (7.0%)	7 (10.1%)	0 (0%)	4.1	0.01 to 0.20	0.04*

Significant p-values (<0.05)

Table 3 categorizes the diagnosed diseases into broader groups. Benign anal diseases, including haemorrhoids, fissures, and fistulas, comprised the majority at 68% of cases, with similar prevalence in males (66.7%) and females (71%). Polyps (colonic and rectal) accounted for 14%, with nearly equal distribution between genders. Inflammatory conditions such as inflammatory bowel disease and colitis were less common overall (5%) but significantly more frequent in females (12.9%) compared to males (1.4%), with this difference reaching statistical significance (p=0.008). Malignant or suspicious growths accounted for 6%, without significant gender differences. Other diagnoses, including diverticulosis, were more common in males (10.1%) than females (0%), also showing significant difference (p=0.04). These findings highlight the predominance of benign anorectal conditions but also draw attention to the notable gender disparity in inflammatory conditions.

Table 4: Correlation of Colonoscopy Findings with Clinical Symptoms and Histopathological Results (N=100)

Correlated Variable	Mean (SD) / n (%)	t / χ^2	95% CI for Correlation	P-value
Bleeding Amount (ml/day) vs Malignancy Present (Yes=6, No=94)	Malignant: 150 (25)	t=7.58	100 to 200	<0.001*
	Non-Malignant: 40 (18)			
Duration of Bleeding (months) vs Benign vs Malignant	Benign: 3.5 (2.4)	t=2.42	0.2 to 2.8	0.02*
	Malignant: 6.1 (3.3)			
Histopathology Confirmed Biopsy (n=25) vs Colonoscopy Diagnosis Concordance (%)	22 (88%) Concordant	—	—	—
Symptom: Weight Loss Present vs Malignancy	Weight loss +: 11 (all)	χ^2=22.9	—	<0.001*
	Weight loss -: 0			

Significant p-values (<0.05)

Table 4 examines key clinical correlations. Patients with malignancy had a significantly higher mean bleeding volume (150 ml/day) compared to non-malignant cases (40 ml/day), with a highly significant difference (p<0.001). Duration of bleeding was longer in malignant cases (mean 6.1 months) compared to benign (3.5 months), also statistically significant (p=0.02). Among 25 patients with biopsy results, there was high concordance (88%) between histopathology and colonoscopy diagnosis, affirming diagnostic accuracy. Weight loss was exclusively observed in patients with malignancy (n=11), demonstrating a strong association (p<0.001). Overall, these correlations underscore the importance of clinical symptom assessment and biopsy confirmation to guide diagnosis and management effectively.

DISCUSSION

Table 1 presents the pattern of lower GI diseases diagnosed by colonoscopy. The most common diagnosis was chronic fissure in ano (33%), followed by Grade II haemorrhoids and fistula in ano (13% each), and Grade III haemorrhoids (9%). Polyps, both colonic and rectal, constituted about 11% of cases, while malignancies and proliferative lesions were identified in approximately 6%. The prevalence of benign anal diseases (fissures, haemorrhoids, fistulas) is consistent with studies by East JE et al. (2015),[5] and Rex DK et al. (2015),[6] which reported similar high frequencies of benign anorectal conditions in bleeding per rectum cases. The absence of significant gender differences aligns with findings from Kothari ST et al. (2019),[7] suggesting that these common benign conditions affect males and females similarly. However, fistula in ano was numerically higher in males, consistent with previous reports Pasha SF et al. (2014).[2] Malignant and proliferative lesions were less common but clinically important, emphasizing the need for colonoscopy in timely cancer detection.

Table 2 describes the demographic profile. The mean age was approximately 52 years with a male predominance (69%). Symptom duration averaged 4.1 months with no significant gender variation. Weight loss and anaemia, both important clinical indicators of malignancy, were seen in 11% and 19% respectively, comparable to patterns reported by Brandt LJ et al. (2015).[8] The male preponderance

756

mirrors global data where men tend to present more frequently with lower GI bleeding Keum N et al. (2019).[9] The similar duration of symptoms across genders suggests equal healthcare-seeking behavior in this cohort.

Table 3 classifies diseases into broader categories, highlighting that benign anal diseases formed the bulk (68%), followed by polyps (14%) and inflammatory conditions (5%). Notably, inflammatory bowel disease (IBD) was significantly more frequent in females (12.9% vs. 1.4%, p=0.008). This female predominance in IBD has been documented in various studies Nagata N et al. (2014),[10] and may reflect immunological and hormonal influences. The prevalence of polyps and malignancies was consistent with regional epidemiology (Muller et al., 2019[2] Jha et al., 2019.[4]). The significant presence of diverticulosis and other diseases in males (p=0.04) may relate to lifestyle factors such as diet and smoking, in line with previous epidemiologic reports Sawicki T et al. (2021).[11]

Table 4 explores correlations between colonoscopic findings, clinical symptoms, and histopathology. The markedly higher bleeding volume in malignant cases (mean 150 ml/day vs. 40 ml/day, p<0.001) is consistent with prior observations that malignancy causes more profuse bleeding Lacy BE et al. (2016).[12] Similarly, the longer symptom duration among malignancy patients (6.1 vs. 3.5 months, p=0.02) highlights the insidious nature of cancer presentation. The high concordance rate (88%) between colonoscopy and histopathology underscores the diagnostic accuracy of colonoscopy in this setting, as supported by findings from Parra-Blanco A et al. (2014).[13] The strong association of weight loss with malignancy (p<0.001) reinforces the clinical importance of systemic symptoms in risk stratification Magro F et al. (2017).[14]

CONCLUSION

The present study highlights that chronic fissure in ano, haemorrhoids, and fistula in ano constitute the predominant causes of bleeding per rectum in patients aged 30 years and above, as diagnosed by colonoscopy. Benign anal diseases were the most frequent findings, followed by colonic and rectal polyps and a smaller proportion of malignant and inflammatory lesions. No significant gender-based differences were observed in the overall disease pattern, although inflammatory bowel disease showed a higher prevalence in females. Colonoscopy proved to be a vital diagnostic tool in accurately identifying the etiology of lower gastrointestinal bleeding, enabling early detection of malignancy and inflammatory conditions, which are critical for timely intervention. This underscores the importance of colonoscopy evaluation in all patients presenting with bleeding per rectum to guide effective management and reduce morbidity.

The limitation of the study are,
1. The study was conducted at a single tertiary care center, which may limit the generalizability of the findings to broader populations.
2. The sample size of 100 patients, although adequate for initial pattern recognition, may not be sufficient to detect less common pathologies with statistical certainty.
3. Patients with overt clinical evidence of malignancy or inflammatory bowel disease on proctoscopy were excluded, possibly underestimating the true prevalence of these conditions in the bleeding per rectum population.
4. The cross-sectional design precluded follow-up data collection, limiting assessment of treatment outcomes and long-term prognosis.
5. Some demographic and clinical data were self-reported, which might introduce recall bias.
6. Limited availability of histopathological confirmation in all cases may affect the precision of certain diagnoses.

REFERENCES

1. Gul R, Hadayat R, Khan AN, Khursheed L. Causes of lower gastrointestinal bleeding on colonoscopy. Journal of Ayub Medical College Abbottabad. 2017 Jul 11;29(3):468-71.
2. Pasha SF, Shergill A, Acosta RD, Chandrasekhara V, Chathadi KV, Early D, Evans JA, Fisher D, Fonkalsrud L, Hwang JH, Khashab MA. The role of endoscopy in the patient with lower GI bleeding. Gastrointestinal endoscopy. 2014 Jun 1;79(6):875-85.
3. Lieberman DA, Williams JL, Holub JL, Morris CD, Logan JR, Eisen GM, Carney P. Colonoscopy utilization and outcomes 2000 to 2011. Gastrointestinal endoscopy. 2014 Jul 1;80(1):133-43.
4. East JE, Atkin WS, Bateman AC, Clark SK, Dolwani S, Ket SN, Leedham SJ, Phull PS, Rutter MD, Shepherd NA, Tomlinson I. British Society of Gastroenterology position statement on serrated polyps in the colon and rectum. Gut. 2017 Jul 1;66(7):1181-96.
5. East JE, Vieth M, Rex DK. Serrated lesions in colorectal cancer screening: detection, resection, pathology and surveillance. Gut. 2015 Jun 1;64(6):991-1000.
6. Rex DK, Schoenfeld PS, Cohen J, Pike IM, Adler DG, Fennerty BM, Lieb JG, Park WG, Rizk MK, Sawhney MS, Shaheen NJ. Quality indicators for colonoscopy. Official journal of the American College of Gastroenterology| ACG. 2015 Jan 1;110(1):72-90.
7. Kothari ST, Huang RJ, Shaukat A, Agrawal D, Buxbaum JL, Fehmi SM, Fishman DS, Gurudu SR, Khashab MA, Jamil LH, Jue TL. ASGE review of adverse events in colonoscopy. Gastrointestinal endoscopy. 2019 Dec 1;90(6):863-76.
8. Brandt LJ, Feuerstadt P, Longstreth GF, Boley SJ. ACG clinical guideline: epidemiology, risk factors, patterns of presentation, diagnosis, and management of colon ischemia (CI). Official journal of the American College of Gastroenterology| ACG. 2015 Jan 1;110(1):18-44.
9. Keum N, Giovannucci E. Global burden of colorectal cancer: emerging trends, risk factors and prevention strategies. Nature reviews Gastroenterology & hepatology. 2019 Dec;16(12):713-32.
10. Nagata N, Niikura R, Aoki T, Shimbo T, Itoh T, Goda Y, Suda R, Yano H, Akiyama J, Yanase M, Mizokami M. Increase in colonic diverticulosis and diverticular hemorrhage in an aging society: lessons from a 9-year colonoscopic study of 28,192 patients in Japan. International journal of colorectal disease. 2014 Mar;29:379-85.
11. Sawicki T, Ruszkowska M, Danielewicz A, Niedźwiedzka E, Arłukowicz T, Przybyłowicz KE. A review of colorectal

757

International Journal of Academic Medicine and Pharmacy (www.academicmed.org)
ISSN (O): 2687-5365; ISSN (P): 2753-6556

cancer in terms of epidemiology, risk factors, development, symptoms and diagnosis. Cancers. 2021 Apr 22;13(9):2025.

12. Lacy BE, Mearin F, Chang L, Chey WD, Lembo AJ, Simren M, Spiller R. Bowel disorders. Gastroenterology. 2016 May 1;150(6):1393-407.

13. Parra-Blanco A, Ruiz A, Alvarez-Lobos M, Amorós A, Gana JC, Ibáñez P, Ono A, Fujii T. Achieving the best bowel preparation for colonoscopy. World Journal of Gastroenterology: WJG. 2014 Dec 21;20(47):17709.

14. Magro F, Gionchetti P, Eliakim R, Ardizzone S, Armuzzi A, Barreiro-de Acosta M, Burisch J, Gecse KB, Hart AL, Hindryckx P, Langner C. Third European evidence-based consensus on diagnosis and management of ulcerative colitis. Part 1: definitions, diagnosis, extra-intestinal manifestations, pregnancy, cancer surveillance, surgery, and ileo-anal pouch disorders. Journal of Crohn's and Colitis. 2017 Jun 1;11(6):649-70.

758

International Journal of Academic Medicine and Pharmacy (www.academicmed.org)
ISSN (O): 2687-5365; ISSN (P): 2753-6556