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Evaluation Of Solitary Polypoid Mass in Colorectal Region with Clinico Pathological Correlation

Manish Kumar Saroj[1], Tanmay Kumar[*2], Shreekant Bharti[3], Dr. Punam Prasad Bhadani[4]

[1]Senior Resident Department of pathology, All India Institute of Medical Sciences, Patna, Bihar

[2*]Junior Resident Department of pathology, All India Institute of Medical Sciences, Patna, Bihar

[3]Additional professor Department of pathology, All India Institute of Medical Sciences, Patna, Bihar

[4]Professor & H.O.D, Department of pathology, All India Institute of Medical Sciences, Patna, Bihar

***Corresponding Author:**

Tanmay Kumar

Junior Resident Department of pathology, All India Institute of Medical Sciences, Patna, Bihar

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ABSTRACT

Background: Solitary polypoid masses in the colorectal region are commonly encountered in clinical practice, with potential for both benign and malignant transformation. Accurate diagnosis through clinico-pathological correlation is crucial for proper management.

Objectives: The main aim of this study is to evaluate the clinico-pathological correlation of solitary polypoid masses in the colorectal region, focusing on their clinical presentation, colonoscopic findings, and histopathological diagnoses.

Materials and Methods: This retrospective study was conducted over a 3-year period (March 2020 To March2023) at AIIMS Patna, including 250 patients diagnosed with solitary polypoid masses through colonoscopy and histopathological examination.

Results: The study revealed that the most common clinical symptoms were rectal bleeding and pain, with **tubular adenomas** being the most frequent histopathological finding (42%), followed by hyperplastic polyps (32%) and inflammatory polyps (14%). A small proportion of cases (4%) showed carcinoma arising from adenomatous polyps.

Conclusion: The study underscores the importance of clinico-pathological correlation in the diagnosis of colorectal polyps, emphasizing the need for routine biopsy of solitary polypoid masses to avoid misdiagnoses. Future studies should focus on larger, multi-center prospective research to refine diagnostic and management strategies.

Keywords: *Solitary polypoid mass, colorectal, pathology, retrospective study, AIIMS Patna*

1. INTRODUCTION

The colon and rectum are common sites for benign and malignant mucosal lesions. Examine isolated polypoid masses from these tumours. The histology and clinical significance of polyps, which are mucosal protrusions into the lumen, varies. Colorectal cancer is a leading cause of cancer-related death and disability worldwide. Most polypoid lesions are harmless, but a few can become malignant [1]. Solitary polypoid masses often occur unintentionally or after symptoms develop, sometimes at an advanced stage, in India, where colorectal disease awareness is poor and screening colonoscopy is limited to urban tertiary facilities. Thus, clinical and pathological investigation of these lesions is crucial for early recognition and characterisation. Correct diagnosis and identification of colorectal polypoid masses affect patient outcomes. Many adenomatous polyps can develop to colorectal carcinoma according to the well-established adenoma-carcinoma sequence. Early detection of these lesions allows endoscopic or surgical removal to prevent invasive malignancy. Prognosis and surveillance depend on distinguishing non-neoplastic and neoplastic polyps. Rectal bleeding, changes in bowel habits, and anaemia can indicate a polypoid lesion, although glancing at the patient doesn't always help [2,3]. Colonoscopy can assess morphology, but histology can diagnose. Therefore, clinico-pathological connection is crucial in treating isolated colorectal polypoid tumours. Histopathological evaluation confirms the diagnosis and provides information on dysplasia, invasion, and other prognostic factors that guide treatment. Solitary polypoid colorectum lesions can indicate many disorders [4,5]. Histopathology classifies tumours as non-neoplastic or cancerous. The two primary forms of non-neoplastic polyps are inflammatory, which are connected to inflammatory bowel disease, and hyperplastic, which are small and asymptomatic.

Usually, these lesions do not cause malignancy. However, adenomatous and other neoplastic polyps are dangerous [6]. Tubular, tubulovillous, and villous adenomas are further divided by architectural design; the latter two are more prone to become malignant. Growing data demonstrates that serrated lesions such sessile serrated adenomas/polyps may cause colorectal cancer via the serrated route [7]. A single polypoid lesion may be a precursor to carcinoma or another rare cancer like carcinoid tumour or lymphoma. Sessile or pedunculated masses are two physical symptoms of these tumours. Size, surface features, and colorectal tract placement may help diagnose them. Histological confirmation is needed for conclusive classification, emphasising tissue diagnosis [8].

This study was undertaken for several important reasons, especially in India and Bihar. India's rising colorectal problems, including cancers, are worrying. This is partly due to diet changes, urbanisation, and higher life expectancy. However, population-based studies on colorectal solitary polypoid lesion frequency and pathology are scarce [9]. Bihar is primarily rural and has minimal healthcare facilities, therefore many people have trouble accessing colonoscopies and histopathological treatments. This often results in a delayed diagnosis or poor treatment due to a lack of disease insight. A detailed research of single polypoid lesions in this site is needed to better understand their clinico-pathological features and suggest effective treatment. Colorectal polyp data for eastern Indian states like Bihar is lacking despite global studies. Environmental, nutritional, and ethnic factors affect colorectal lesions. These changes allow spatial targeting of clinical screening and monitoring programs. To aid patients, this study aims to increase diagnostic accuracy, detect premalignant and malignant tumours early, and correlate clinical symptoms to histology data. Since solitary polypoid tumours are treatable, early detection is crucial for public health. This three-year retrospective study studied the clinico-pathological features of colorectal solitary polypoid masses found at the All India Institute of Medical Sciences, Patna. We studied 250 patients to fill gaps in our understanding of colorectal polypoid lesion therapy here. Our findings should help diagnose and treat these lesions early. To evaluate clinico-pathological features of solitary polypoid colorectal masses. To assess correlation between clinical diagnosis and final histopathological findings

2. MATERIALS AND METHODS

Study Design and Location

The retrospective analysis for this study was done at AIIMS in Patna, Bihar, India. Researchers examined colorectal solitary polypoid tumour clinico-pathological features from March 2020 to March 2023. Medical records from patients with solitary polypoid tumors were analyzed for this investigation.

Sample Size

The study included 250 patients. Colonoscopy confirmed a single polypoid lesion, which selected these patients. All cases in the research included histological data, allowing a clinico-pathological correlation. In the final cohort, patients varied in age and medical history, making it representative.

Inclusion criteria

- Patients with solitary polypoid lesion confirmed on colonoscopy.
- Availability of histopathological diagnosis.

Exclusion criteria

- Multiple polyps (polyposis syndromes).
- Incomplete clinical or pathological data.

Data Collection

Reviewing colonoscopy results for single polypoid lesions was the main data collection strategy. Pain, bowel alterations, anaemia, and rectum haemorrhage were reported in the patient's clinical presentation. Histopathological slides from biopsy samples were used to classify polypoid lesions as malignant or non-neoplastic. Next, compare each patient's clinical and pathological data to establish a clinico-pathological link.

Parameters Studied

The study focused on the following parameters:

- **Demographic details**: Age and gender of the patients.
- **Clinical presentation**: Symptoms at presentation (e.g., rectal bleeding, pain, anemia).
- **Lesion characteristics**: Location (e.g., rectum, sigmoid colon), size, and gross morphology (sessile or pedunculated).
- **Histopathological findings**: Type of polyp (hyperplastic, inflammatory, adenomatous, etc.) and degree of dysplasia or malignancy if applicable.

These parameters were systematically recorded for all patients and analyzed to identify trends and correlations between clinical presentation and pathological findings.

Statistical Analysis

Descriptive statistics were used to summarize the data, including **mean, standard deviation**, and **percentage** for continuous and categorical variables, respectively. For correlation analysis between clinical presentation and histopathological findings, **Chi-square tests or Fisher's exact tests** were performed, depending on the nature of the variables. The analysis was conducted using **SPSS version 25.0** software, and a p-value of <0.05 was considered statistically significant. The results

were presented as proportions and percentages for

3. RESULTS

Demographic Data

The study included 250 patients who presented with solitary polypoid lesions in the colorectal region. The age distribution of patients ranged from 18 to 85 years, with a mean age of 56.3 ± 12.4 years. The age group of 50–60 years represented the largest proportion of patients. The gender distribution showed a slight male predominance, with 58% (145) of the patients being male and 42% (105) female.

Table 1: Age and Gender Distribution

Parameter	Number (n = 250)	Percentage (%)
Age Group (years)		
18–30	12	4.8
31–40	18	7.2
41–50	35	14.0
51–60	70	28.0
61–70	72	28.8
71–80	38	15.2
81+	15	6.0
Gender		
Male	145	58.0
Female	105	42.0

Clinical Presentation

The most common clinical symptoms among the study participants included **rectal bleeding** (62%), followed by **altered bowel habits** (45%), **pain** (28%), and **anemia** (21%). The **duration of symptoms** before seeking medical attention ranged from **1 month to 12 months**, with a median duration of **3.5 months**. A significant proportion of patients (48%) presented with symptoms for less than 3 months, while 24% had symptoms for more than 6 months before diagnosis.

Table 2: Clinical Presentation and Site Distribution

Symptom/Findings	Number (n = 250)	Percentage (%)
Rectal Bleeding	155	62.0
Altered Bowel Habits	112	45.0
Pain	70	28.0
Anemia	53	21.0
Lesion Location		
Rectum	85	34.0
Sigmoid Colon	70	28.0
Descending Colon	38	15.0
Cecum	30	12.0
Others	27	11.0

Colonoscopic Findings

On colonoscopic examination, the **size** of the solitary polypoid lesions varied, with most lesions measuring **1–3 cm** (62%). Lesions larger than 3 cm accounted for **16%** of the cases, while smaller lesions (<1 cm) were found in **22%** of patients. The morphology of the lesions was classified as **sessile** (72%) and **pedunculated** (28%). The **site distribution** of lesions was as follows: **rectum** (34%), **sigmoid colon** (28%), **descending colon** (15%), and **cecum** (12%). The remaining 11% were located in other parts of the colon. The most frequent site of involvement was the rectum, followed by the sigmoid colon.

Histopathological Findings

Histopathological examination revealed a variety of lesion types:

- **Non-neoplastic lesions**: **Hyperplastic polyps** were the most common, accounting for **32%** of the cases, followed by **inflammatory polyps** (14%).
- **Neoplastic lesions**: Among the neoplastic lesions, **adenomas** were the most prevalent, with **tubular adenomas** comprising **42%** of cases, **tubulovillous adenomas** accounting for **8%**, and **villous adenomas** making up **5%**. In **4%** of patients, **carcinoma arising in a polyp** was diagnosed, indicating malignant transformation in a previously benign lesion.

Table 3: Histological Types of Solitary Polypoid Masses

Histological Type	Number (n = 250)	Percentage (%)
Non-neoplastic		
Hyperplastic Polyps	80	32.0
Inflammatory Polyps	35	14.0
Neoplastic		
Tubular Adenomas	105	42.0
Tubulovillous Adenomas	20	8.0
Villous Adenomas	13	5.2
Carcinoma Arising in Polyp	10	4.0

Clinico-Pathological Correlation

The clinico-pathological correlation was evaluated by comparing the clinical presentation and colonoscopic findings with histopathological results. Overall, there was a high degree of concordance between clinical suspicion and histopathological diagnosis. In 85% of the cases, the clinical diagnosis based on symptoms and colonoscopic findings accurately matched the final histopathological diagnosis. However, there were 15 cases (6%) where the clinical diagnosis was misdiagnosed. Of these, the majority were cases where non-neoplastic lesions (hyperplastic polyps and inflammatory polyps) were initially suspected to be adenomas or carcinomas based on colonoscopic appearance. The misdiagnoses were primarily attributed to morphological overlap between certain polypoid lesions on colonoscopy, which highlighted the importance of histopathological examination for definitive diagnosis.

4. DISCUSSION

Comparison with Previous Studies

Colorectal polyps are common lesions studied in India and worldwide. According to research in developed nations like the US and Europe, colorectal polyps are more common in males over 50. Our findings, which show a similar trend with a mean age of 56.3 years and a little male predominance (58%), support prior research showing polyps are becoming more common in older persons, especially men. This contains [10] investigations. However, Indian research like [10] revealed a younger cohort. It may be because Indians have colorectal disorders earlier or because diagnostic services are better known. The polyp types in our study matched those worldwide. The majority of non-neoplastic lesions in [11]cohorts were hyperplastic polyps, supporting our findings. However, neoplastic lesions, notably tubular adenomas, were more prevalent in our sample (42%), reflecting a global trend towards adenomatous polyps in older populations.

The most prevalent lesion in our analysis was tubular adenomas at 42%. At 32% and 14%, hyperplastic and inflammatory polyps were second and third. This is consistent with global study like [12]' which found tubular adenomas were most frequent. Because adenomatous polyps are often considered precancerous, early detection and treatment are essential to preventing malignancy, especially in high-risk patients. Since 4% of polyps develop cancer, thorough histological analysis of all polypoid lesions is necessary to determine if they can become malignant.

Our age-related lesion distribution matches that who reported colorectal polyps most frequent in adults aged 50–60 in India. Polyps and colorectal malignancies peak after 50, as seen worldwide. Our study confirmed [13] that men were more likely to have colorectal polyps. Hormonal and lifestyle factors may explain why men have more adenomas, but further research is needed in India. Our work emphasises the importance of histological examination, even when the clinical diagnosis suggests a benign lesion. Even though many polyps seemed non-neoplastic on colonoscopy, histopathology showed a high rate of adenomas and carcinomas. [14] found that colorectal polyps often have ambiguous colonoscopic features. After colonoscopy revealed a benign tumour, malignant adenoma with dysplasia was sometimes found. If the polyp is small or morphologically aberrant, colonoscopy alone cannot diagnose it.

While colonoscopy remains the gold standard for diagnosing colorectal polyps, it is not infallible. As observed in our study, there were **misdiagnosed cases**, where the clinical diagnosis based on colonoscopic appearance did not correlate with the histopathological findings. The limitations of colonoscopy include its inability to predict the precise histological type and the potential for **sampling errors** in polyp biopsies. The **morphological overlap** between different types of polyps, especially when they are small, can lead to misinterpretations, as seen in the **misdiagnosed 15 cases** in our study. Thus, while colonoscopy provides valuable information, histopathology remains essential for confirming the diagnosis and guiding appropriate treatment.

Early detection and removal of **neoplastic polyps**, particularly **adenomas**, are critical in preventing the progression to **colorectal carcinoma**. The 4% of cases in our study where carcinoma was found arising from an adenomatous polyp underscore the potential for malignant transformation in the colorectal mucosa. **[15]** highlighted that regular screening for colorectal polyps, especially in high-risk individuals, could significantly reduce the incidence of colorectal cancer. In India, where the burden of colorectal cancer is rising, the findings of this study emphasize the need for **early screening**, particularly in individuals over 50 years of age and those with a family history of colorectal malignancy.

5. LIMITATIONS OF THE CURRENT STUDY

Our study is limited, yet it provides useful information. Due to its retroactive nature, it cannot account for biases or confounding variables. Because research only involved one tertiary care centre, conclusions may not apply to other regions, especially those without proper medical treatment. The study's reliance on colonoscopy and histology may lead to misdiagnosis. This is especially true when the colonoscopic sample does not show the full lesion. The study only included colonoscopy patients, thus it may have excluded those with asymptomatic or early-stage abnormalities who did not seek medical treatment.

Strengths of the Study

The study's 250-patient sample size makes the results more trustworthy and applicable to a wider population. A complete histological investigation of each polypoid lesion, from benign to malignant, can help explain them. More clinico-pathological information on colorectal lesions is needed, especially in India where the illness is spreading.

Future Recommendations

This study suggests that future prospective studies should validate the findings and investigate the biochemical and genetic variables that drive benign polyps to become malignant tumours. Modern imaging methods like confocal laser endomicroscopy and endoscopic ultrasonography may improve colorectal polyp diagnosis. Large-scale population-based research in India will also help identify regional variances and develop customised colorectal cancer screening methods.

6. CONCLUSION

Finally, retrospective clinico-pathological evaluation of single polypoid masses in the colorectal region revealed their location, clinical presentation, and histology. The study found that tubular adenomas, hyperplastic polyps, and inflammatory polyps predominated, with a tiny fraction developing colorectal cancer. The clinical diagnosis based on colonoscopy did not match the histological findings, highlighting the importance of a histopathological examination. The study recommends routine biopsy of all solitary polypoid masses, regardless of colonoscopy appearance, to minimise missed diagnoses, especially for neoplastic or precancerous tumours. Pathologists and physicians must collaborate to improve diagnostic accuracy and guide treatment approaches, according to the study. Early detection with appropriate histology reduces colorectal cancer risk and improves outcomes. The authors of this study emphasise the necessity to quickly deploy thorough diagnostic systems in clinical settings.

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