

Histomorphology Profile of Non-Neoplastic Polypoid Lesions of the Colon

Nupur A Kulkarni¹, M W Pujari²

¹Assistant Professor, Prakash Medical College and Research Centre, Uran-Ishwarpur (Islampur) Dist- Sangli, Maharashtra

²Assistant Professor, Prakash Medical College and Research Centre, Uran-Ishwarpur (Islampur) Dist- Sangli, Maharashtra

Corresponding Author: Dr. Nupur A Kulkarni

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ABSTRACT

Introduction: A polyp is a mass protruding into the lumen of a hollow viscus. Colonic polyps may be sessile or pedunculated and are classified as neoplastic or non-neoplastic. While most are asymptomatic, some can cause bleeding, pain, obstruction, and have malignant potential. Histopathological evaluation is essential for early diagnosis and reducing colorectal cancer-related morbidity and mortality.

Material & Methods: This prospective study was conducted in the Department of Pathology, a tertiary care centre in Maharashtra, over two years (May 2013–April 2015). A total of 100 colonoscopic biopsy specimens were fixed in 10% buffered formalin, processed, and stained with Haematoxylin and Eosin. Standard tissue processing included dehydration in graded alcohol, clearing with xylene, paraffin embedding, microtome sectioning at 4 µm, slide mounting with glycerol egg albumin, and H&E staining. Microscopic examination was performed to classify and study histomorphology.

Results: Out of 15 non-neoplastic polypoid lesions, females comprised 53.33% and males 46.66% (p = 0.9, not significant). Most cases were below 10 years of age (33.33%), decreasing in older groups (p = 0.54). Descending colon (33.33%) and rectum (26.66%) were the most affected sites (p = 0.25). Histopathologically, juvenile polyps predominated (53.33%), followed by hyperplastic (33.33%) and inflammatory polyps (13.33%) (p = 0.5).

Conclusion: Non-neoplastic colonic polypoid lesions are predominantly benign, with juvenile polyps being the most common. The lesions occur mainly in younger age groups and slightly more in females, affecting the descending colon and rectum most frequently. Early histopathological evaluation facilitates accurate diagnosis, guides management, prevents complications, and may reduce colorectal morbidity, emphasizing the importance of timely detection and treatment.

Keywords: Colo-rectal, Neoplasm, Polyp, Histopathological

INTRODUCTION

A polyp is defined as a localized mass that protrudes into the lumen of a hollow viscus, such as the colon¹. Colonic polyps may present as sessile, arising directly from the mucosal surface, or pedunculated, extending on a fibrovascular stalk. Based on histology,

they are classified as neoplastic, which have malignant potential, or non-neoplastic, which are generally benign². Although most polyps are asymptomatic, some can lead to clinical manifestations including gastrointestinal bleeding, abdominal pain, changes in bowel habits, or, rarely, intestinal

obstruction³. Early identification and histopathological evaluation of these lesions are essential for timely intervention and prevention of progression to colorectal cancer, a major cause of morbidity and mortality worldwide⁴. The present study was conducted to examine the histomorphological characteristics of non-neoplastic colonic polyps. Additionally, it aimed to analyse the demographic profile of affected patients, including age and sex distribution, as well as the anatomical location of polyps within the colon, providing insights into their prevalence, site predilection, and clinical significance.

MATERIALS AND METHODS

This prospective study was conducted in the Department of Pathology, Dr. D.Y. Patil Medical College, Hospital, and Research Institute, Kolhapur, over a period of two years from May 2013 to April 2015. A total

of 100 colonoscopy punch biopsy specimens were collected in 10% buffered formalin, and relevant clinical data, including age, sex, chief complaints, and laboratory investigations, were obtained from requisition forms accompanying the specimens. The collected tissues were fixed in 10% buffered formalin for 12–24 hours, followed by dehydration in three changes of graded alcohol and two changes of acetone⁵. Clearing was performed using xylene, and tissues were embedded in paraffin wax at 60°C. Sections of 4 µm thickness were prepared using a microtome and floated on a water bath at 60°C before being mounted on slides. Finally, all sections were stained with Haematoxylin and Eosin (H&E) for histopathological examination to study the morphology and classify the colonic polypoid lesion^{6,7}

RESULTS

Table 1: Incidence of Neoplastic and Non-Neoplastic Polypoid Lesions of Colon

Type	Number of Cases	Percentage (%)
Non-Neoplastic	15	15
Neoplastic – Benign	44	44
Neoplastic – Malignant	41	41
Total	100	100

Table 1 highlights that the, non-neoplastic lesions were less common (15%) compared to neoplastic polyps. Among neoplastic lesions, benign polyps (44%) were slightly more frequent than malignant ones (41%). Statistical analysis showed no significant

difference in distribution among these types (p = 0.49). This indicates that neoplastic polyps constitute the majority of colonic polypoidal lesions, highlighting the importance of histopathological evaluation for early detection and management.

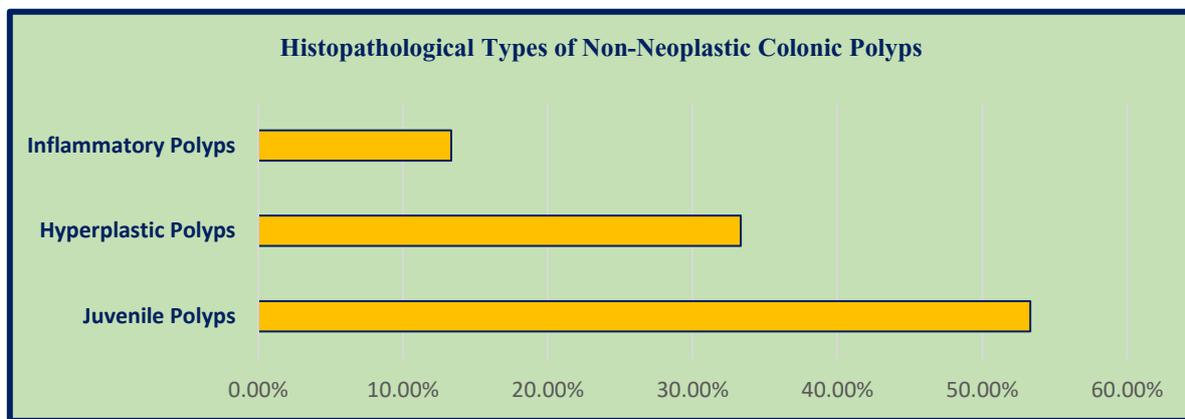


Figure 1, depicts, that Juvenile polyps were predominant among non-neoplastic colonic lesions, followed by hyperplastic and inflammatory polyps, reflecting the typical distribution observed in this study.

Table 2: Age Distribution of Non-Neoplastic Polypoid Lesions of Colon

Age Group (Years)	Number of Cases	Percentage (%)
<10	5	33.33
11–20	3	20.00
21–30	2	13.33
31–40	3	20.00
41–50	1	6.66
51–60	1	6.66
61–70	–	–
71–80	–	–
81–90	–	–
>90	–	–
Total	15	100

The data in table 2, underlines the fact that, most non-neoplastic colonic polyps occurred in children under 10 years of age (33.33%), followed by the 11–20 and 31–40 age groups (20% each). Fewer cases were observed in

the 21–30, 41–50, and 51–60 age groups, while no lesions were reported above 60 years. This indicates that non-neoplastic polyps are more common in younger individuals.

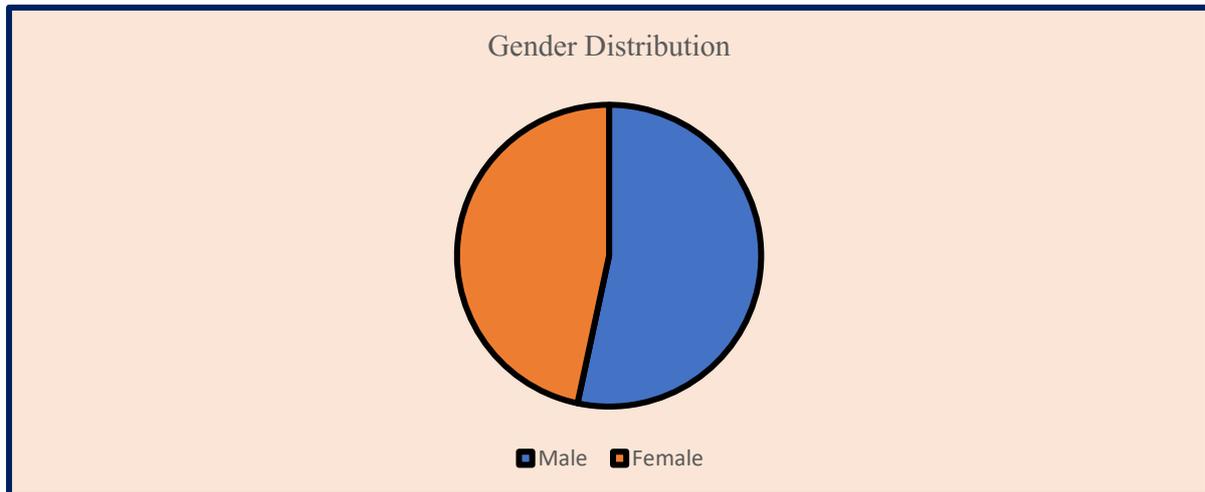


Figure 2, depicts that slight female predominance was observed, with 53.33% of cases occurring in females and 46.66% in males.

Table 3: Site distribution of non-neoplastic polypoid lesions of colon

Site	Number of Cases	Percentage (%)
Caecum	–	–
Ascending colon	3	20.00
Transverse colon	2	13.33
Descending colon	5	33.33
Sigmoid colon	1	6.66
Rectum	4	26.66
Total	15	100

The descending colon (33.33%) was the most affected site, followed by the rectum (26.66%) and ascending colon (20%). Fewer cases were observed in the transverse and sigmoid colon, while no lesions were reported in the caecum. Statistical analysis

showed no significant association between site and occurrence of lesions ($p = 0.25$).

DISCUSSION

The present study reveals that non-neoplastic polypoid lesions of the colon constituted 15% of all cases, whereas neoplastic lesions

(benign and malignant combined) accounted for the remaining 85%. This finding underscores that neoplastic polyps are considerably more common than non-neoplastic ones. The predominance of neoplastic lesions highlights the need for meticulous histopathological evaluation of all colonic polypoid lesions to ensure early detection and appropriate management, thereby preventing malignant transformation. Our observations are consistent with previous studies conducted by Sohrabi, Albarisi, Wisedopas et al.⁸⁻¹⁰, all of which reported a higher incidence of neoplastic lesions compared to non-neoplastic ones. The similarity in findings across multiple studies reinforces the global trend of neoplastic predominance among colonic polyps.

In the present study, juvenile polyps were the most common non-neoplastic colonic lesions (53.33%), followed by hyperplastic (33.33%) and inflammatory polyps (13.33%). This distribution closely aligns with previous studies¹¹. Previous studies observed that juvenile polyps were predominant among non-neoplastic lesions, showing cystic glandular dilatation and regenerative changes typical of benign pathology. Similarly, Fang et al. (2023)¹² reported juvenile polyps as the most frequent type in paediatric populations, comprising nearly 89% of non-neoplastic lesions. These findings reinforce the predominance of juvenile polyps and highlight their benign, non-neoplastic nature¹³.

In the present study, the mean age of presentation for non-neoplastic colonic polypoid lesions was 28.5 years, indicating a younger age of occurrence compared to findings from other studies, conducted¹⁴⁻¹⁶ by ShresthaR, Zafar, U Mandhan et al. respectively. Cases of hyperplastic polyps were mainly seen in the 3rd and 5th decades, while inflammatory polyps appeared in the 4th decade, showing a wide variation in age distribution¹⁷. This variation may be attributed to differences in sample size, regional demographics, and referral patterns.

When compared with studies by Mandhan et al.¹⁶ and Waitakayakul et al.¹⁸ both reported a male predominance (64.9% and 53.7%, respectively), while the present study showed a slight female preponderance (53.33%). This contrast may reflect geographical and population-based differences, as well as variations in dietary, hormonal, or genetic factors influencing the development of colonic polyps.

In the present study, the descending colon (33.33%) was the most frequently involved site for non-neoplastic polypoid lesions, followed by the rectum (26.66%), ascending colon (20%), and transverse colon (13.33%), with the sigmoid colon (6.66%) being the least affected¹⁹. These findings show partial agreement with the study by Gencosmanoglu et al.²⁰, who reported that the rectosigmoid region was the most common site for colorectal polyps in a large Turkish cohort. While their study found a predominance of lesions in the distal colon, our results demonstrated a higher frequency in the descending colon. Overall, both studies emphasize the tendency of non-neoplastic polyps to occur predominantly in the left colon, underscoring the importance of thorough distal colonic evaluation during colonoscopy.

CONCLUSION

Non-neoplastic polypoid lesions of the colon are benign and commonly occur in the first decade of life, with juvenile polyps being the predominant type. Early diagnosis and management are essential to prevent complications such as bleeding and obstruction. This study provides baseline data for understanding the prevalence and histomorphology of non-neoplastic polypoid lesions in the colon, which can aid in improving diagnostic and therapeutic approaches.

Declaration by Authors

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Conflict of Interest: The authors declare no conflict of interest.

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