

## A Histomorphological Study of Polyps And Polypoid Lesions Of Gastrointestinal Tract From South India

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**Abstract:** Polyps of gastrointestinal tract (GIT) form a composite group with varied morphology, clinical presentation and course of disease. Although polyps of GIT may occur in any age, they are common in the 6th to 7th decade. They may be seen in oesophagus, stomach and small intestine but are most commonly seen in the colon. They may arise as a result of inflammation, ectopia, hamartomatous or neoplastic proliferation. Aims and objectives: This study aims at studying the polyps and polypoid lesions of gastrointestinal tract, with reference to the incidence, distribution, morphology and their association with cancers in a tertiary care centre of Southern India. Methods: 452 specimens of polyps and polypoid lesions were studied with respect to their location, presentation, morphology and association with cancer. Results: Hyperplastic polyps were the commonest type of polyps in the stomach and small intestine, while adenomatous polyps dominated in the colon. The left colon was affected more than the right side. Tubular adenomas were the commonest type. 5 cases of adenomatous polyposis coli and 5 cases of polyps with malignant change were seen. Conclusion: Colorectal tubular adenomatous polyps are the commonest polyps in South India. Cost effective screening techniques are required for early detection of malignant change.

**Key words:** colonic polyp, adenoma, hyperplastic polyp, colorectal cancer.

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### I. Introduction

A polyp is a tumorous mass that projects above the surrounding mucosa and protrudes into the lumen of the gut. Majority of the GIT polyps are sporadic in nature. Familial polyposis syndromes are rare autosomal dominant syndromes with a high propensity for malignant transformation. They usually present with multiple polyps and show early conversion to malignancy. Sporadic polyps may be asymptomatic, being discovered only in autopsy studies or symptomatic, sometimes with serious complications such as intussusception. They may also be manifestations of benign or malignant neoplasms, underscoring the significance of the lesion. Polyps have to be differentiated from pseudopolyps, which represent areas of inflamed and regenerating mucosa that projects above the level of the surrounding frequently ulcerated mucosa. Various endoscopic techniques have helped the identification and sampling of polyps and polypoid lesions in various parts of gastrointestinal tract. Clinical details and endoscopic findings are essential to interpret these biopsies correctly.

Polyps of gastrointestinal tract may be classified as non-neoplastic or neoplastic. The non-neoplastic polyps include inflammatory polyps, hyperplastic polyps, hamartomatous polyps and lymphoid polyps. Neoplastic polyps are broadly called as adenomas. Though the non-neoplastic polyps are grouped so, they may be associated with malignancies elsewhere.

Many other lesions may mimic as polyps endoscopically, including mesenchymal and lymphoid tumours. The commonest type of polyp varies in different parts of gastrointestinal tract, such as hyperplastic polyps in the stomach and adenomatous polyp in the large intestine. The natural course of the polyp has been difficult to study, as they are usually completely excised as a part of diagnostic procedure. However, various genetic studies and familial syndromes have helped understand the pathogenesis of polyps, especially in cases of colonic cancers arising from adenomatous polyps. The incidence of neoplastic polyps and colorectal cancers is bound to increase in low prevalence countries like India due to changes in the dietary pattern. Genetic studies are yet to provide definitive predictive markers of development of colonic cancer.

### II. Materials and Methods

This study was conducted at the department of pathology at Madras Medical College hospital, Chennai, India between 2008 and 2012. The study material included all the lesions identified as polyps or polypoid lesions in the gastro-intestinal tract. The specimens included both endoscopic biopsies (polypectomies) and intestinal resection specimens showing such lesions. Lesions described as nodules or ulcerated proliferating masses were

excluded to avoid confusion with other lesions. A total of 60,671 specimens were received during this period. Of these, 452 specimens met all the above criteria and were included in the study.

The specimens were collected along with relevant clinical details including age, sex, clinical presentation and family history of polyposis or GI cancers. The specimens were fixed using 10% neutral buffered formalin and processed as for routine histopathological studies using H & E stain.

### III. Results

Polyps and polypoid lesions were found in all over the GIT, from oesophagus to anal canal, with a predominance in the colonic region. The distribution of the lesions is shown in Table 1. The lesions were found predominantly in males in all the sub-sites with the exception of stomach, where a slight female preponderance was noted. Hyperplastic polyps were the predominant lesions in the stomach and small intestine while adenomatous polyps were the predominant lesions in colon.

**TABLE 1: DISTRIBUTION OF POLYPS AND POLYPOID LESIONS IN THE GASTRO-INTESTINAL TRACT**

	Esophagus	Stomach	Small intestine	Large intestine
No. of cases (%)	7 (1.5%)	120 (26.5%)	56 (12.2%)	269 (59.5%)
Age range (Mean) in years	28 to 65 (47.6)	16 to 80 (51)	14 to 88 (47)	13 to 85 (47)
Male:Female ratio	2.5:1	1:1.2	4.1:1	2.5:1
Commonest site And type	Lower end; Hyperplastic squamous epithelium with papillomatosis	Antrum; Hyperplastic polyp	Duodenum; Hyperplastic polyp	Left colon; Adenomatous polyp

The frequency, distribution and histomorphology of the polyps and polypoid lesions are described as follows:

(i) ESOPHAGUS: Very few cases (n=7) were found in the oesophagus. The only true polyp (n=1) that was seen in the oesophagus is the fibroepithelial polyp. The rest were predominantly hyperplastic squamous epithelium with papillomatosis (n=3), polypoid lesions of Barret's oesophagus(n=2) and non-specific inflammation(n=1). No malignancies were seen in these cases.

(ii) STOMACH: A total of 120 cases were seen in the stomach, of which 66 were polyps. Among the polyps, hyperplastic polyps were the most frequent type(n=46). The complete description of the polyp and polypoid lesions are described in the table 2. The hyperplastic polyps were seen predominantly in females in the age range of 35 to 80 years (mean-47 years). The most common location was the antrum. Only 3 cases were pedunculated while the rest were sessile. The main symptoms in these patients with hyperplastic polyps were those associated with peptic ulcer disease (epigastric pain, dyspepsia and nausea). Adenomatous polyps were less frequent (n=9) with 2 cases presenting with co-existent adenocarcinomas in the stomach.

**TABLE 2: DISTRIBUTION OF POLYPS AND POLYPOID LESIONS IN STOMACH**

POLYPS IN STOMACH	NUMBER OF CASES	POLYPOID LESION IN STOMACH	NUMBER OF CASES
Hyperplastic polyps	46	Adenocarcinoma	16
Fundic polyps	2	Non-specific inflammation	16
Inflammatory polyps	7	Chronic lymphocytic gastritis	15
Inflammatory fibroid polyp	1	GIST	1

Hamartomatous polyp	1	Multiple lesions	6
Adenomatous polyp	9		
TOTAL	66	TOTAL	54

(iii) SMALL INTESTINE: In the small intestine, duodenum was the major site of pathology with 48 out of 56 cases involving it. Jejunum and ileum had 4 cases each. Hyperplastic polyps were the predominant type followed by non-specific inflammatory pathology. The distribution of the other lesions is shown in table 3. One patient with Peutz-Jegher's polyp and one patient with inflammatory fibroid polyp presented with intussusception in the study. 5 inflammatory polyps, 1 hyperplastic polyp and 1 adenomatous polyp were seen in association with cancers elsewhere (oesophagus and stomach).

**TABLE 3: DISTRIBUTION OF POLYPS AND POLYPOID LESIONS IN SMALL INTESTINE**

POLYPS	NUMBER OF CASES	POLYPOID LESIONS	NUMBER OF CASES
Hyperplastic polyp	16	Adenocarcinoma	2
Inflammatory polyp	7	Brunner gland hyperplasia	3
Inflammatory fibroid polyp	1	Chronic duodenitis	3
Peutz-Jeghers polyp	2	Non-specific inflammation	13
Adenomatous polyp	5	GIST	1
Tubular adenoma	2		
Tubulovillous adenoma	3		
		Pseudopolyp	2
		Carcinoid	1

(iv) LARGE INTESTINE: The large intestinal lesions formed the bulk of the study (59.5%, n=269), with a predominance of adenomatous polyps. The lesions were distributed as follows: colon (n=146), rectum (n=70), anal canal (n=29) and caecum (n=24). The colonic lesions were more than those of isolated rectal lesions. Left sided colonic lesions (from splenic flexure to rectosigmoid) constituted 59.1% of the large intestinal lesions whereas right sided lesions (from caecum to transverse colon) were 20%. Among the non-neoplastic lesions, hyperplastic polyps were most common followed by juvenile polyps. All were predominant in males. 5 cases of hyperplastic polyps and 2 cases of inflammatory polyps were found with synchronous malignancies in colon and anal canal. Among the adenomatous polyps, 64 cases(53%) were tubular adenomas, 38 cases(31.7%) were tubulovillous adenomas, 16 cases(13.3%) were villous adenomas and 2 cases were flat adenoma (1.7%). 5 patients were found to have adenomatous polyposis coli (more than 100 polyps in colon), 2 of them with malignant transformation. No positive family history was obtained in these patients. 4 of these patients presented in their 4<sup>th</sup> to 5<sup>th</sup> decades (age range 30 to 42 years) and 1 patient was in the 7<sup>th</sup> decade (65 yrs). 5 other adenomatous polyps showed malignant change within the polyps (4.2%). 16 cases of adenomatous polyps were found synchronously with a co-existing non-contiguous colorectal malignancy. The distribution of colonic polyps is given in Tables 4 and 5.

**TABLE 4: DISTRIBUTION OF POLYPS AND POLYPOID LESIONS IN THE LARGE INTESTINE BASED ON SITE (RIGHT VS LEFT COLON)**

RIGHT COLON		LEFT COLON		OTHERS	
CAECUM	24	SPLenic FLEXURE	4	ANAL CANAL	29
ASCENDING COLON	13	DESCENDING COLON	26	MULTIFOCAL	9
HEPATIC FLEXURE	3	SIGMOID COLON	34	DATA INADEQUATE	18
TRANSVERSE COLON	14	RECTUM	70		
		RECTOSIGMOID	21		
<b>TOTAL</b>	<b>54 (20.07%)</b>	<b>TOTAL</b>	<b>159(59.12%)</b>		

**TABLE 5: DISTRIBUTION OF POLYPS AND POLYPOID LESIONS IN THE LARGE INTESTINE BASED ON HISTOLOGICAL TYPE**

Polyp/polypoid lesion	Number	Percentage
Hyperplastic polyps	42	15.61
Inflammatory polyps	34	12.63
Hamartomatous polyps (Peutz jehgers polyp, Juvenile polyp&Retention polyp)	13	4.83
Adenomatous polyps	120	44.61
Mesenchymal polyps	20	7.43
a. Lipomatous polyps	4	
b. Fibroepithelial polyp	15	
c. Angiomatous polyp	1	
Malignancies:	27	10.04
a. Adenocarcinoma	25	
b. NHL	1	
c. Malignant melanoma	1	
Pseudopolyps	11	4.09
a. Inflammatory	7	
b. Ulcerative colitis	4	
Others -Crohn's disease	2	0.74
<b>Total</b>	<b>269</b>	

#### IV. Discussion

Polyps of gastrointestinal tract have varying incidence depending on the site of the lesion. Esophageal polyps are very rare whereas polyps in the stomach and colon are relatively common. This study is hospital based and may not reflect the true incidence of gastrointestinal polyps in general population. The majority of lesions are situated in the large intestine, constituting 59.5% of cases followed by the stomach and this is similar to the previously published literature elsewhere. The incidence of gastric polyps was reported as 0.4% of autopsy cases<sup>1</sup> and 5% of endoscopic studies<sup>2,3</sup>. Small intestinal lesions, especially ileal polyps are being increasingly detected in the early stages due to the advent of new endoscopic techniques such as small bowel push endoscopy and video capsule endoscopy. Large intestinal lesions have remained the predominant population with most of them being adenomatous polyps.

Polyps and polypoid lesions of esophagus are uncommon though malignancies are associated with polypoid presentation. In our study, three cases showed hyperplastic squamous epithelium and two cases with features of Barrett's esophagus. No malignant polypoid lesions were seen in our study. Squamous hyperplasia is considered as early histologic manifestation of Gastro-esophageal Reflux disease, even in the absence of

macroscopic esophagitis<sup>4</sup>. The interpretation of early changes is subject to inter and intra-observer variation and also depends on number and topography of biopsies and technical aspects. Barrett's esophagus is defined as endoscopically recognized columnar metaplasia of esophageal mucosa which is confirmed pathologically by the presence of goblet cells<sup>5</sup>. It is more common in males; in our study of two cases, equal incidence was seen and both presented with epigastric pain. Endoscopically, the lesion is identified by salmon coloured mucosa with focal ulceration or erosion.

Polyps and polypoid lesions of stomach constitute 26.5% of total cases in our study. The age group ranged from 16 yrs to 80 yrs with a mean age of 51 yrs. In our study, female patients outnumbered males in the ratio 1.2:1. The commonest site of involvement was antrum and the commonest lesion was hyperplastic polyp. Hyperplastic polyps, according to literature, are commonly seen in the antrum and reflected in our study also. They present as single or multiple lesions- solitary lesions were commoner in our study. Grossly they appear as oval elevations of mucosa with smooth contours. They may be sessile or pedunculated, sessile lesions constituting 93.5% of cases in our study. One polyp of size 1.5 cm was associated with gastric outlet obstruction. Rare cases of hyperplastic polyp simulating hypertrophic pyloric stenosis in pediatric age group<sup>6</sup> and causing gastric outlet obstruction in an adult female patient<sup>7</sup> have been reported. Histologically, hyperplastic polyps showed hyperplastic and elongated foveolae with corkscrew appearance, lined by columnar epithelium and cystically dilated glands with mild to moderate inflammation in the stroma. Some polyps also showed intestinal metaplasia and duct-like structures with cuboidal epithelium and eosinophilic granular cytoplasm. The incidence of malignancy in hyperplastic polyps is reported to range from 1.5% to 4.5%.<sup>8,9</sup> No cases of hyperplastic polyposis or hyperplastic polyps co-existing with carcinoma stomach were seen in our study, showing that malignant transformation of hyperplastic polyps is very rare. The significance of identifying hyperplastic polyps lies in identifying associated gastric pathology.

Among the small intestinal polyps, the predominant site of involvement in this study was the duodenum, constituting 85.72% of cases of small intestine. Hyperplastic polyps were the most common, followed by inflammatory polyps. 2 cases of Peutz-Jeghers polyps were recorded. Hyperplastic polyps were all seen in the duodenum. A large Japanese study<sup>10</sup> showed that 15 out of 25 lesions seen in duodenum were hyperplastic polyps. PJ polyps are the commonest hamartomatous polyps of the small intestine, with majority in the jejunum, followed by ileum and duodenum. Solitary or multiple, they present with GI bleed, anemia, abdominal pain and recurrent intussusception. In our study, PJ polyps of small intestine were rare, only two cases were seen. No features of Peutz Jeghers syndrome were seen. The existence of sporadic PJ polyps has been questioned as they have been associated with development of carcinoma at other sites during follow up studies.

The predominant population of colonic polyps in this study was formed by adenomatous polyps (44.61% of colonic polyps). Of these, 55% were tubular adenomas which are the commonest type of colonic polyps as seen in other studies also<sup>11</sup>. 5 cases of adenomatous polyposis coli were noted in our study. Familial adenomatous polyposis presents in childhood or adolescent or early adulthood with thousands of polyps in colon as well as in other parts of gastrointestinal tract. By definition more than 100 polyps should be present. Genetic studies in FAP show loss of both copies of APC gene on chromosome 5q. Proctocolectomy was done in these 5 cases.

The incidence of malignant change in adenomatous polyps varies from 1.4% in Canada<sup>12</sup> to 6.06% in South India<sup>13</sup>. The proportion of such polyps in our study (4.2%) is similar to Tony et al<sup>13</sup> and is higher than those of the Canadian study<sup>12</sup>. The results also indicate that hyperplastic polyps are less common when compared to adenomatous polyps in this part of the country and do not serve as indicator for presence of adenomas.

## V. Conclusion

Polyps and polypoid lesions in the gastrointestinal tract may vary from asymptomatic incidental findings and benign harmless lesions to invasive malignancies. Various investigatory modalities are being developed and available in developing countries for screening and diagnosis of these lesions. The morphology of the polyps are well defined to delineate them from one another. A careful study of adenomatous polyps is needed in view of the potential for malignant transformation. The study is hospital-based and may not represent the true incidence of the disease in the community. Though surveillance programs have been framed, it is imperative to establish cost effective screening guidelines so as to detect the lesions earlier. As most of the lesions are left-sided they would be more accessible with colonoscopy techniques. Genetic studies are needed to establish predictive and prognostic markers for malignant transformation of adenomatous polyps.

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