

## Clinico Histopathological Study of Gastrointestinal Polyps: A Prospective Study of 160 Polypectomy Specimens

Muram Reddy Vijaya Lakshmi\*, Muram Reddy Panchala Reddy\*\*, Vissa Shanthi\*\*\*, Nandam Mohan Rao\*\*\*\*, Byna Syam Sundara Rao\*\*\*\*\*, Grandhi Bhavana\*\*\*\*\*

\*,\*\*Assistant Professor \*\*\*,\*\*\*\*Professor \*\*\*\*\*,\*\*\*\*\*Associate Professor, Department of Pathology, Narayana Medical College, Nellore, Andhra Pradesh 524003, India.

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### Abstract

**Background:** Gastrointestinal polyps are proliferative or neoplastic mucosal lesions, projecting into gastrointestinal lumina. Certain polyps like adenomatous polyps have more clinical importance because they have the risk of malignancy. **Aim:** The aim of our study is to determine the age and sex distribution, location, histological type and also to assess the benign or malignant potential of gastrointestinal polyps. **Materials and Methods:** This study was done in the Department of Pathology, Narayana Medical College and Hospital, Nellore, Andhra Pradesh, India, over a period of two years from October 2015 to September 2017. Total 160 Cases of Gastrointestinal polyps were studied. **Results:** Gastrointestinal polyps were more common in males (60%) than females (40%) and were common in the age group between 51-60 years (40%). Commonest clinical symptom was malena (28.12%). Rectum was the commonest site (28.75%), followed by sigmoid colon (18.75%). The most prevalent type of gastrointestinal polyp was adenomatous polyp (50%). The commonest subtype of adenomatous polyp was tubular variant (82.5%). **Conclusion:** High grades of dysplasia was commonly observed in villous and tubulovillous types of adenomatous polyps. As adenomatous polyps have more risk of malignant transformation, early diagnosis and removal is a highly effective method in preventing colorectal cancer.

**Keywords:** Adenomatous Polyp; Dysplasia; Gastro Intestinal Polyps; Rectum; Tubular Variant.

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### Introduction

Gastrointestinal polyp is a circumscribed lesion that projects above the surface of surrounding mucosa [1]. With the increased use of endoscopic procedures, visually discernible abnormalities such as gastrointestinal polyps, are encountered more common [2]. Also because of rapid growth of urbanization, low physical activity, obesity and changes in the diet, they constitute a significant proportion of gastrointestinal pathology samples. Gastrointestinal polyps are proliferative or neoplastic mucosal lesions, projecting into gastrointestinal Lumina [3]. Of all the polyps, adenomatous polyps have more clinical importance because they have the

risk of developing into an infiltrating carcinoma. By effective screening for adenomatous polyps we can prevent the development of colorectal cancer. The risk of malignancy is more with larger polyp size, more villous component, multiple polyps and if the age at diagnosis is more than 60 years [4]. Hereditary gastrointestinal polyposis syndromes accounts for 1% of all cases of colorectal cancer. Proper surveillance is essential in these syndromes for early detection of cancer [5]. The aim of this study is to determine the age and sex distribution, location, histological type and also to assess the benign or malignant potential of gastrointestinal polyps.

### Materials and Methods

This study was done in the Department of Pathology, Narayana Medical College and Hospital, Nellore, Andhra Pradesh, India. It was a prospective study done for a period of two years from October

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**Corresponding Author:** Muram Reddy Panchala Reddy, Assistant Professor, Dept. of Pathology, Narayana Medical College, Nellore, Andhra Pradesh 524003, India.  
E-mail: [dr.panchalareddy15@gmail.com](mailto:dr.panchalareddy15@gmail.com)

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2015 to September 2017. Total 160 cases of gastrointestinal polypectomy specimens received from medical and surgical gastroenterology and general surgery departments were included in our study. All the details like age, sex, site and clinical features were recorded. The specimens were fixed in 10% formalin, followed by processing and embedding. Paraffin embedded blocks were cut into 4 microns thin sections and stained with Haematoxylin and eosin. Microscopic evaluation was done by the pathologist and the results were analysed.

### Results

Out of 160 cases of gastrointestinal polyps, 96 cases (60%) were reported in males and 64 cases (40%) were reported in females. The male:female ratio was 1.5:1.

The minimum and maximum age of the patients was 3 years and 80 years respectively. The polyps were more common between 51-60 years (40%). The age distribution of gastrointestinal polyps were studied (Figure 1).

Symptomatology was studied in gastrointestinal polyps. Out of 160 cases, 99 cases (61.88%) were symptomatic and 61 cases (38.12%) were asymptomatic. The most common clinical symptom

was malena, reported in 45 cases (28.12%). Other symptoms were dyspepsia seen in 20 cases (12.5%), abdominal pain seen in 15 cases (9.38%). Diarrhoea, constipation, dysphagia and anaemia seen in 4 cases (2.5%) each. Intestinal obstruction seen in 2 cases (1.25%) and weight loss seen in 1 case (0.63%).

The site of location of gastrointestinal polyps were studied. The commonest site is rectum 46 cases (28.75%), followed by sigmoid colon 30 cases (18.75%), descending colon 18 cases (11.25%), anus and duodenum 14 cases (8.75%) each, stomach 12 cases (7.5%), ascending colon 8 cases (5%), caecum 6 cases (3.75%), ileum, transverse colon and gastroesophageal junction 4 cases (2.5%) each.

Histopathological type of gastrointestinal polyps were studied. Commonest type was adenomatous polyp diagnosed in 80 cases (50%), followed by hyperplastic polyp 46 cases (28.75%), inflammatory polyp 16 cases (10%), fibroepithelial polyp 10 cases (6.25%) and juvenile polyp 8 cases (5%). Distribution of histological types of polyps according to their locations in gastrointestinal tract was studied (Table 1).

The subtypes of adenomatous polyps were studied. The commonest subtype was tubular diagnosed in 66 cases (82.5%), followed by villous 8 cases (10%) and tubulovillous 6 cases (7.5%). Out of 66 cases of tubular adenomatous polyp, 56 cases (84.84%) showed low

**Table 1:** Distribution of histological types of polyps according to their locations in gastrointestinal tract

Site Polyp type	GE junction	Stomach	Duodenum	Ileum	Caecum	Ascending Colon	Transverse colon	Descending colon	Sigmoid colon	Rectum	Anus	Total
Tubular	-	-	11	2	2	5	2	8	8	21	7	66
Tubulo villous	-	-	-	-	-	-	-	-	3	3	-	6
Villous	-	-	-	-	-	-	-	2	3	3	-	8
Hyperplastic polyp	3	10	2	2	2	3	2	2	8	8	4	46
Inflammatory polyp	1	1	1	-	2	-	-	4	3	4	-	16
Juvenile polyp	-	-	-	-	-	-	-	1	3	4	-	8
Fibro epithelial polyp	-	1	-	-	-	-	-	1	2	3	3	10
Total	4	12	14	4	6	8	4	18	30	46	14	160

**Table 2:** Comparison of grades of dysplasia in adenomatous polyp

Adenomatous polyps	Our study		Gentiana et al study	
	Cases	%	Cases	%
Tubular low grade dysplasia	56	84.84%	159	70.67%
Tubular high grade dysplasia	10	15.16%	66	29.33%
Tubulovillous low grade dysplasia	1	16.67%	8	25%
Tubulovillous high grade dysplasia	5	83.33%	24	75%
Villous low grade dysplasia	1	12.5%	4	23.52%
Villous high grade dysplasia	5	62.5%	13	76.48%
Intra mucosal carcinoma in villous polyp	2	25%	-	-
<b>Total</b>	<b>80</b>		<b>274</b>	

grade dysplasia and the remaining 10 cases (15.16%) showed high grade dysplasia. Out of 8 cases of villous adenomatous polyp, 5 cases (62.5%) showed high grade dysplasia, 1 case (12.5%) showed low grade dysplasia and 2 cases (25%) showed intramucosal carcinoma. Out of 6 cases of tubulovillous adenomatous polyp, 5 cases (83.33%) showed high grade dysplasia and 1 case (16.67%) showed low grade

dysplasia. In our study, 3 cases of hyperplastic polyp and 1 case of inflammatory polyp showed mild dysplasia. As far as hereditary gastrointestinal polyposis syndrome is considered, 1 case of familial adenomatous polyposis syndrome and 1 case of juvenile polyposis syndrome were diagnosed in our study.

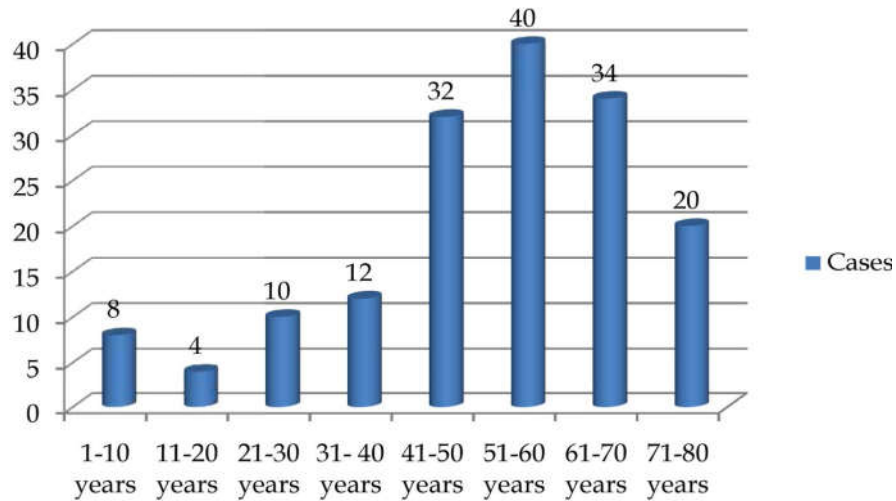


Fig. 1: Age distribution of gastrointestinal polyps

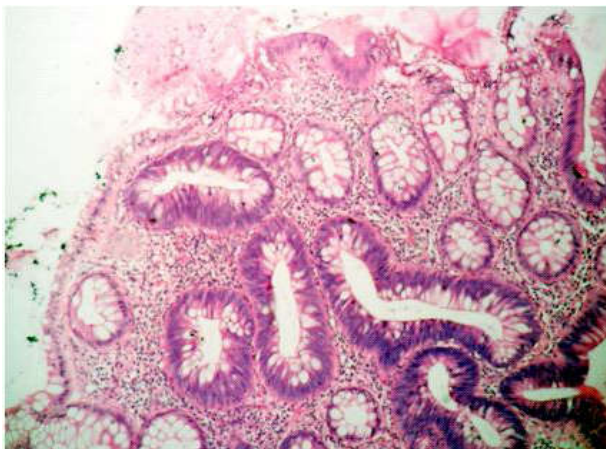


Fig. 2: Adenomatous polyp showing small, round tubular glands (Haematoxylin and eosin,x 100)

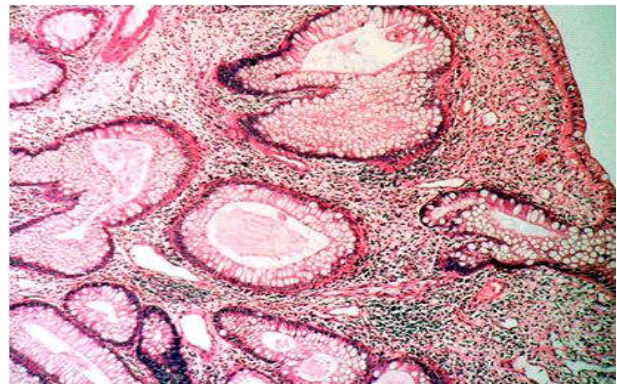


Fig. 4: Hyperplastic polyp showing increased mature goblet cells(Haematoxylin and eosin,x 100)

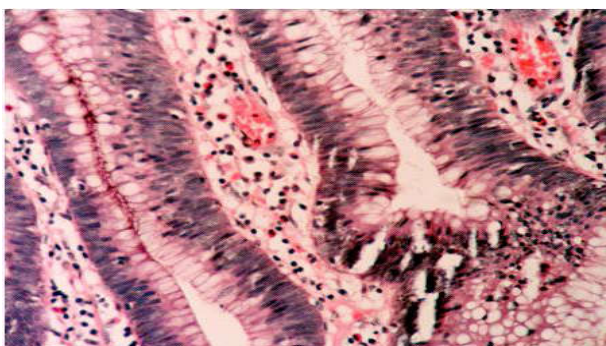


Fig. 3: Adenomatous polyp showing high grade dysplasia (Haematoxylin and eosin,x 400)

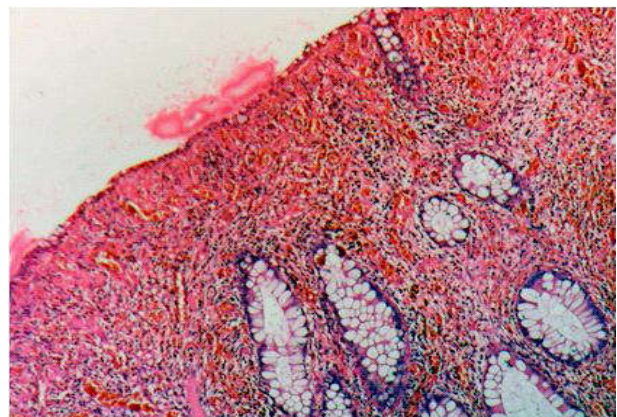


Fig. 5: Inflammatory polyp showing mucosal loss and inflammatory infiltrate in lamina propria (Haematoxylin and eosin,x 100)



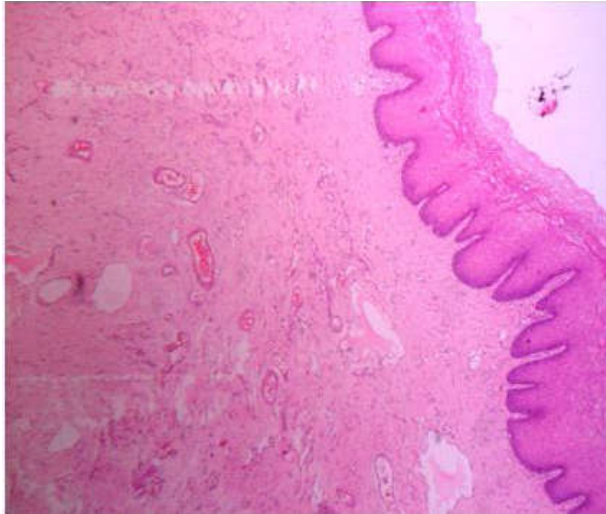


Fig. 6: Fibroepithelial polyp showing fibrous stroma covered by squamous epithelium (Haematoxylin and eosin,x 100)

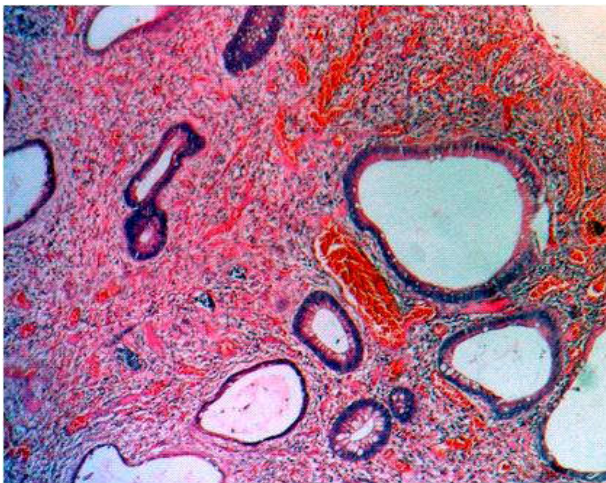


Fig. 7: Juvenile polyp showing cystically dilated glands filled with mucin (Haematoxylin and eosin,x 100)

## Discussion

Of all the gastrointestinal polyps, polyps in the colon are most common. But polyps can occur in the esophagus, stomach and small intestine also [6]. Most of the colonic polyps are epithelial polyps consisting of adenomatous and hyperplastic polyps. The lesser common polyps are nonepithelial polyps consisting of inflammatory and hamartomatous (Juvenile and Peutz-Jeghers) polyps [4]. In gastric polyps, epithelial polyps are the most common which includes fundic gland polyps, hyperplastic polyps and adenomatous polyps. Other less common epithelial lesions which may present as polyps include carcinoids, ectopic pancreatic tissue and pyloric gland adenoma [2].

In our study, gastrointestinal polyps were common in males (60%) when compared to females (40%) which

was similar to that of study done by Alizare mirzaie et al [3] in which they reported 61.4% of cases in males and 38.6% of cases in females.

Most of the cases reported in our study were in the middle age group (51-60 years, 40%). Alizare mirzaie et al [3] reported most of the cases in old age group between 70-80 years (25.2%). In a study done by Gentiana et al [1] on colonic polyps, most of the cases were reported in fourth decade.

In our study, most common clinical symptom was malena reported in 28.12% of cases, similar to that of study done by Alizare mirzaie et al [3] they reported malena in 31.4% of cases. 38.12% of cases in our study were asymptomatic and were found on routine screening procedures. In our study, dyspepsia was seen in mainly gastric polyps, dysphagia was seen in gastro oesophageal junction polyps. Other symptoms like abdominal pain, diarrhoea, intestinal obstruction and weight loss were commonly observed in intestinal polyps.

Commonest site of gastrointestinal polyps in our study was rectum (28.75%) followed by sigmoid colon (18.75%). Kunjumon et al [4] study reported 39% of cases in rectum. Alizare mirzaie et al [3] reported 40% of cases in rectosigmoid area. Gentiana et al [1] also reported majority of the cases in rectosigmoid area. In all these studies majority of the polyps are located in rectosigmoid area, similar to that of our study.

In our study, most common histological type of gastrointestinal polyp was adenomatous polyp reported in 50% of cases, followed by hyperplastic polyp (28.75%), inflammatory polyp (10%), fibro epithelial polyp (6.25%) and juvenile polyp (5%). Alizare mirzaie et al [3] also reported adenomatous polyps as the commonest in 83.3% of cases, followed by hyperplastic polyp (7.1%), inflammatory polyp (6.7%), juvenile polyp (1.9%) and fibroepithelial polyp (1%). Gentiana et al [1] also reported adenomatous polyps as the commonest (72.99%), followed by hyperplastic polyp (16.78%), inflammatory polyp (6.08%) and juvenile polyp (4.13%). Our study was consistent with these two studies, in which they also reported adenomatous polyp as the commonest subtype. But in our study, the incidence of hyperplastic polyp is somewhat high when compared to other studies.

Hyperplastic polyp (83.33%) was the commonest gastric polyp in our study, followed by inflammatory (8.33%) and fibroepithelial polyp (8.33%). Gencosmanoglu et al [7] and Jain et al [8] also reported hyperplastic polyp as the commonest gastric polyp. Carmack et al [9] reported fundic gland polyp as the commonest gastric polyp (77%), followed by

hyperplastic (17%), inflammatory (1%) and adenomatous polyp (0.69%).

The World Health Organisation (WHO) classifies adenomatous polyps into Tubular, Tubulovillous and Villous subtypes [4]. Tubular adenoma is the most commonest subtype constituting 65-80% and has microscopic appearance of branched tubular glands. Tubular adenomas often they are pedunculated and show only mild dysplasia.

Villous adenoma constitutes about 5-10% of adenomatous polyps, more commonly they are sessile, they have long finger like projections on microscopy and they show severe dysplasia more likely. Tubulovillous adenomas have both tubular and villous components and it constitutes about 10 to 25% of adenomatous polyps [5].

The prevalence of adenomatous polyps varies widely from country to country [10], but more common in western countries[4]. Genetic susceptibility and other risk factors like smoking[11], obesity, high intake of red meat and low intake of fibre and calcium play a role in their development [12,13]. Conversely, use of non steroid anti-inflammatory drugs and statins have more likely a protective effect [12,14].

Clinically, most of the adenomatous polyps are asymptomatic and are found on routine screening. Larger polyps may present with bleeding, intestinal obstruction, abdominal pain and diarrhoea [5].

All adenomatous polyps have varying degrees of dysplasia ranging from low grade to high grade. Malignant nature of adenomas correlates with type of polyp, size, degree of dysplasia [1]. Higher grades of dysplasia, more percentage of villous tissue within the polyp, polyp size greater than 1 cm in diameter, multiple polyps and if the age at the diagnosis is more than 60 years are associated with increased risk of malignancy [1,4].

In our study, adenomatous polyp (Figure 2) was the commonest type diagnosed in 80 cases (50%) out of total 160 cases. In a study done by Ali Zare mirzaie et al [3], adenomatous polyps were reported in 83.3% of cases. In a study done by Gentiana et al [1] on colonic polyps, adenomatous polyps were reported in 72.99% of cases. Our study was consistent with Ali Zare mirzaie et al [3] and Gentiana et al [1] studies, in which adenomatous polyp was the commonest type.

In our study, tubular variant was the commonest reported in 82.5% of cases, followed by villous (10%) and tubulovillous (7.5%) which was similar to that of study done by Alizare mirzaie et al [3] in which they reported tubular as the commonest type (70.3%), followed by villous (16%) and tubulovillous (13.7%).

Grades of dysplasia in our study and Gentiana et al [1] study was compared as shown in (Table 2). Most of the results were similar to that of Gentiana et al [1] study. Low grade dysplasia was mainly seen in Tubular adenomatous polyps. High grade dysplasia (Figure 3) was mainly seen in villous and tubulovillous adenomatous polyps.

In our study, 2 out of 8 cases (25%) of villous adenoma showed Intramucosal carcinoma, proving that malignant risk is more with villous component. So malignant transformation can be prevented by effective screening for adenomatous polyps before they develop the ability to invade.

In our study, most of the adenomatous polyps were located in colon (81.25%) similar to that of study done by Khodadoostan et al [15] they reported 91% of adenomatous polyps in colon.

Hyperplastic polyp (Figure 4) was reported in 46 cases (28.75%) in our study and most of them are located in stomach. These polyps develop because of crypt function and defects in apoptosis in combination with hypermaturation of the upper crypt and surface epithelium.

They show bland features and have sessile, serrated architecture [4,5]. Microscopically, they show features of hyperplasia without dysplasia, because of that reason they are not considered as premalignant [5]. Recent studies have showed that Hyper plastic polyp of large size (>0.5cm), showing atypical features and those which are located in the right side of intestine have more risk of malignant transformation [4]. In our study, 2 cases of hyperplastic polyp showed mild dysplasia.

Inflammatory polyp (Figure 5) was reported in 16 cases (10%) in our study. Inflammatory polyps are isolated or it can be associated with inflammatory bowel disease, mainly ulcerative colitis and other forms of colitis like infectious colitis, ischemic colitis or diverticulitis. Microscopically, they show islands of normal regenerating mucosa (the polyp) surrounded by areas of mucosal loss and there is inflammatory infiltration [5]. Inflammatory polyps related to IBD may show dysplasia rarely and even carcinoma may develop [4]. In this study, we observed atypical features in 1 case of inflammatory polyp.

Fibroepithelial polyps (Figure 6) were reported in 10 cases (6.25%) in our study. Fibroepithelial polyps are benign polypoidal lesions commonly encountered on proctoscopy[16]. Most of them are located in rectum and anus. Microscopically, they show fibrous stroma covered by squamous epithelium. Many small dilated vessels filled with red blood cells and scattered smooth muscle fibres may be seen.

Sporadic Juvenile polyps are the most common type of polyp diagnosed in children. The peak age of incidence is between 2 to 4 years [4]. Juvenile polyposis syndrome is an autosomal disorder in which hundreds of juvenile polyps are seen in the gastrointestinal tract [5]. Patients with JPS present at an older age with mean age of 9.5 years and they have slight male predominance [4]. JPS have more risk of adenomatous changes and subsequently they may develop carcinoma unlike Solitary juvenile polyps [5]. In our study, we encountered 8 cases (5%) of juvenile polyp (Figure 7). The youngest age of the patient, where juvenile polyp was reported in our study was 3 years. 1 cases of juvenile polyposis syndrome was reported in a 12 years old female in our study, in which multiple juvenile polyps were present in the colon. Microscopic features of juvenile polyp are inflamed, edematous stroma, eroded surface and presence of cystic epithelial elements [17].

Familial adenomatous polyposis is the most commonest type of intestinal polyposis syndrome [4]. It is an autosomal dominant hereditary polyposis syndrome characterised by development of multiple adenomatous polyps through out the colon and rectum along with some extra intestinal manifestations [5]. The onset of FAP is during childhood or adolescence, by adulthood multiple adenomas will develop and by the age of 35 years, it will transform into colorectal cancer. Identification of high risk population and timely implementation of rapid surveillance programmes is essential in these syndromes to prevent colorectal cancer [5].

In our study, 1 case of familial adenomatous polyposis syndrome was diagnosed, in this case total colectomy surgery was done.

## Conclusion

Gastrointestinal polyps are a common finding in routine screening endoscopic procedures. In our study, these polyps were more common with advanced age, male sex and the commonest site is rectum. The commonest type of polyp was tubular type of adenomatous polyp. High grades of dysplasia were commonly observed in villous and tubulovillous types of adenomatous polyps. As adenomatous polyps have more risk of malignant transformation, early diagnosis and removal is a highly effective method in preventing colorectal cancer. Also proper surveillance is essential in hereditary gastrointestinal polyposis syndrome and by timely prophylactic surgery we can prevent the development of malignancy.

## References

1. Cekodhima Gentiana, Cekodhima Altin, Beqiri Arban, Alimehmeti Mehdi. Histopathological Characteristics of colon polyps-A population based study in Tirana,Albania. *J Gastrointest Dig Syst.* 2015;5(2):1-3.
2. Rafiul Sameer Islam, Neal C. Patel, Doralam-Himlin, Cuong C. Nguyen. Gastric Polyps: A review of clinical, endoscopic and histopathological features and management decisions. *Gastroenterol hepatol (NY).* 2013 oct;9(10):640-651.
3. Alizare Mirzaie, Maryam Abolhasani, Roozbeh Mobasher Moghaddam, Maryam Kadivar. The frequency of gastrointestinal polyps in Iranian population. *Iranian Journal of pathology.* 2012;7(3):183-189.
4. Deepa Thomas Kunjumon, Jinu Abraham Glaxon, k Pushpalatha pai. A histopathological study of 23 cases of benign epithelial polyps of intestine. *International journal of biomedical research.* 2014;5(2):117-120.
5. Noam Shussman, Steven D wexner. Colorectal polyps and polyposis syndromes. *Gastroenterol Rep (oxf).* 2014 feb;2(1):1-15.
6. Jerrold R Turner. Gastrointestinal tract. In: Kumar, Abbas, Fausto, Aster, editors. *Robbins and cotran pathologic basis of disease.* Eight edition. Philadelphia: Saunders Elsevier; 2009.p.763-831.
7. Gencosmanoglu R, Sen oran E, Kurtkaya Yapicier O, Arsar E, Sav A, Tozun N. Gastric polypoid lesions: analysis of 150 endoscopic polypectomy specimens from 91 patients. *World J Gastroenterol.* 2003;9(10):2236-9.
8. Jain R, Chetty R. Gastric hyperplastic polyps: a review. *Dig Dis sci.* 2009;54(9):1839-46.
9. Carmack Sw, Genta RM, Schuler CM, Saboorian MH. The current spectrum of gastric polyps: a 1-year national study of over 1,20,000 patients. *Am J Gastroenterol.* 2009;104(6):1524-32.
10. Giacosa A, Frascio F, Munizzi F. Epidemiology of colorectal polyps. *Tech coloproctol.* 2004;8(2):243-247.
11. Burnett Hartman AN, Passarelli MN, Adams SV, Upton MP, Zhu Lc, Potter JD et al. Differences in epidemiologic risk factors for colorectal adenomas and serrated polyps by lesion severity and anatomical site. *Am J epidemiol.* 2013;177(7):625-37.
12. Zhenming Fu, Martha J. Shrubsole, walter E. Smalley, Huiyun Wu, Zhichen, Yu shyr et al. Life style factors and their combined impact on the risk of colorectal polyps. *Am J epidemiol.* 2012; 76(9):766-776.
13. Koji okabayashi, Hutan Ashrafian, Hirotoishi Hasegawa, Jae Hoon Yoo, Vanash M Patel, Leanne Harling et al. Body mass index category as a risk factor for colorectal adenomas: A systematic review and meta analysis. *Am J Gastroenterol.* 2012;107(8): 1175-1185.

14. Broughton T, Sington J , Beales IL. Statin use is associated with a reduced incidence of colorectal adenomatous polyps. *Int J colorectal Dis.* 2013;28(4): 469-76.
  15. Khoda doostan M, Fatemi R, Maserat E, Hooshang A, Alizade M, Molaie M et al. Clinical and pathological characteristics of colorectal polyps in Iranian population. *East Afr J Public Health.* 2010;7(2):157-9.
  16. Loannisgalanis, Dimitrios Dragoumis, Michail Tsolakis, Konstantinos Zaram poukas, Thomas Zarampoukas, Konstantinos Atmatzidis. Obstructive ileus due to giant fibroepithelial polyp of the anus. *World J Gastroenterol.* 2009;15(29):3687-3690.
  17. Mary P Bronner. Gastrointestinal Polyposis syndrome. *Mod Pathol.* 2003;16(4):359-365.
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