

# Spectrum of Colorectal Polyps in Southern India: A Twin Centre Ambispective Study

AFSHAN JABEEN<sup>1</sup>, V VIJAY SREEDHAR<sup>2</sup>

## ABSTRACT

**Introduction:** Intestinal polyps are grossly visible tumours which protrude (into lumen of gastrointestinal tract). Majority of the polyps are benign in the paediatric age group. However in adults, they may be harbingers of more serious genetic, familial or developmental disorders and some of them may be premalignant.

**Aim:** Our aim was to study the distribution, histological varieties of colorectal polyps and to examine dysplasia in adenomatous polyps and its determinants.

**Materials and Methods:** This is a four years retrospective and one year prospective study from June 2017 to May 2022 conducted at Upgraded Department of Pathology, Osmania General Hospital and a tertiary care centre, Shadan Institute of Medical Sciences, Hyderabad, Telangana, India. A total of 110 cases of polyps were studied which included 62 cases in adults and 48 cases in children (0-12 years). Predictors of dysplasia in adenomatous polyps were studied. Results were analysed using PSP software.

**Results:** There were 62.73% (69) males and 37.27% (41) females. The commonest clinical presentation was bleeding from rectum 64.54% (71) cases. Rectosigmoid was the commonest site in 83.64% (92) cases. Juvenile polyps were the commonest in children and constituted 89.58% (43 cases). In adults, there were 63.07% (41) adenomatous polyps. A statistically significant association has been observed between high grade dysplasia and size (p-value 0.015) and villous architecture (p-value 0.02). There was no statistically significant association with site (p-value 0.2).

**Conclusion:** A rising incidence of Colorectal Cancer (CRC) has necessitated identification of preneoplastic Adenomatous polyps which may progress to carcinoma via the Adenomacarcinoma sequence. Polyps occurring as part of polyposis syndromes have increased neoplastic potential. Their detection and treatment carries significant implications both for the patients and their families. In India, there is a need for screening colonoscopy in asymptomatic individuals which can be a potential cancer prevention tool.

**Keywords:** Adenomas, Benign, Dysplasia, Juvenile polyps, Villous adenomas

## INTRODUCTION

The word polyp comes from the Greek word 'polypus' meaning 'many footed'. Intestinal polyps are grossly visible tumours which protrude into lumen of gastrointestinal tract [1]. They may be sporadic or part of polyposis syndromes.

The pathologist assumes a critical role in the diagnosis of a polypoid lesion as the adequacy of resection, the accurate description and identification of the type of polyp can have significant implications for the patient along with the associates. It is important to realise that a biopsy of a polypoid lesion is similar to examining the "tip of the iceberg". Although majority of the polyps in the paediatric age group are benign - where as in adults, more often they may be harbingers of more serious genetic, familial or developmental disorders and some of them may be premalignant [1].

The term "colorectal polyps" includes both neoplastic and non neoplastic lesions. In children, solitary Juvenile polyps are the commonest. Estimates reveal that they occur in 2% of children under 10 years of age and cause rectal bleeding commonly. They are benign and carry no neoplastic potential. However, when as part of Juvenile Polyposis Syndrome (JPS), they predispose to malignancy [2].

JPS has an incidence of 1 in 100,000-160,000 individuals [2]. The diagnosis of JPS is clinically established based upon the presence of atleast one of the following criteria (1) more than five juvenile polyps of the colorectum, or (2) juvenile polyps throughout the gastrointestinal tract, or (3) any number of juvenile polyps with a family history of JPS [1]. Individuals with JPS are at risk for the development of malignancy as the polyps can show adenomatous change and transformation to carcinoma [2].

Peutz-Jeghers Syndrome (PJS), an autosomal-dominant disorder characterised by mucocutaneous pigmentation, hamartomatous polyps, and an increased risk of malignancies. It has a reported incidence of one in 150,000 to 200,000 individual [2].

In adults, adenomatous polyps are the most frequently occurring polyps with a reported incidence of 7-27%. They are considered to be precursors of large bowel cancer, through a process referred to as adenoma-carcinoma sequence [3]. Although only few adenomas progress to malignancy, the risk of cancer development increases with the size, the amount of villous component and the occurrence of higher grades of dysplasia [4].

Colorectal Cancer (CRC) is the third most common cancer in men and fourth most common cause of deaths from cancer worldwide [5]. The incidence of CRC has been reported to be 20.7% [2]. Despite the lower incidence in Asian countries, including India, adoption of Western lifestyles and dietary patterns has led to a rapid transition towards Western rates [6].

Early detection and removal of adenomas can significantly reduce the risk of CRC. It is believed that a one-time screening colonoscopy at the age of 55 years could achieve a 30-50% reduction in mortality from CRC [7]. The incidence of CRC has been declining in the United States due to widespread CRC screening and change in behavioural risk factors [8].

Among the non neoplastic polyps, hyperplastic polyps are common. They account for 8-10% of polyps detected. Although, they are considered to be benign, recent studies have shown that some of the subsets of hyperplastic polyps have neoplastic potential [9].

We have observed that there is a dearth of literature pertaining to polyps in the Indian population and hence further studies are

required in this terrain. A retrospective study was conducted to determine the prevalence and histopathological characteristics of polyps in tertiary centre in South India [10]. However, it shed light more on the characteristics of polyps in adults. In this study, we aimed to elucidate the polyp characteristics in children and adults.

The aim of this study was 1) To analyse demographics of patients with colorectal polyps, 2) To study the distribution and histological types of colorectal polyps, 3) To examine dysplasia in adenomatous polyps and its determinants. Further, to compare present study with literature. As this study covered a period of five years, we had an opportunity for follow-up to observe for any recurrence.

## MATERIALS AND METHODS

This is an observational study, conducted at 2 tertiary care centres: Upgraded Department of Pathology, Osmania General Hospital and Shadan Institute of Medical Sciences, Hyderabad, Telangana, India. Data was collected four years retrospectively (June 2017 to May 2021) and one year prospectively (June 2021 to May 2022). A total of 110 cases of polyps were studied including 48 (43.63%) cases in children and 62 (56.36%) cases in adults. Both polypectomy and bowel resection specimens were studied. Ethical clearance was obtained from relevant centres (012/SIMS/RESEARCH/2022). Informed consent was taken from the participants.

**Inclusion criteria:** All polypoid lesions in the colorectal region detected clinically and by imaging were included.

**Exclusion criteria:** Pseudopolyps associated with ulcerative colitis were excluded.

Polyps presenting in other parts of gastrointestinal tract were excluded.

Demographic data, clinical features, radiological features, polyp number and distribution were obtained from medical records. The specimens were routinely processed and sections stained with H&E. Polyps were classified into different types based on WHO criteria [1]. Adenomatous polyps were further classified into tubular, villous and tubulovillous types and were examined for dysplasia.

## STATISTICAL ANALYSIS

Statistical analysis was done using PSPP software, an open source application. Association of dysplasia with site/size and type of adenomatous polyp was studied using Chi-square test.

## RESULTS

Among 1762 colorectal resection and biopsy specimens, 110 (6.24%) polyp cases were studied, which included 48 (43.63%) cases in children and 62 (56.36%) cases in adults. There were 69 (62.73%) males and 41 (37.27%) females [Table/Fig-1].

| Parameters | Children    | Adults      | Total       |
|------------|-------------|-------------|-------------|
| Male       | 29          | 40          | 69 (62.73%) |
| Female     | 19          | 22          | 41 (56.37%) |
| Total      | 48 (43.63%) | 62 (56.37%) |             |

[Table/Fig-1]: Demographic data.

In children, highest proportion- 15 (31.2%) occurred in age group of 6-8 years with a mean age of 6.62 years. In adults, majority- 64.52% (40) occurred between 50-80 years with a mean age of 56.5 years. The most common clinical presentation was bleeding per rectum- 64.54% (71). The other presenting features were anaemia, altered bowel habits, abdominal pain and intussusception. The commonest site was rectosigmoid 83.63% (92). 93.63% (103) were pedunculated polyps while 6.37% (7) were sessile. 56.36% (62) of the polyps measured less than 1cm while 43.63% (48) measured more than 1 cm. 80.9% (89) were solitary while 19.1% (21) were multiple.

In children, juvenile polyps were the commonest accounting for 89.58% (43) of the cases [Table/Fig-2-4]. In adults, adenomatous

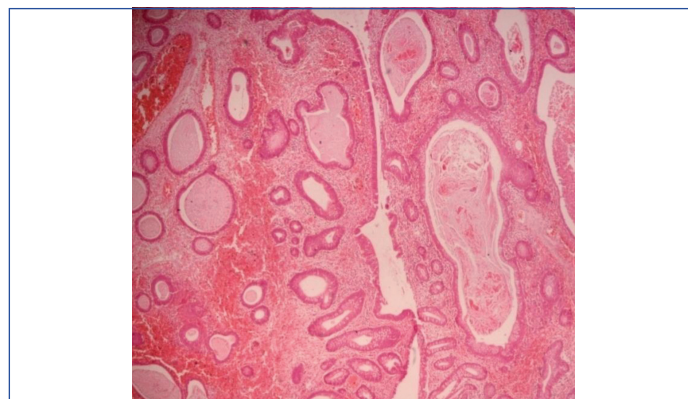
polyps were the commonest, constituting 63.07% (41) of the cases [Table/Fig-5]. Among the adenomas, tubular adenomas were the commonest accounting for 63.41% (26) of the cases and sessile serrated adenoma was the least common-2.43% (1) [Table/Fig-6] [1].

| Type of polyp           | No. of cases |
|-------------------------|--------------|
| Juvenile polyp          | 43 (89.6%)   |
| Juvenile polyposis coli | 1 (2.1%)     |
| Peutz-Jegher's polyp    | 2 (4.16%)    |
| Inflammatory polyp      | 2 (4.16%)    |
| Total                   | 48 cases     |

[Table/Fig-2]: Spectrum of polyps in children.



[Table/Fig-3]: Gross picture of Juvenile polyposis coli showing a segment of bowel measuring 60 cm. Lumen shows multiple pedunculated polyps.



[Table/Fig-4]: Photomicrograph of juvenile polyp (H&E, 4X).

| Type of polyp              | No. of cases  |
|----------------------------|---|
| Adenomatous polyps         | 37 (56.92%)   |
| Hyperplastic polyps        | 8 (12.3%)   |
| Inflammatory polyps        | 6 (9.23%)   |
| Adenocarcinoma             | 6 (9.23%)   |
| FAP                        | 4 (6.15%)   |
| Juvenile polyp             | 1 (1.53%)   |
| Inflammatory fibroid polyp | 1 (1.53%)   |
| Peutz-Jegher's polyp       | 1 (1.53%)   |
| Lymphomatous polyp         | 1 (1.53%)   |
| Total                      | 62 (3 cases had both adenocarcinoma and adenomatous polyps) |

[Table/Fig-5]: Spectrum of polyps in adults.

FAP: Familial adenomatous polyposis

Four cases of adenomatous polyps presented as part of a syndrome of Adenomatous polyposis. Two cases of Familial Adenomatous Polyposis (FAP), post total colectomy presented with polyps in the rectal stump. One case of adenomatous polyp had a family history of FAP and on follow-up examination, developed another polyp. Three cases of adenomatous polyps were associated with an adjacent Adenocarcinoma. Among them, two were villous adenomas and

| Type of polyps           | No. of cases                                      |
|--------------------------|---|
| Tubular adenoma          | 26 (63.41%)                                       |
| Tubulovillous adenoma    | 3 (7.31%)   |
| Villous adenoma          | 11 (26.82%)                                       |
| Sessile serrated adenoma | 1 (2.43%)   |
| Total                    | 41 (includes solitary adenomatous polyps and FAP) |

**[Table/Fig-6]:** Types of adenomatous polyps.

one was tubular adenoma and all three measured more than 1 cm and showed high grade dysplasia. Among the adenomatous polyps, villous adenomas tended to be of larger size with majority of them being more than 1 cm and many of the villous adenomas were associated with high grade dysplasia.

There is evidence that dysplasia is a valid marker of the potential for malignant transformation of colorectal adenomas. Hence, taking high grade dysplasia as a variable which reflects possibility of malignant transformation, we studied the association of dysplasia with site, size and villous architecture using chi-square test.

There was no significant statistical association of high grade dysplasia with site ( $p$ -value-0.2)

There was a significant statistical association between dysplasia and size ( $p$ -value-0.015) [Table/Fig-7].

There was a significant statistical association between high grade dysplasia and villous architecture ( $p$ -value of 0.02) [Table/Fig-8].

| Dysplasia            | Size <1 cm | Size >1 cm |
|----------------------|------------|------------|
| High grade dysplasia | 1          | 4          |
| Low grade dysplasia  | 26         | 9          |

**[Table/Fig-7]:** Association between high grade dysplasia and size of polyp.  
Chi-square test ( $p$ -value: 0.015)

| Dysplasia            | Villous and tubulovillous adenomas | Tubular adenomas |
|----------------------|------------------------------------|------------------|
| High grade dysplasia | 4                                  | 1                |
| Low grade dysplasia  | 10                                 | 25               |

**[Table/Fig-8]:** Association between high grade dysplasia and villous architecture.  
Chi-square test ( $p$ -value: 0.02)

|                              | Jagtap N et al., India, 2021 [10]                 | Amarapurkar AD et al., India, 2016 [11] | Jain M et al., India 2017 [14]                    | Wei C et al., Beijing, 2012 [18]  | Zare-Mirzaie A et al., Iran, 2012 [17] | Lei P et al., China, 2014 [20]   | Shilpa K et al., Mysore, India 2017 [21] | Rathi C et al., Mumbai, 2015 [16]   | Present study, India   |
|------------------------------|---|---|---|-----------------------------------|--|----------------------------------|--|-------------------------------------|--|
| Incidence                    | 10.18%  | 10.3%                                   | 12.7%   | -                                 | -                                      | -                                | -  | -                                   | 6.24%  |
| Sex distribution             | M-75.4%<br>F-24.6%                                | M--66%<br>F-34%                         | M-76.9%<br>F-23.1%                                | M-63.3%<br>F-36.7%                | M-61.4%<br>F-38.6%                     | M-67.7%<br>F-33.3%               | M-63.3%<br>F-36.7%                       | M-72%<br>F-28%                      | M-62.73%<br>F-37.27%   |
| Mean age at presentation     | 51.5 years  | 54.8 years                              | 61.1 years  | 4.7 years (children)              | 58.4 years                             | 8 years (Children)               | 43.6 years                               | 7.31 years                          | Adults-56.5 years<br>Children-6.62 years                               |
| Clinical presentation        | Abdominal pain (74.5%)<br>Rectal bleeding (24.6%) | -                                       | Altered bowel habits (59%)<br>Haematochezia (38%) | Rectal bleeding (94%)             | Rectal bleeding (32%)                  | Rectal bleeding (81.9%)          | -  | Rectal bleeding (95.8%)             | Rectal bleeding (64.54%)   |
| Commonest site               | Rectum (28.91%)<br>Left colon (35.5%)             | Rectosigmoid 76.6%                      | Left colon and rectum (68.2%)                     | Sigmoid (46.1%)<br>Rectum (37.8%) | Colon and sigmoid (74.2%)              | Rectosigmoid (91.3%)             | Rectum                                   | Left colon (97.2%)                  | Rectosigmoid (83.64%)  |
| Most common gross morphology | -   | -                                       | Solitary polyps (94.5%)                           | Solitary polyps (88.4%)           | -                                      | Solitary polyps (80.4%)          | Solitary polyps                          | Solitary polyps (76.6%)             | Solitary polyps (80.9%)  |
| Common histological type     | Adenomatous polyps (42.64%)                       | Adenomatous polyps (52.4%)              | Adenomatous polyps (48.9%)                        | Juvenile polyps (91.8%)           | Adenomatous polyp (84%) in adults      | Juvenile polyp (71%) in children | Adenomatous polyp (60%)                  | Juvenile polyps (77.5%) in children | Juvenile polyps (89.58%) in children<br>Adenomatous (63.07%) in adults |

**[Table/Fig-9]:** Literature review.

## DISCUSSION

We observed that the overall incidence of polyps is lesser in India compared to western countries. Our observed incidence (6.24%) was comparable with Amarapurkar AD et al., (10.3%) [11].

Kastuar S et al., have reported a slightly higher incidence in Indians living in USA which could be due to lifestyle changes. However, the incidence reported by Kastuar S et al., is still less when compared with the incidence reported in National polyp study of USA indicating that Indians have a lower incidence of polyps [12,13]. Another view may be that there is an underestimation in India as a result of scarcity of focused studies and lack of screening colonoscopy. We have observed a predilection in males (62.73%) and our results are comparable with Jain M et al., (76.9%) and national polyp study, USA (62%) [Table/Fig-9] [13,14].

Our observation that the majority of paediatric polyps occur between 6 to 8 years with a mean age of 6.62 years are comparable with studies by Latt TT et al., (5.6 years) and Rathi C et al., (7.31 years) [15,16]. In adults, we have observed a mean age of 56.5 years which is comparable with other studies like Amarapurkar AD et al., (54.8 years) and National polyp study, USA (62 years) [11,13].

Our observation of bleeding per rectum being the commonest presenting symptom (64.54%) is supported by Zare-Mirzaie A et al., (32%) [17]. We have observed a larger proportion of patients to be symptomatic. One possible reason could be a lack of screening colonoscopy in asymptomatic patients, as a result of which patients present at a later stage with symptoms.

Our finding of Rectosigmoid region being the commonest site (83.64%) has been corroborated by Giuliani A et al., (88%), Rathi C et al., (97.3%) and Wei C et al., (83.9%) [4,16,18].

We have observed a predominance of solitary polyps (80.9%) and this has been confirmed by Wei C et al., (88.4%) and Roma-Giannikou ES et al., (95%) [18,19].

We have observed Juvenile polyp to be the commonest type of paediatric polyp (89.58%) which is confirmed by Lei P et al., (71%), Latt TT et al., (83%) and Roma-Giannikou ES et al., (95%) [15,19,20]. In adults, Adenomatous polyp was found to be the commonest and this has been corroborated by Amarapurkar AD et al., (52.4%), Shilpa K et al., (60%) and Zare-Mirzaie A et al., (84%) [11,17,21].

Among the adenomas, Tubular adenomas were the commonest comparable with Zare-Mirzaie A et al., [17]. However, higher proportion of villous adenomas were observed in this study based on the available literature research. This observation has also been made by Kastuar S et al., among Indians residing in USA and they have stated that although polyps overall are less common in Indians, premalignant polyps are more frequent [12]. We have observed a positive association between high grade dysplasia and size. This finding has been supported by Amarapurkar AD et al., and Zare-Mirzaie A et al., [11,22]. We have also observed a positive association between villous architecture and high grade dysplasia. This finding has been supported by Zare-Mirzaie A et al., [22]. We have not observed any correlation between high grade dysplasia and location which has been supported by Tony J et al., and contradicted by Zhan T et al., [23,24].

### Limitation(s)

We have collected our cases from symptomatic individuals who visited the hospital so our study may not accurately reflect the prevalence of polyps. Increased screening in asymptomatic individuals will correctly reflect the actual prevalence. Another limitation is that we could not do risk factors assessment.

### CONCLUSION(S)

A rising incidence of CRC necessitates the identification of colorectal polyps, especially the Adenomatous polyps as they may progress to carcinoma as per the adenoma carcinoma sequence. Polyps occurring as part of polyposis syndromes have increased neoplastic potential. Their detection and treatment carries significant implications both for the patients and his family. In India, there is a need for screening colonoscopy in asymptomatic individuals which can serve as a potential cancer prevention tool.

### REFERENCES

- [1] Hamilton SR, Aaltonen LA. World health organization classification of tumours. Pathology and genetics of tumours of the digestive system. IARC Press: Lyon. 2000:103-42.
- [2] Manfredi M. Hereditary hamartomatous polyposis syndromes: Understanding the disease risks as children reach adulthood. *Gastroenterol Hepatol (NY)*. 2010;6(3):185-96.
- [3] Giacosa A, Frascio F, Munizzi F. Epidemiology of colorectal polyps. *Tech Coloproctol*. 2004;8(2):s243-47.

- [4] Giuliani A, Caporale A, Corona M, Ricciardulli T, Di Bari M, Demoro M, et al. Large size, villous content and distal location are associated with severe dysplasia in colorectal adenomas. *Anticancer Res*. 2006;26(5B):3717-22.
- [5] Ferlay J, Shin HR, Bray F, Forman D, Mathers C, Parkin DM. Estimates of worldwide burden of cancer in 2008: GLOBOCAN 2008. *Int J Cancer*. 2010;127(12):2893-917.
- [6] Sung JJ, Lau JY, Goh KL, Leung WK. Increasing incidence of colorectal cancer in Asia: Implications for screening. *Lancet Oncol*. 2005;6:871-76.
- [7] Frazier AL, Colditz GA, Fuchs CS, Kuntz KM. Cost-effectiveness of screening for colorectal cancer in the general population. *JAMA*. 2000;284:1954-61.
- [8] Jemal A, Siegel R, Ward E, Hao Y, Xu J, Murray T, et al. Cancer statistics, 2008. *CA Cancer J Clin*. 2008;58:71-96.
- [9] Higuchi T, Jass JR. My approach to serrated polyps of the colorectum. *J Clin Pathol*. 2004;57(7):682-86.
- [10] Jagtap N, Singh AP, Pradev I. Detection of colon polyps in India- A large retrospective cohort study (DoCPIr). *J Dig Endosc*. 2021;12:63-66.
- [11] Amarapurkar AD, Nichat P, Narawane N, Amarapurkar D. Frequency of colonic adenomatous polyps in a tertiary hospital in Mumbai. *Indian J Gastroenterol*. 2016;35(4):299-304.
- [12] Kastuar S, Narayanan S, Kastuar S, Pitchumoni CS. Prevalence of colon polyps in asymptomatic individuals undergoing screening colonoscopy in the USA. *Practical Gastroenterol*. 2011;23:41-42.
- [13] O'Brien MJ, Winawer SJ, Zauber AG, Gottlieb LS, Sternberg SS, Diaz B, et al. The national polyp study. Patient and polyp characteristics associated with high-grade dysplasia in colorectal adenomas. *Gastroenterology*. 1990;98(2):371-79.
- [14] Jain M, Vij M, Srinivas M, Michael T, Venkataraman J. Spectrum of colonic polyps in a South Indian Urban cohort. *J Dig Endosc*. 2017;8:119-22.
- [15] Latt TT, Nicholl R, Domizio P, Walker-Smith JA, Williams CB. Rectal bleeding and polyps. *Arch Dis Child*. 1993;69(1):144-47.
- [16] Rathi C, Ingle M, Pandav N, Pipaliya N, Choksi D, Sawant P. Clinical, endoscopic, and pathologic characteristics of colorectal polyps in Indian children and adolescents. *Indian J Gastroenterol*. 2015;34(6):453-57.
- [17] Zare-Mirzaie A, Abolhasani M, Moghaddam RM, Kabivar M. The frequency of gastrointestinal polyps in Iranian population. *Iranian Journal of Pathology*. 2012;7(3):183-89.
- [18] Wei C, Dayong W, Liqun J, Xiaoman W, Yu W, Xiaohong Q. Colorectal polyps in children: A retrospective study of clinical features and the value of ultrasonography in their diagnosis. *J Pediatr Surg*. 2012;47(10):1853-58.
- [19] Roma-Giannikou ES, Papazoglou TA, Panayiotou JV, Van Vliet CP, Kitsiou S, Syriopoulou V, et al. Colon polyps in childhood: Increased mucosal eosinophilia in juvenile polyps. *Annals of Gastroenterology*. 2008;21(4):229-32.
- [20] Lei P, Gu F, Hong L, Sun Y, Li M, Wang H, et al. Pediatric colonoscopy in South China: A 12-year experience in a tertiary center. *PLoS One*. 2014;9(4):e95933.
- [21] Shilpa K, Sharathkumar HK, Monica GS, Mathew N. Histomorphological spectrum of colorectal polyps. *Journal of Medical Science and Clinical Research*. 2017;5(1):15791-94.
- [22] Zare-Mirzaie A, Abolhasani M, Aryamanesh A. Left sided colorectal adenomatous polyps have more risk for high grade dysplasia. *Acta Med Iran*. 2013;51(3):172-77.
- [23] Tony J, Harish K, Ramachandran TM, Sunilkumar K, Thomas V. Profile of colonic polyps in a southern Indian population. *Indian J Gastroenterol*. 2007;26(3):127-29.
- [24] Zhan T, Hahn F, Hielscher T, Betge J, Kähler G, Ebert MP, et al. Frequent co-occurrence of high-grade dysplasia in large flat colonic polyps (>20 mm) and synchronous polyps. *BMC Gastroenterol*. 2015;15:82.

#### PARTICULARS OF CONTRIBUTORS:

1. Assistant Professor, Department of Pathology, Shadan Institute of Medical Sciences, Hyderabad, Telangana, India.
2. Professor and Head, Bhaskar Medical College (Retired HOD, Osmania Medical College), Hyderabad, Telangana, India.

#### NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:

Afshan Jabeen,  
12-2-204, Murad Nagar, Hyderabad, Telangana, India.  
E-mail: afshanjabeen30887@rediff.com

#### AUTHOR DECLARATION:

- Financial or Other Competing Interests: None
- Was Ethics Committee Approval obtained for this study? Yes
- Was informed consent obtained from the subjects involved in the study? Yes
- For any images presented appropriate consent has been obtained from the subjects. Yes

#### PLAGIARISM CHECKING METHODS: [Jain H et al.]

- Plagiarism X-checker: Sep 30, 2022
- Manual Googling: Nov 15, 2022
- iThenticate Software: Dec 23, 2022 (18%)

#### ETYMOLOGY: Author Origin

#### EMENDATIONS: 8

Date of Submission: **Sep 29, 2022**

Date of Peer Review: **Nov 19, 2022**

Date of Acceptance: **Jan 03, 2023**

Date of Publishing: **Jul 01, 2023**