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## Gastrointestinal endoscopic practice in infants: Indications and outcome

Nagla H. Abu Faddan<sup>a,\*</sup>, Almoutaz Eltayeb<sup>b</sup>, Maha Barakat<sup>c</sup>, Yasser Gamal<sup>d</sup><sup>a</sup> Department of Pediatrics, Faculty of Medicine, Assiut University, Assiut, Egypt<sup>b</sup> Department of Pediatric Surgery, Faculty of Medicine, Assiut University, Assiut, Egypt<sup>c</sup> Department of Tropical Medicine, Faculty of Medicine, Assiut University, Assiut, Egypt<sup>d</sup> Department of Pathology, Faculty of Medicine, Assiut University, Assiut, Egypt

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## ABSTRACT

**Background:** Gastrointestinal (GIT) endoscopic procedures are now common in most major pediatric centers and they can be safely performed in small infants.**Aim of the work:** The present study aims to evaluate the diagnostic role and outcome of endoscopy in infants (>one month of age and ≤one year old) with different GIT disorders attending Assiut University Children's Hospital, Egypt.**Patients and methods:** This is a retrospective descriptive hospital based study, conducted from January 2004 to December 2013. All infants (>one month of age and ≤one year old) who underwent GIT endoscopy during the study period were included in this study. The following data were collected from the hospital database: basic demographic data, preliminary diagnosis, indication for endoscopy, sedation or anesthesia, type of endoscopy used, endoscopic finding, complications and final diagnosis.**Results:** The present study included 177 infants (103 male and 74 female), 40.1% of them were within the first 6 months of age. Bleeding was the most common indication for endoscopic examination. Mucosal inflammations were the most common findings in infants presented with different gastrointestinal symptoms. Erythematous patches were the most common endoscopic findings in cases of inflammation. Mixed gastrointestinal lesions detected in 22 (12.4%) of infants were included in this study. No complications occurred either from the procedure itself or sedation given.**Conclusions:** Pediatric gastrointestinal endoscopy is a valuable and informative diagnostic procedure in infants. Negative endoscopic findings have their role in either reassurance, assistance of diagnosing a functional etiology or may point to the need of further other investigations.© 2016 The Egyptian Pediatric Association. Production and hosting by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

## Introduction

Pediatric gastrointestinal (GIT) endoscopy is a field that has been evolving in the last decades and provides a safe and effective diagnostic tool. It is now considered as an important tool in evaluation and treatment of paediatric GIT diseases. Currently children of all ages can be safely examined with better anesthetic techniques and technological advances in the size and flexibility of specially designed pediatric endoscopes.<sup>1–4</sup> These changes, combined with increasing indications, have resulted in an increased number of endoscopic procedures performed in infancy.<sup>3</sup> Because children are not simply young adults, optimal performance of endoscopy in

these patients requires an adequate knowledge and a thorough understanding of the child's medical background, so endoscopy in children should be performed by pediatric- trained gastroenterologists whenever possible.<sup>5,6</sup> Although the indications for GIT endoscopy in pediatric age group are similar to those for adult, the endoscopist must be aware of the fact that all infants, many children, and some adolescents cannot verbalize or describe symptoms accurately.<sup>6,7</sup> Occult signs and symptoms that may prompt an endoscopy in infants and children include failure to thrive, limitation of usual activities, unexplained irritability, and anorexia.<sup>8</sup>

## Aim of the work

The present study aims to evaluate the diagnostic role and outcome of endoscopy in infants (>one month of age and ≤one year old) with different gastrointestinal disorders attending Assiut University Children's Hospital, Egypt.

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\* Corresponding author at: Department of Pediatrics, Faculty of Medicine, Assiut University Children Hospital, Assiut, Egypt.

E-mail address: [nhi-af@hotmail.com](mailto:nhi-af@hotmail.com) (N.H.A. Faddan).<http://dx.doi.org/10.1016/j.epag.2016.10.001>

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## Patients and methods

This is a retrospective descriptive hospital based study, conducted at gastrointestinal endoscopic unit in Assiut University Children Hospital, Egypt, from January 2004 to December 2013. This study was approved by the Ethics Committee of Faculty of Medicine, Assiut University. All infants (>one month of age and ≤one year old) who underwent GIT endoscopy during the study period were included in this study. The following data were collected from the hospital database: basic demographic data, initial diagnosis, indication for endoscopy, sedation or anesthesia used, type of endoscopy used, endoscopic finding, complications encountered during and after the procedure and final diagnosis.

## Statistics

All data were collected in a descriptive form and presented in numbers, percentages and tabulations. The numerical data were represented as mean ± SD.

## Results

The present study included 177 infants [103(58.2%) males and 74(41.8%) females], 71(40.1%) of them were within the first 6 months of age. A written consent obtained from parents (or guardian) of all infants included in this study. Intravenous sedation was

used through incremental doses of midazolam (maximum dose: 0.3 mg/kg). Regarding the equipment, a small diameter video oesophago-gastroscope (Pentax EG 1840) shaft diameter 6 mm, with a working length 105 cm and colonoscopy Videoscope (Pentax EC-3440F) shaft diameter 11.7 mm, with a working length 150 cm were used.

Our results are shown in Tables 1–5 and Figs. 1–4. The results of this study showed that GIT bleeding were the most common indication for endoscopy while, mucosal inflammation (esophagitis, gastritis duodenitis, colitis and/or proctosegmoiditis) were the most commonly detected signs. Erythematous patches were the most common endoscopic findings in cases of inflammation where, mixed GIT lesions were detected in 22 (12.4%) of infant included in this study. There were no complications occurring either from the procedure itself or sedation given. The histopathologic findings of endoscopic mucosal biopsies were villous atrophy of the duodenum suggesting malabsorption syndrome in two infants (2/15 = 13.3%) with chronic diarrhea. Histological evidence of colonic inflammation was detected in 51 infants [22 infants with bleeding of rectum, 22 infants with bloody diarrhea and 7 infants with chronic diarrhea] and eosinophilic colitis has been diagnosed in 20 (39.2%) of them [10 infants with bleeding per rectum, 7 of infants with bloody diarrhea and 3 infants with chronic diarrhea]. The characteristic mushroom-like mass of mucus and neutrophils at the surface epithelium suggesting pseudomembranous colitis was found in 3 patients (5.9%), one of them without endoscopic

**Table 1**

The main indications for endoscopy in 177 infants.

	Males N = 103	Females N = 74	Duration (days) Mean (SD)	≤6 months N = 71	>6 months N = 106	Total N = 177
Upper Endoscopy						
1. Hematemesis: n (%)	31(30.1)	21(28.4)	23.6(19.8)	23 (32.4)	29 (27.4)	52 (29.4)
2. Recurrent vomiting: n (%)	19 (18.4)	18(24.3)	116 (99)	14 (19.7)	23 (21.7)	37 (20.9)
3. Melena: n (%)	6(5.8)	3(4)	24.8 (24.1)	1 (1.4)	8 (7.5)	9 (5)
4. FB ingestion: n (%)	2(1.9)	2(2.7)	7 (4)	–	4 (3.8)	4 (2.3)
5. Dysphagia: n (%)	–	1(1.4)	–	–	1 (0.95)	1 (0.6)
Colonoscopy						
Bleeding per rectum: n (%)	20 (19.4)	12(16.2)	29.7(20.7)	13 (18.3)	19 (17.9)	32 (18)
Bloody diarrhea: n (%)	14(13.6)	13(17.6)	35(27.5)	15 (21.1)	12 (11.3)	27 (15.3)
Panendoscopy						
Chronic diarrhea: n (%)	11(10.7)	4(5.4)	147(132.8)	5(7.1)	10(9.4)	15(8.5)

**Table 2**

Upper endoscopic findings in infants presenting with different GIT symptoms.

	Esophagitis N (%)	Gastritis N (%)	Duodenitis N (%)	Gastric Erosions N (%)	Peptic Ulcers N (%)	Esophageal varices N (%)	GAVD N (%)	Duonal Stenosis N (%)	Ancylostoma N (%)	Achalesia N (%)	Normal N (%)
Hematemesis (52)	11(21.2) <sup>A</sup>	19(36.5)	8 (15.4)	5(9.6)	1(1.9)	6(11.5) <sup>B</sup>	3(5.8)	–	–	–	6(11.5)
Recurrent vomiting (37)	15 (40.5) <sup>C</sup>	6(16.2)	3 (8.1)	1(2.7)	1(2.7)	–	–	1(2.7)	–	–	13(35.1)
Melena (9)	2(22.2)	4 (44.4)	1(11.1)	–	–	1(11.1) <sup>D</sup>	–	–	1(11.1)	–	2(22.2)
Dysphagia (1)	–	–	–	–	–	–	–	–	–	1 (100)	–
Chronic diarrhea (15)	–	–	–	–	–	–	–	–	–	–	15 (100)

GAVD = gastro-antral vascular dysplasia.

A = 2 cases of esophagitis with incompetent cardia and 3 cases with hiatus hernia.

B = one patient have both esophageal and fundal varices.

C = incompetent cardia present in 7 patients.

D = the patient had both fundal and esophageal varices.

NB: more than one lesion could be detected in the same infant.

**Table 3**

Colonoscopic findings in infants presenting with different GIT symptoms.

	Colitis N (%)	Procto- segmoiditis N (%)	Pseudo-membrane N (%)	Polyp N (%)	Oxyuris N (%)	Normal N (%)
Bleeding per rectum (32)	15 (46.9)	7 (21.9)	–	3 (9.4)	1(3.1)	6 (18.7)
Bloody diarrhea (27)	16 (59.3)	6 (22.2)	1 (3.7)	–	–	4 (14.8)
Chronic diarrhea (15)	5 (33.3)	2 (13.3)	2 (13.3)	–	–	6 (40)

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