Original Article

Usefulness of Upper Gastrointestinal Endoscopy in Children

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Abstract

Context: Upper gastrointestinal (GI) endoscopy is now important investigation in children. Although endoscopy is used routinely by pediatric surgeons, there are no recent Indian studies which have evaluated endoscopy within a Department of Pediatric Surgery. **Aims:** It was done with the aim to define the diagnostic value of upper GI endoscopy and evaluate the outcome. **Subjects and Methods:** This is a descriptive retrospective study. Cases <14 years between January 2013 and October 2016 were included. An Olympus GIF-Q150 video gastroscope was used for all procedures. This study was approved by the institute research and ethical committee, and patient confidentiality was maintained using unique identifiers. The data were analyzed using Microsoft Excel 2010 and SPSS (Version 19) software. **Results:** The most common indication for endoscopy was for hematemesis (25.3%, *n* = 18) followed by foreign body removal (22.5%, *n* = 16). There were 18 normal cases. Foreign body removal was done in 18 cases. Among esophageal varices, banding was done in seven cases and dilatation of stricture was done in eight cases. **Conclusion:** Upper GI endoscopy is significantly associated with positive organic finding and so it is a valuable and essential diagnostic procedure.

Keywords: Endoscopy, pediatric surgery, recurrent abdominal pain

Introduction

The use of endoscope is growing worldwide for diagnostic and therapeutic purposes.[1] Pediatric endoscopy has become an important diagnostic procedure in the evaluation of gastrointestinal (GI) bleeding, pain abdomen, dysphagia, and removal of foreign body. New advances in pediatric endoscopy have led to more sensitive diagnosis of common pediatric GI disorders and new diseases, such as eosinophilic esophagitis. Many studies have shown that endoscopy is superior to radiography in diagnosing GI diseases. It also offers opportunity for biopsy and concomitant treatment.[2,3] Although endoscopy is used routinely by pediatric surgeons, there are no recent Indian studies which have evaluated endoscopy within a department of pediatric surgery. In addition, there are very few studies on endoscopy in Indian children which demonstrate its utility. In this study, we seek to establish the utility of endoscopy in patients aged <14 years, who underwent upper GI endoscopy for various indications.

Subjects and Methods

This is a descriptive, cross-sectional, retrospective study done in tertiary care hospital. The study was done with the aim to define the diagnostic value of upper GI endoscopy and evaluate the outcome. Cases between January 2013 and October 2016 were included. The study included the children <14 years who underwent upper GI endoscopy during the study period. In accordance with the institutional protocol, endoscopic procedure on children <14 years were performed under general/local anesthesia administered by anesthesiologists. During procedure, vital signs and oxygen saturation were monitored continuously. These procedures were done both on an outpatient and inpatient basis. The procedure was assisted by at least two nurses trained in endoscopy. Written informed consent was taken from patients' parents or legal guardian. An Olympus GIF-Q150 video gastroscope was used for all procedures. This study was approved by the institute research and ethical committee and patients' confidentiality was maintained using unique identifiers. The data were analyzed using Microsoft Excel 2010 and SPSS (Version 19, IBM Corp., Microsoft Windows, USA) software. All data on categorical variables

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were presented as frequencies and percentages. Chi-square test was used to compare the frequencies and percentages. All the statistical analyses were carried out at 5% level of significance and $P < 0.05$ was considered statistically significant.

Results

A total of 71 upper GI endoscopy were performed between the 2013 and 2016. Data were collected and analyzed from these cases. There were 51 (71.8%) male and 20 (28.2%) female. The median age of cases was 6 years.

Indications

Table 1 shows the distribution of indications of all endoscopy performed during the study period. The most common indication for endoscopy was for hematemesis (25.3%, $n = 18$) followed by foreign body removal (22.5%, $n = 16$). Table 1 also shows age distribution by indication.

Outcomes

Table 2 shows the outcome of endoscopy. There were 18 normal cases. Foreign body removal was done in 18 cases. Among foreign bodies, eight were sharp objects, five gold pendants, two batteries, one coin, and two nonradio-opaque foreign bodies. Both radio-opaque objects were found in esophageal stricture cases. Among esophageal varices, banding was done in seven cases and dilatation of stricture was done in eight cases. Figure 1 shows various upper GI endoscopic views.

Discussion

Endoscopy is one of important tool for both diagnosis and treatment. It has also helped in the understanding the pathophysiology of many GI diseases in children. This study was conducted at a tertiary care center in a pediatric surgery department. Indications for endoscopy change over a period of time. There is increasing trend of endoscopic utilization for diagnosis and treatment in children. In this study, the most common indication was hematemesis. Previous studies from developing countries reported recurrent abdominal pain as the most common indication of upper GI endoscopy.[4-6] In this study, the frequency of abdominal pain as an indication of upper GI endoscopy was low, this could be because it was done in surgical department. The second most common indication was abdominal pain and foreign body removal. This was followed by abdominal pain, which accounted for 22.5% of cases. A recent retrospective study from Pakistan has reported the most common indication as failure to thrive with suspected celiac disease (31%).[7] Another retrospective study from Saudi Arabia done in tertiary care hospital has reported endoscopy for duodenal biopsy as the most common indication followed by abdominal pain (24%).[4]

In our study, 26.7% of the upper GI endoscopies were found to be normal. This is smaller percentage compared to previous studies.[5,8-10] It correlated with another study.[11] Endoscope was most commonly used for foreign body removal. Esophageal varices were the next most common diagnosis.

The outcomes of the current study regarding the endoscopic indications and outcome are quite different from previous studies.[5,8-11] This could be because the studies mentioned above are mostly from medical gastroenterology department and not from pediatric surgical department. Overall, the number of gastroscopies performed in pediatric surgery department will be much lesser than gastroenterology department.

Table 1: Indications for endoscopy

Serial number	Indication	Age <5 years ($n=40$)	Age >5 years ($n=31$)	Total ($n=71$), n (%)
1	Foreign body	14	2	16 (22.5)
2	Hematemesis	3	15	18 (25.3)
3	Abdominal pain	4	12	16 (22.5)
4	Dysphagia	11	0	11 (15.5)
5	Corrosive ingestion	3	2	5 (7.1)
6	vomiting	4	0	4 (5.6)
7	Biopsy	1	0	1 (1.4)

Table 2: Endoscopic outcome

Outcome	n (%)
Normal	19 (26.7)
Foreign body	18 (25.3)
Esophageal varices	10 (14.0)
Gastritis	6 (8.6)
Corrosive ingestion	5 (7.1)
Reflux esophagitis	4 (5.6)
Stricture esophagus	8 (11.2)
Celiac disease	1 (1.4)

Conclusion

Upper GI endoscopy is significantly associated with positive organic finding, and so it is a valuable and essential diagnostic procedure. Endoscopy can be safely used in children of all

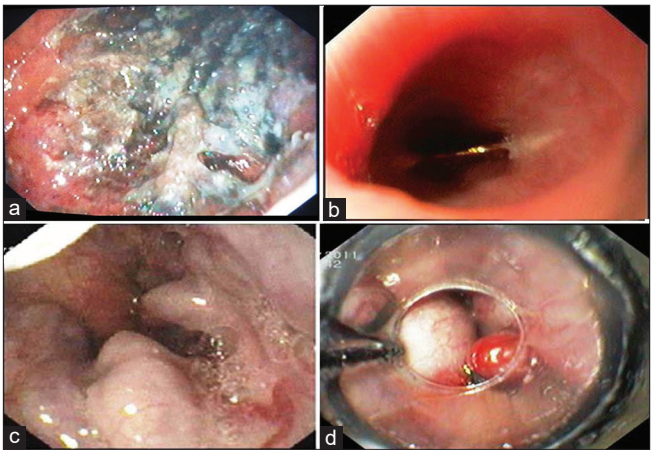


Figure 1: Various endoscopic views: (a) Corrosive poisoning, (b) gold pendant in esophagus, (c) esophageal varices, (d) esophageal banding

ages which helps in early diagnoses and management of various GI conditions.

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Confiicts of interest

There are no conflicts of interest.

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