

## Original Article

# Gastrointestinal Endoscopy in the Riverine Southwestern Ondo State of Nigeria: An Eight Year Review

Obonna GC<sup>1</sup>, Obonna MC<sup>2</sup>

<sup>1</sup>Gastroenterology unit, George and Martin Clinic, Ore Ondo State and Department of Surgery, University of Medical Science Teaching Hospital, Ondo City, Ondo State, Nigeria.

<sup>2</sup>Department of anatomy, Faculty of Basic Medical Science, Abia state university Uturu Nigeria.

### Correspondence

Obonna GC

Email: [obonnadr@gmail.com](mailto:obonnadr@gmail.com)

Tel: +2348038584310

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## ABSTRACT

Gastrointestinal (GI) endoscopy is a notable advancement in the diagnosis of diseases in the digestive tract. It offers the advantage of biopsy and a range of cost-effective therapeutic options. The aim of this research was to study the range of GI endoscopy procedures, indications, spectrum of findings and outcome of GI endoscopy in a typical private specialist gastroenterology institution in a developing country. This was a cross sectional observational study of patients referred for GI endoscopy to a referral health facility in southern Ondo, Ondo state, Nigeria from February 2012 to February 2020. The variables studied were demographics of the patients, indication, the type of endoscopic procedure carried out and outcome. Statistical analysis was done using SPSS version 20 (SPSS, Chicago, IL, USA). Four hundred and ninety-six cases of endoscopy were performed during the study period comprising 313(63.1%) males and 183(36.1) females. The age range was 15 months - 86years (mean age of  $48.9 \pm 16.2$  years). Upper and lower gastrointestinal bleeding were the commonest indications for endoscopy referral - 181 (36.5%). The range of procedures performed included oesophagogastroduodenoscopy 266 (52.8%) and colonoscopy 177 (35.9%); the therapeutic procedures carried out ranged from sclerotherapy 35(7.0%), polypectomy 24(5.0%), band ligation 6(1.0%), foreign body retrieval 6(1.0%) to a case of endoscopic mucosal resection EMR.

In our experience, the practice is safe with a high diagnostic yield and therapeutic achievement.

**Keywords:** Gastrointestinal tract, Endoscopy

## INTRODUCTION

A rapid development of flexible gastrointestinal endoscopy into a therapeutic instead of a purely diagnostic discipline has been witnessed in the last few years.<sup>1</sup> The skills and technique involved in flexible endoscopy have long been embraced by gastroenterologists with much reluctance from surgeons.<sup>2</sup>

The Fundamentals of Endoscopic Surgery (FES) program of American Board of Surgeons was designed to address the challenge of endoscopic skills acquisition.<sup>3</sup> In Nigeria, the last two decades have witnessed remarkable upsurge in the use of this technology, though not to the same degree as obtains in the western world. The scarcity of trained endoscopic surgeons, relevant infrastructure and support staff are some limiting factors. The purpose of this paper is

to report the range of endoscopy procedures, Indications, spectrum of findings and outcome from nearly 500 consecutive gastrointestinal endoscopic procedures in a surgical gastroenterology practice in the riverine southwestern Ondo state.

## PATIENTS AND METHOD

### Study design/setting

A cross-sectional observational single-centre study was conducted on patients who had GI endoscopy in the George and Martin privately-owned health facility in Ore, southern Ondo, Ondo State Nigeria which serves as a referral endoscopy centre for a considerable part of this region. The study duration was February 2012 to February 2020 with patients either referred or presenting primarily for the procedures. There was prospective data collection using Microsoft Excel software at presentation and following the procedure. The variables collated were demographics of the patients. Indications for referral, the nature of endoscopic procedures performed and their outcomes. The age of patients was stratified into age group of 10 years interval.

### Patient Preparation/Procedure

A detailed history was obtained including indication, comorbidities, medication and previous endoscopy experience. All procedures were performed by the same surgeon endoscopist.

### Upper gastrointestinal endoscopy

A routine haemoglobin count was done, and an educational leaflet was given during obtaining consent from patients. The patients were fasted for 6 hours before the procedure. A local anaesthetic spray to the pharyngeal mucosa and mild sedation with 0.25- 5mg of benzodiazepine was the routine practice. Sometimes total intravenous anaesthesia with endotracheal intubation was used, primarily for paediatric endoscopy, in patients with acute bleeding condition and uncooperative patients. A complete diagnostic procedure is adjudged by

intubation of the duodenum and visualization of the second part in the absence of an obstructing lesion. The vital signs were monitored during and at least 15 minutes after the procedure with moderate sedation, or until full recovery from general anaesthesia, then discharged home or back to referring hospital.

### Lower gastrointestinal endoscopy

Routine pre-procedure tests as for upper gastrointestinal endoscopy was performed. A bowel preparation using polyethylene glycol or a combination of bisacodyl/castor oil or Sodium picosulphate citrate (Picolax) was used based on availability. A pre- procedure dietary restriction for 2 days prior to the colonic examination was the practice but for proctoscopy, there was no need for bowel preparation. An opioid analgesic (pentazocine 30mg) and mild sedation (0.25-5mg diazepam) were administered prior to procedure, intravenously, with patient monitoring.

### Statistical analysis

Statistical analysis was done SPSS version 20 (SPSS, Chicago, IL, USA). Mean age and standard deviation were calculated for quantitative variables while Chi-square and Fisher's exact tests were performed on categorical variables where appropriate. Statistical significance was determined for the tests when  $P < 0.05$ .

## RESULTS

A total of 496 gastrointestinal endoscopic procedures were performed during the study period. The age range was from 5 - 86 years with a mean age of  $48.9 \pm 16.2$  years (Figure 1); 313(63.1%) were males and 183(36.9) females. The payment for endoscopy service was out- of-pocket in 469 (94%), while those by health insurance reimbursement 30(6.0%). Upper gastrointestinal endoscopy was the most common endoscopic procedure done in 264 (53.2%) cases(Figure 2). The three most common indications for upper GI endoscopy were epigastric pain 141 (28.4%), upper abdominal discomfort 37(7.5%) and dysphagia 23 (4.6%) (Table 1). There were: 5 band ligations for

oesophageal varices; 6 cases of foreign body extraction- 2 button batteries, 2 dentures, 1 coin and 1 tooth brush; 3 cases of sclerotherapy for gastric bleeding from isolated gastric varices and 2 peptic ulcer diseases. The remaining 252(94.9%) OGDs were diagnostic for various upper gastro-intestinal symptoms and pathologies; 5 on-table oesophagogastroduodenoscopy (OGD) as work up for laparoscopic cholecystectomies. Transient sore throat and flatulence were the common complications observed following upper GI endoscopy. There was no recorded case of cardiopulmonary complication, perforation or death. The leading indications for lower GI endoscopy were bleeding per rectum 46(61.33%) and lower abdominal pain 27(5.4%). There were 233 lower GI endoscopies: proctoscopy 13(2.6%); rigid video proctosigmoidoscopy 5(1.0%); flexible sigmoidoscopy 33(26.7%) and colonoscopy 177 (36.7%) (Table 1). The interventional endoscopic procedures done were: 34 sclerotherapies; 25 polypectomies; 1 endoscopic mucosal resection EMR. The findings at endoscopy are as shown in Table 2. Gastritis was the commonest finding at upper gastrointestinal endoscopy 109(22.0%) followed by

**Table 1:** Distribution of symptoms among patients presenting for gastrointestinal endoscopy

Symptoms	Frequency (n)	Percentage (%)
Bleeding Per rectum	157	31.7
Epigastric Pain	141	28.4
Upper Abdominal discomfort	37	7.5
Screening	29	5.8
Lower Abdominal pain	27	5.4
Haematemesis	24	4.8
Dysphagia	23	4.6
Constipation	17	3.4
Anal pain/protrusion	16	3.2
Others (follow-up etc)	7	1.4
Foreign body ingestion	6	1.2
Vomiting	4	0.8
Diarrhea	4	0.8
Flatulence	4	0.8
Total	496	100

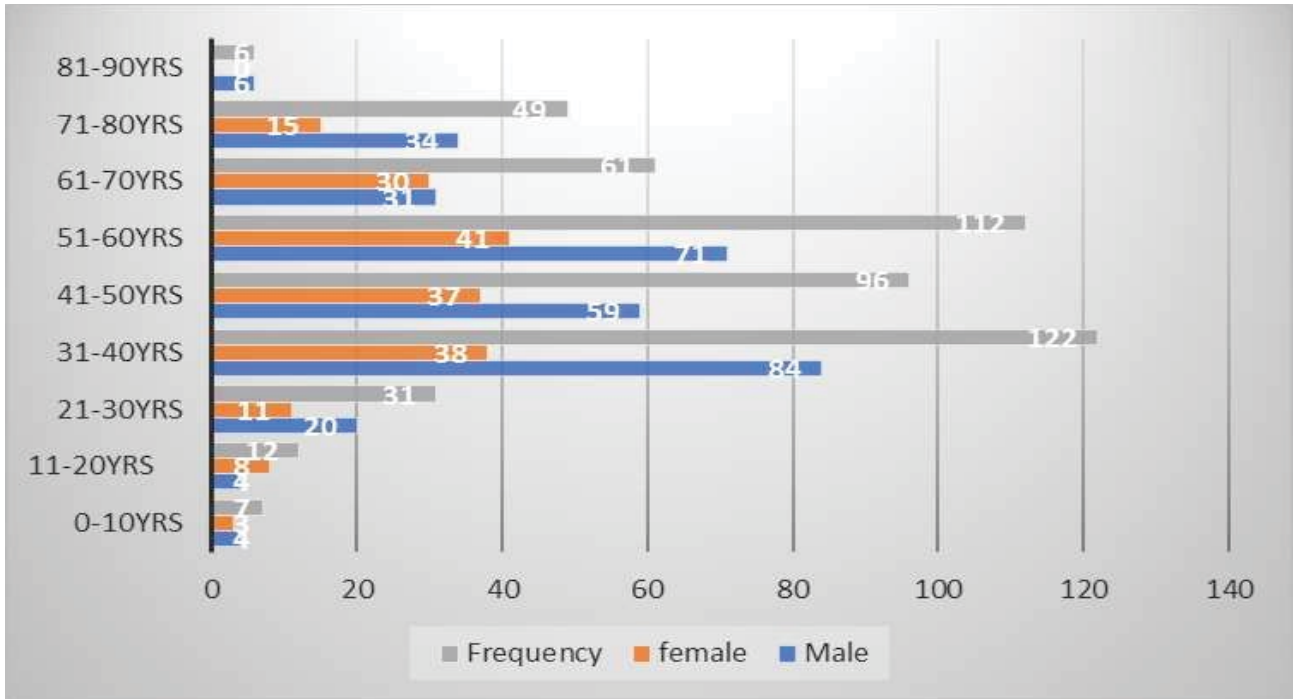


Fig. 1: Age and gender distribution of patients presenting for gastrointestinal endoscopy.

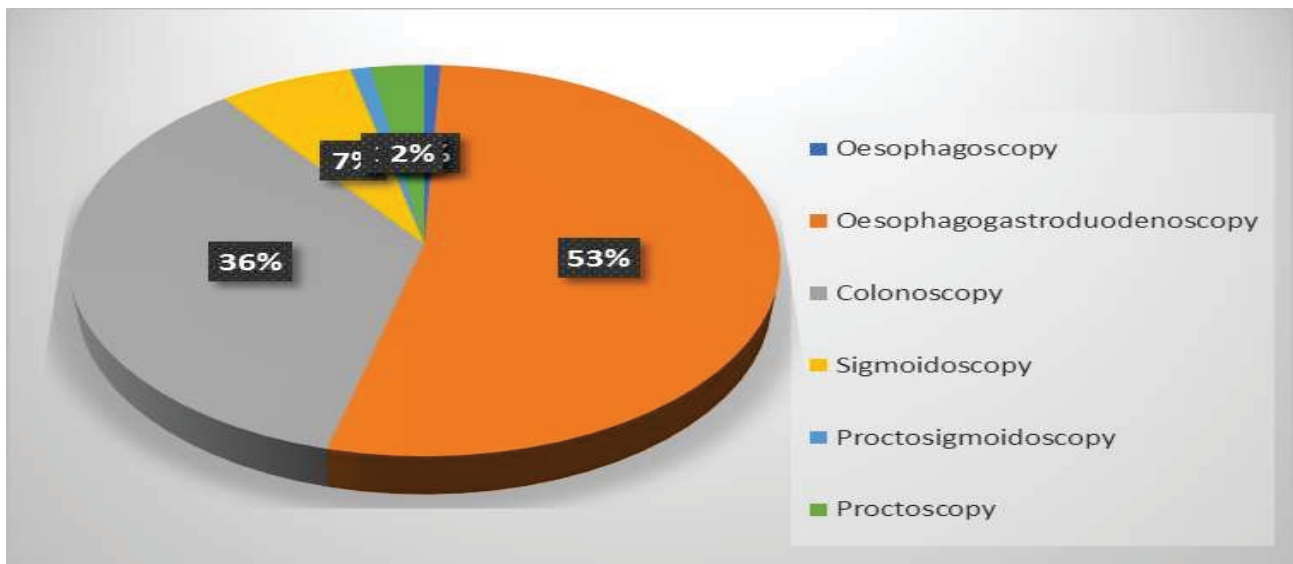


Figure 2: Endoscopy procedures performed on patients presenting for gastrointestinal endoscopy

**Table 2:** Endoscopy findings among patents presenting for gastrointestinal endoscopy in Ondo state, Nigeria.

Symptoms	Frequency (n)	Percentage (%)
Gastritis	109	22.0
Haemorrhoids	98	19.8
Normal Study	62	12.5
GOERD/Hiatus hernia	46	9.3
Colorectal neoplasm	36	7.3
PUD	18	3.6
Diverticular Disease	14	2.8
Gastric tumour/polyp	12	2.4
Colitis	9	1.8
Others (Necrotizing fasciitis Mucosal oedema etc)	9	1.8
Oesophageal Varices	8	1.6
Oesophageal Tumour	8	1.6
Fissure-in-ano	8	1.6
Foreign Body removal	7	1.4
Incomplete study	7	1.4
Diverticulosis	7	1.4
Biliary reflux	5	1.0
Obscure GI bleeding	5	1.0
Proctitis	4	0.8
Candida Oesophagus	4	0.8
Duodenitis	4	0.8
Gastric erosion	3	0.6
Mallory Weiss tear	3	0.6
Angiodysplasia	2	0.4
Ulcerative colitis	1	0.2
Oesophageal web	1	0.2
Gastric Varices	1	0.2
<b>Total</b>	<b>496</b>	<b>100</b>

gastrooesophageal reflux disease 46 (9.3%). Peptic ulcer disease constitutes 18 (3.6%) while gastric tumour/polyp accounted for 12 (2.4%). Oesophageal tumour and oesophageal varices each accounted for 8 (1.6%) respectively of the findings. The least of the findings were oesophageal web 1 (0.2%) and gastric varices 1 (0.2%). The

commonest finding at colonoscopy was haemorrhoids 98 (19.8%) followed by colorectal neoplasm 36 (7.3%). Next is diverticular disease 14 (2.8%) and colitis 9 (1.8%) and fissure-in-ano 8 (1.6%), diverticulosis 7 (1.4%). There was incomplete study 7 (1.4%). Endoscopic findings were normal in 62 (12.5%).

## DISCUSSION

Gastrointestinal endoscopy is a keystone diagnostic procedure in gastroenterology. In this study, the male to female ratio was 1.7: 1 and patients who were scoped were mostly in their 4<sup>th</sup> decade of life. Over half of the cases (50.4%) were persons aged 20 to 50 years, who are in the productive years of their lives, with attendant loss of man hours. This burden of hours lost from the active work force due to ill health underscores the importance of prompt accurate diagnosis and treatment of digestive diseases.

A small proportion of patients seen were of paediatric age group 16(3.0%). The practice of paediatric endoscopy by adult gastroenterologists in developing countries is not ideal but rather a pragmatic step to fill in for the dearth of skilled paediatric gastroenterologists.<sup>4,5,6</sup>

Epigastric pain was the most common indication for upper GI endoscopy seen in 141(28.4%) cases. This is a part of the symptom complex of dyspepsia. Dyspepsia is a chronic or recurrent central upper abdominal pain or discomfort arising from the upper gastrointestinal tract usually associated with food intake or brought on by hunger.<sup>7</sup> There is a paucity of literature on the prevalence of dyspepsia in Nigerians however there is report of gastritis being the most common endoscopic finding at upper GI endoscopy in patients with dyspepsia.<sup>8,9,10</sup> In US, the annual prevalence of dyspepsia is about 25%.<sup>11</sup> For the lower tract, bleeding per rectum was the most common indication for endoscopy referral and this was the case in 142 (29.0%) cases. A similar finding was seen in other lower GI studies from Nigeria.<sup>12,13</sup> This is probably because of the alarming nature of this symptom which compels patients to seek medical attention and accept the cost-effective option of endoscopy for an accurate diagnosis and intervention.<sup>14</sup> There were 15 cases of upper gastrointestinal endoscopy that were performed as part of endoscopic evaluation for bleeding per rectum because massive upper gastrointestinal bleeding can manifest as haematochezia.

Flexible video gastroscopy was performed in 264(53-0%) cases and thus was the most common gastrointestinal

endoscopy procedure. Similar combined upper and lower GI studies from different parts of Nigeria report oesophago-gastroduodenoscopy as the most common GI endoscopy procedure.<sup>15,16</sup> Flexible endoscopy is a useful tool for pre, intra, and post-operative assessment of surgical patients. An oesophagogastroduodenoscopy prior to laparoscopic cholecystectomy could disclose other gastroesophageal disorders with similar symptoms to gallstones.<sup>17</sup> An OGD was performed on table just prior to laparoscopic cholecystectomy for 5 cases as the theatre was equipped with flexible endoscopy equipment. A case of post-operative assessment of a gastro-jejunostomy was recorded.

There was a very low complication rate and no mortality was recorded in this study. Only transient sore throat and bloating were reported by some patients after upper GI endoscopy. A case of post-polypectomy bleeding was recorded following an interventional colonoscopy. There were also reports of transient abdominal discomfort in a handful of colonoscopy cases. Reports of severe acute complications following GI endoscopy are rare. However when they do occur, they are more apt to be related to anaesthetic complications, bleeding, perforation or infection<sup>15,16,18</sup>.

There was a wide spectrum of gastrointestinal diseases recorded. In the upper digestive tract, the most common pathologies were gastritis (22.0%), gastroesophageal reflux disease (GOERD)-9.3% and peptic ulcer disease (PUD) 3.6% in decreasing order of frequency. A low rate of diagnosis of peptic ulcer disease in cases of dyspepsia was observed in keeping with the global reduction in incidence of peptic ulcer disease.<sup>19,20</sup> In the small population of peptic ulcer disease recorded, males were four times more affected and the ratio of gastric to duodenal ulcers was 2.6:1. The diseases of the lower digestive tract that were recorded, in decreasing order of frequency, were haemorrhoids, colorectal neoplasms and diverticular disease. Reports of lower GI endoscopy from Nigeria also show haemorrhoids as most common diagnosis.<sup>21,22,23</sup> In all 65 (13.0%) of the patients studied presented with normal endoscopic features.



Nigeria is a developing country with middle per capita income.<sup>24,25</sup> The current National Health Insurance Scheme NHIS is largely non-inclusive of the cost of endoscopy as the study shows majority of payments for procedures were made out-of-pocket. Health insurance reimbursement was applicable in only 30(6.0%)cases. A diagnostic flexible endoscopy procedure in our region costs from \$100 - \$200 (₦40, 000 to ₦80, 000). This service, unfortunately, is not affordable by a significant portion of the population. Beyond cost, effective GI endoscopy service also face other challenges which include a non-ready availability of endoscopy consumables and failure of prompt referral of patients by primary care physicians/other specialists. In the authors view, an increased enlightenment of the availability and usefulness of endoscopy services among health care givers in addition to a more appropriately priced and comprehensive health insurance scheme are needed.

## CONCLUSION

Through endoscopy a wide range of gastrointestinal conditions can be detected. Therefore the needed expertise in a broad range of therapeutic endoscopic procedures will be desirable.

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