

The Role of Endoscopy in the Diagnosis and Management of Upper Gastrointestinal Bleeding.

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ABSTRACT

Background: Upper gastrointestinal bleeding is a common medical and surgical emergency. The aim of the study is to comprehend the aetiology of upper gastrointestinal bleeding by endoscopy and to evaluate the different endoscopic modalities for the management of upper gastrointestinal bleed. **Methods:** In 117 haemo-dynamically stable patients with the history of upper gastro-intestinal bleed endoscopy was done and possible site and cause of bleeding determined. The bleeding was stopped using one or more of the undermentioned modalities- Endoscopic Sclerotherapy (ES) using absolute alcohol, Endoscopic Variceal ligation (EVL), Injection Epinephrine (1:100,000) **Results:** Out of 84 patients bleeding was stopped in 81(96.42%) by endoscopic intervention. Among 72 (85.71%) patients of oesophageal varices treated with ES, re-bleed occurred in 2 (2.38%) patients. While out of 12 (14.28%) non variceal patients, re-bleed occurred in 1 (8.30%) patient. **Conclusion:** Most of the upper gastrointestinal bleed patients who presented in our setup were having varices. On the basis of lower rates of re-bleeding, mortality, complications and need for fewer endoscopic treatments, ligation should be considered as the endoscopic treatment of choice for patients with oesophageal variceal bleeding.

Keywords: Endoscopy, Esophageal varices, Upper gastrointestinal bleed.

INTRODUCTION

Upper gastrointestinal bleeding is a common medical/surgical emergency. The first description of the upper gastrointestinal bleeding presenting as coffee ground vomiting and melena was given by Galen Claudius in 200 AD^[1], there has been dynamic progress in the diagnosis and management of this disease ever since. Upper G I Bleed is defined as bleeding from proximal to the ligament of Trietz. Haematemesis and melena are the most common presentation of the upper G.I. bleed and the patient may present with one or both symptoms, occasionally a brisk upper G.I bleed may manifest as haematochezia. The common cause of upper G.I. Bleed include: 1). Oesophageal varices, 2) Peptic ulcer, 3) Gastritis 4). Gastric erosion 5). Gastric malignancy, etc. Initial management includes - resuscitation of haemodynamically unstable patient, followed by diagnostic workup including endoscopy followed by definite therapy. The development of Endoscopy has provided the clinicians with the ability for both diagnostic and therapeutic approach to bleeding through the G I tract.

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Endoscopic examination of upper G I tract provide useful information regarding the source and site of bleeding. Since the late 1980s endoscopic techniques to achieve haemostasis for bleeding

ulcer and the varices have continued to evolve. Endoscopy is now the method of choice for controlling active upper G I haemorrhage.^[2,3,4]

Endoscopy has become the gold standard for many surgical disease of upper G I tract particularly the GI bleeding.^[2] The coupling of the video technology to the flexible endoscopies has also improved the procedure. The ability of endoscopy staff to watch with the surgeon makes the procedure safer, quicker and more effective. The improved lighting and magnification of video monitor makes it less likely that small lesion or subtle mucosal changes will be missed. A number of endoscopic modalities are available to prevent or treat upper gastrointestinal haemorrhage, they are: 1). EVL, 2). Clipping, 3). Laser therapy 4). Inj. sclerotherapy using epinephrine 1:10,000, 5). Heater probe, 6). Electrocoagulation (monopolar and bipolar). Over the last 10 years several randomized clinical trials and meta-analysis have demonstrated and supported that early endoscopic haemostatic therapy significantly reduces the rate of recurrent bleeding, need for emergent surgery, and mortality in the patient with upper G I Bleed.^[5] Upper gastrointestinal bleeding is a common medical emergency at J. N. Medical College hospital, Aligarh Muslim University, Aligarh which is located in north India and very close to national capital New Delhi. It is associated with high rates of morbidity and mortality. Therapeutic endoscopy is being performed in our centre for the last three years. Little data are available in our region regarding the clinical profile, diagnostic investigations and management of patient with upper gastrointestinal bleeding. With this background, the study was conducted in the surgical endoscopic unit of our hospital.

MATERIALS AND METHODS

A total of 117 haemo-dynamically stable patients with history of upper gastrointestinal bleeding were included in this study. Patients with history of upper gastrointestinal bleeding having one or more of the following: 1.Haematemesis, 2.Malena, 3.Haematemesis and melena both, 4.Hematochezia. The exclusion criteria included patients having: 1.shock (uncontrolled), 2.peritonitis, 3.patient with major cardiac problem such as recent myocardial infarction. 4. Congestive cardiac failure.

Preparation for upper G I endoscopy

- 1) The patient were kept nothing by mouth for 4-6 hours.
- 2) Pharyngeal anaesthesia to blunt the gag reflex using 5% lidocaine spray.
- 3) Intravenous sedation was given in selected cases using Inj midazolam.
- 4) The patient's vitals were monitored closely during the procedure.

Procedure

The procedure was performed in standard manner with the patient in the left lateral position using FUJINON EG -201FP video-oesophago-gastro-duodenoscope having EVE processor EXP-201H (JAPAN). After a thorough upper gastrointestinal endoscopy, the possible cause of gastrointestinal bleeding was determined. In patients where the cause and the site of bleeding was known, endoscopic therapy was done in order to control the gastrointestinal bleed or prevent recurrence. During the endoscopy, the patient was monitored according to analgesia and sedation guidelines formulated by American society of Anaesthesiology. The characteristics of bleeding lesion were noted and appropriate therapy applied when necessary for high risk lesions or active bleeding.

The modalities for control of haemorrhage endoscopically were the following:

1. Injection sclerotherapy using absolute alcohol
 2. EVL
 3. Inj epinephrine (1:100000) dilatation.
- The techniques used for variceal bleeding were:
- 1) Injection sclerotherapy
 - 2) Endoscopic variceal ligation (EVL)
 - 3) Both.

For non variceal bleeding the following modalities was adopted:

- 1) Epinephrine (1:10000, 1:20000) was injected in 0.5-ml aliquots around the base of vessel.
2. Patients were given intravenous PPIs (protein pump inhibitors) initially followed by oral.

Helicobacter Pylori eradication was done in the patients with peptic ulcer bleed using standard regimen.

In Variceal bleeding:

1. The varices were seen on endoscopy and graded according to the paquet grading system.^[5]
2. After initial resuscitation, upper G I endoscopy was performed. If the varices belonged to grade 3-4 or there was evidence of bleeding, endoscopic variceal band ligation (EVL) was done using the Pentagun banding kit provided by hospiline company, New Delhi, India.
3. In those patients where the varices were of grade 2-3 and there was history of bleeding, injection sclerotherapy was done using absolute (95%) alcohol both intra-variceal and para-variceal injection were given. In some patients a combination of EVL and sclerotherapy was used.

Care and Monitoring after the Procedure and Follow up:

- 1) The patient was kept in the recovery area for at least 30 minutes after therapeutic endoscopy.
- 2) His/her vitals were closely monitored. The patients was discharged or sent to ward if the condition of the patient was found to be stable.
- 3) The patient with acute G I bleed were kept in the ward for 48 hrs for observation. In case of re-bleed, a repeat endoscopy and endoscopic therapeutic procedure was repeated.
- 4) The patient were followed up at 15 days 30 days, 6 months, & 1 year and repeat endoscopy performed if indicated.
- 5) Patients with variceal bleed were kept on the beta blocker 40mg x 8 hourly and regular evaluation was done by the physician in charge.

RESULTS

The total number of cases included in the study was 117 out of which 76 were male (65%) while 41 were females comprising about 35% of total. Male: Female ratio was 1.8:1. The maximum number of patients were in the age group of 31-40 years (28.97%) followed by third decade (18.69%). Minimum number of patients were in the age group of above 70 years (1.86%). The mean age of distribution in our study was 43years.

Clinical presentation:

Out of 117 patients 78 (66.67%) patients presented with features of hematemesis and 12 (10.25%) presented with melena, and 27 (23.07%) patients presented with both hematemesis and melena. And 6 (5.12%) patients presented with haematochezia. Apart from G.I. bleeding patients had other associated features. 30 (25.64%) patients had pain in abdomen and 26 (22.23%) were having ascites. 6 (5.12%) presented with features of gastric outlet

obstruction. In endoscopy out of 117 patients who underwent upper G.I. endoscopy, 72 (61.53%) had variceal bleeding due to oesophageal varices and

45 (38.46%) were having non variceal bleed [Table 1,2,3].

Table 1: Clinical (Main) features of patients.

S.No	Clinical Features	No. of Patients	Percentage
1	Hematemesis	78	66.67
2	Melena	12	10.25
3	Both (hematemesis & melena)	27	23.07
4	Hematochezia	6	5.12

Table 2: Clinical (Associated) features of patients.

S.No	Associated features	No. of Patients	Percentage
1	Pain Abdomen	30	25.64
2	Ascites	26	22.23
3	Gastric outlet obstruction	6	05.12

Table 3: Clinical presentation of patients with non variceal bleed.

S.No	Disease	No. of patients (n=45)	Percentage
1	Gastric ulcer	9	20.00
2	Duodenal ulcer	8	17.77
3	Gastric erosion	9	20.00
4	Ca oesophagus	7	15.55
5	Ca stomach	5	11.12
6	Gastropathy	3	06.67
7	No evidence of endoscopic bleeding	4	08.89

Treatment: Out of 117 patients 84 patients underwent therapeutic endoscopy while 33 patients were managed conservatively. Among 84 patients 72 were of variceal bleed while 12 were of non-variceal bleed. Out of 72 patients, 50 (69.44%) underwent oesophageal variceal ligation (EVL), 15 (20.83%) patients underwent Inj. Sclerotherapy and 7 (09.72%) patients underwent both Inj. Sclerotherapy and EVL.

In case of non variceal bleeding total number of patients was 45 (38.46%). Among them 33 (73.34%) patients were managed conservatively and 12 (26.67%) underwent therapeutic endoscopy. Inj. Adrenaline (1:10000) dilution was used for sclerotherapy in gastric and duodenal ulcer bleed [Table 4].

Out of 84 patients bleeding was stopped in 81 (96.42%) by endoscopic intervention. Among 72 (85.71%) patients of oesophageal varices treated with ES, re-bleed occurred in 2 (2.38%) patients within 72 hours. In one of the patients the re-bleeding was controlled by inj. Sclerotherapy, while in other case the bleeding could not be controlled. While out of 12 (14.28%) non-variceal patients, re-bleed occurred in 1 (08.30%) patient of gastric ulcer, it was controlled by sclerotherapy [Table 5].

Out of 117 patients 2 (1.70%) patients expired who were diagnosed as having oesophageal varices with cirrhosis with portal hypertension. Out of the two patients EVL was done in one patient while in the second patient EVL could not be done.

Table 4: Diagnosis & therapy of patients

S.No	Diagnosis	Therapy	No. of patients	Percentage
1	Gastric ulcer	Inj. Adrenaline	5	41.67
2	Duodenal ulcer	Inj. Adrenaline	7	58.34

Table 5: Results of the therapy

S.No	Results	No. of patients (n=84)	Percentage
1	Bleeding stopped after the therapy	81	96.42%
2	Recurrent bleeding	3	10.68%

DISCUSSION

The upper GI endoscopy is considered to be the gold standard in the diagnosis and management of upper GI bleeding. The present study has been conducted in the department of surgery with the aim to study the aetiology and the management of upper GI bleeding.

Total number of patient in this study was 117, out of which 76 (65%) were male and 41 (35%) were female. And male and female ratio were 1.8:1. This is in accordance with other studies for example a study conducted by Depolo et al^[5] at the department of digestive surgery, university hospital Rijeka, Croatia on the upper GI bleeding patients in the last 10 years; out of 5955 patients 68.4% were

male and 31.6% were female. A study conducted by Golanova et al^[6] in which out of 1639 patients of upper GI bleeding 56% were male and 44% were female.

The age range of the patients in this study were from 11 to 88 years. In our study 28.89% of patients were from age group 31 to 40 years, next were from age group 21 to 30 year comprising 18.69% followed by 41 to 50 years comprising 15.88% in the study conducted by Depolo et al^[5] main age of presentation was 57.7 and Golanova et al^[6] reported the main age was 62.2 years. Majority of this patient belonged to younger age group compared to other studies [Table 6].

In our study 66.67% of patients presented with hematemesis and 10.25% with melena, 5.12%

patients with haematochezia and 23.07% of patients presented with both haematemesis and melena. This is in accordance with other studies. Recent meta-analysis documented by Peter et al^[7] in the patients with upper GI bleed It was found that 50% presented with hematemesis and 15% with haematochezia and 17% with melena. Apart from the history of bleeding patients also had associated features, 28% patients were having pain abdomen, 24.29% were having ascites and 5.60% were having gastric outlet obstruction. Meta-analysis by Peter et al^[7] showed that 40% of patients of upper GI bleeding had epigastric pain and 10% have diffuse abdominal pain.

Table 6: Comparative analysis of present study with other studies

Authors	Type of study	Place of study	No.of patient	Average age	Sex	Main presentation	Endoscopic findings	Therapeutic intervention	Outcome Survival Mortality
Depolo et al ^[5] 2001	Retrospective	Rijeka, Croatia	5955	57.7	M>F	Hematemesis	Peptic ulcer 61% GD erosion 15.4% Varices 5.7%	NA	86.8% 13.2%
Golanova et al. ^[6] 2004	Prospective	Praha, Czech	1639	62.2	M>F	Hematemesis	Peptic ulcer 38.2% Hemorrhagic gastropathy 16.5% Varices 10.3%	NA	NA
E Newihi et al ^[8] 1991	Prospective	Canada	39	NA	NA	Hematemesis	All patients with varices	ES 48.7% EVL 51.3%	95% 5%
Silverstein FE et al ^[9] 1981	Retrospective	Manipal India	120	48.5	M>F	Hematemesis	Acute mucosal lesion 45.83% Peptic ulcer 23.3%	ES 14.4% Operation 18.3%	85% 15%
Our study 2007-2008	Prospective	Aligarh, India	107	43	M>F	Hematemesis	Varices 61.53% peptic ulcer and other 38.46%	EVL 69.64% ES 20.83% Both=9.7%	98.3% 1.7%

In our studies with upper GI bleeding, 61.53% were having variceal bleeding and 38.46% were having non variceal bleeding. This data varies from other studies for e.g Silverstein et al^[9] reported oesophageal variceal bleeding in 10.3% and rest were non variceal bleed. In our study causes of non variceal bleed were gastric ulcer 9 (7.69%), duodenal ulcer 8 (6.83%), gastric erosions 9 (7.69%), carcinoma oesophagus 7 (5.98%), carcinoma stomach 5 (4.27%), gastropathy 3 (2.56%) and in 4 patients (3.41%) no endoscopic cause of upper GI bleeding could be found. In the study by Silverstein et al^[9] duodenal ulcer was found in 24.3%, gastric erosion 23.4%, gastric ulcer 21.3%, oesophageal varices 10.3%, Mallory

Weiss tear in 7.2%, esophagitis 6.3%, duodenitis 5.8% and neoplasm in 2.9%. A meta-analysis conducted by previous authors^[10,11,12] showed oesophageal varices in 13%, peptic ulcer in 36% and acute gastric mucosal lesion in 33% Mallory Weiss tears in 7% and other lesions in 11%.

The variation is because in our study most of the patients were referred from the medicine department. They were mainly of cirrhosis with portal hypertension with oesophageal varices with history of gastrointestinal bleed and in whom EVL was to be done. While other patients were managed conservatively by physicians and therefore not referred to our unit for endoscopic evaluation. Moreover the pattern of disease responsible for

gastrointestinal bleeding vary considerably with different population groups. In our study patients with variceal bleeding are 69.64% underwent endoscopic variceal ligation (EVL) and 20.83% inj. Sclerotherapy and in 9.72% both EVL and sclerotherapy was done. While in 5 of gastric ulcer patients and 7 patients of duodenal ulcer underwent sclerotherapy using Inj epinephrine 1:10,000 and absolute alcohol. Out of 84 patients, bleeding stopped in 81 patients with endoscopic interventions i.e. 96.42%. While in 2 patients of oesophageal varices (2.38%) there was re-bleeding. A study conducted by El-Newihi et al^[8] 50% underwent ES and in 50% EVL was done. There was re-bleed in 37% patients treated with ES and in 25% patients of EVL group. The re-bleeding rate is low in our patients as compared to other studies. Most of the patients in our study were treated by EVL where the re-bleeding rate is low. In our study the comparison of EVL and injection sclerotherapy was done and the z value was found to be 0.85 that was insignificant because of very small sample size.

In this study 2 patients died out of 117 patients in which 1 patient was of variceal bleed in which banding was done and the other patient of varices died before therapeutic endoscopic intervention could be done. Both the re-bleeding rate and over all mortality in our study was much lower compared to other studies. This could be because of selection bias, as most of our patients were referred from the medical department. The patient who were haemo-dynamically unstable were excluded from the study hence the lower mortality rate.

CONCLUSION

In conclusion, on the basis of lower rates of re bleeding, mortality, and complications and need for fewer endoscopic treatments, ligation should be considered the endoscopic treatment of choice for patients with oesophageal variceal bleeding. The number of patients who underwent endoscope therapy for non variceal bleed was very small, hence no definite conclusion were drawn regarding their endoscopic management, from the present

study. Majority of patients with non-variceal bleeding were managed conservatively. Larger studies are needed to evaluate the effectiveness and the modalities for management of non-variceal bleed.

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