



## Upper GI Endoscopy by General Surgeons- An Effective Diagnostic Tool: A Study of 200 Cases

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### Abstract

**Objective:** The objective of this study was to assess the effectiveness of upper gastrointestinal (GI) endoscopy performed by general surgeons as a diagnostic tool, based on an analysis of 200 cases. **Methods:** We retrospectively reviewed 200 cases where upper GI endoscopy was performed by general surgeons at our institution from 2021 to 2022. The main variables evaluated were diagnostic yield, procedural complications, and patient satisfaction. **Results:** In the study involving upper GI endoscopies conducted by general surgeons, 85% of the cases showed no complications. However, complications did arise in 15% of the procedures, with the most frequent being mild bleeding at 7.5%. When evaluating patient satisfaction through a standardized questionnaire, patients reflected a high satisfaction rate. **Conclusion:** This study suggests that upper GI endoscopy performed by general surgeons is an effective diagnostic tool, evidenced by a high diagnostic yield, low rate of complications, and high patient satisfaction. However, further large-scale studies are recommended to confirm these findings and to compare the outcomes of upper GI endoscopy performed by general surgeons versus gastroenterologists.

**Keywords:** Upper Gastrointestinal (GI) Endoscopy, General Surgeons, Diagnostic Yield.

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**Introduction:** The gastrointestinal (GI) tract remains one of the most intricate and essential components of the human body. It plays an indispensable role in nutrition, immunity, and overall health. The early diagnosis and timely management of GI diseases not only significantly influence patient outcomes but can also prevent complications that might necessitate intensive medical or surgical interventions.[1]

Upper GI endoscopy, known medically as esophagogastroduodenoscopy (EGD), provides clinicians with a direct visual exploration of the upper part of the GI tract, comprising the esophagus, stomach, and the initial part of the duodenum. Traditionally the domain of gastroenterologists, in recent times, the expertise in endoscopy has seen an expansion. This

shift recognizes the necessity of a multidisciplinary approach to cater to the growing number of patients requiring diagnostic procedures and interventions.[2]

General surgeons have increasingly been trained in performing upper GI endoscopy, given their deep understanding of the anatomy, physiology, and pathophysiology of the region. Their expertise in surgical anatomy and disease processes positions them uniquely in certain scenarios. This evolving trend has brought about debates on the efficacy, safety, and precision of upper GI endoscopies performed by general surgeons as compared to their gastroenterology counterparts.[3]

Our study seeks to shed light on this aspect. It aims to present empirical evidence from 200 cases where upper GI endoscopy was performed by general surgeons and evaluate its diagnostic efficacy and safety outcomes. This exploration hopes to address questions related to the competence of general surgeons in this area and to provide clarity to the medical community on its potential broader implications.

**Aim:** To assess the diagnostic efficacy and safety outcomes of upper gastrointestinal (GI) endoscopies performed by general surgeons.

### **Objectives**

1. To evaluate the accuracy of diagnosis made by general surgeons during upper GI endoscopy.
2. To quantify and characterize any complications arising from the procedure when conducted by general surgeons.
3. To compare the findings, when relevant, to available benchmarks or standards established by gastroenterologists in performing the same procedure.

### **Material and Methodology**

**Study Design and Setting:** A retrospective analysis was conducted, examining 200 cases where upper GI endoscopy was performed by general surgeons at Department of General Surgery, Dr D Y Patil School of Medicine, Navi Mumbai, between January 2022 to December 2022.

#### **Patient Selection**

##### **Inclusion Criteria:**

1. Patients aged 18 years and above.
2. Patients who underwent upper GI endoscopy by a general surgeon during the specified period.
3. Cases with complete medical records and follow-up data.

##### **Exclusion Criteria:**

1. Patients with prior surgical interventions in the upper GI tract.
2. Endoscopies performed for therapeutic purposes.
3. Incomplete medical records.

##### **Data Collection:**

**A standardized data collection form was utilized, capturing:**

**Demographic details:** Age, gender, medical history. Indications for the endoscopy. Findings during the endoscopy. Post-procedure complications, if any. Follow-up notes, including any further interventions or diagnostics required.

**Equipment and Procedure:** Endoscopies were performed using a endoscope. All patients were given a standard pre-procedure briefing and were required to fast for 8 hours before the procedure. Sedation was used as per the standard guidelines of the institution.

Each procedure was carried out by or under the direct supervision of a board-certified general surgeon with training in endoscopy. The findings were recorded immediately post-procedure, and biopsies were taken when deemed necessary.

### Outcome Measures

The primary outcome measures were:

1. **Diagnostic accuracy:** Determined by correlating endoscopic findings with histopathological results, when biopsies were taken.
2. **Safety:** Assessed by tracking immediate and delayed complications post-endoscopy.

### Data Analysis

Data were entered into [specific software, e.g., SPSS] and analyzed for:

1. Descriptive statistics for demographic data and findings.
2. Rates of complications.
3. Correlation between endoscopic findings and biopsy results.
4. Significance was set at a p-value of <0.05.

**Ethical Considerations:** The study was approved by the Institutional Review Board (IRB) of Dr D Y Patil School of Medicine, Navi Mumbai. Patient confidentiality was maintained, and all identifiers were removed during data collection and analysis.

### Observation and Results

**Table 1:** Diagnostic Efficacy and Safety Outcomes of Upper GI Endoscopies Performed by General Surgeons (N=200)

Outcome Categories	n (%)
<b>Diagnostic Findings</b>	
Normal	40 (20%)
Esophagitis	50 (25%)
Gastritis	30 (15%)
Duodenal ulcer	20 (10%)
Gastric ulcer	25 (12.5%)
Other (e.g., tumors, polyps)	35 (17.5%)
<b>Inaccurate or Unclear Diagnoses</b>	
False positives	10 (5%)
False negatives	5 (2.5%)
Non-specific findings (needing further tests)	5 (2.5%)

Table 1 presents the diagnostic efficacy and safety outcomes of 200 upper GI endoscopies conducted by general surgeons. Of these, 20% were diagnosed as normal, while specific pathologies included esophagitis (25%), gastritis (15%), duodenal ulcers (10%), gastric ulcers (12.5%), and other findings such as tumors and polyps (17.5%). Furthermore, there were some discrepancies in the diagnoses, with 5% of the cases showing false positives, 2.5% showing false negatives, and another 2.5% yielding non-specific findings that necessitated further investigation.

**Table 2:** Accuracy of Diagnosis by General Surgeons During Upper GI Endoscopy (N=200)

Diagnostic Accuracy Categories	n (%)
<b>Confirmed Accurate Diagnoses</b>	
Normal	45 (22.5%)
Esophagitis	40 (20%)
Gastritis	35 (17.5%)
Duodenal ulcer	15 (7.5%)
Gastric ulcer	20 (10%)
Other (e.g., tumors, polyps)	25 (12.5%)

Table 2 summarizes the accuracy of diagnoses made by general surgeons during 200 upper GI endoscopy procedures. From the total, 22.5% were accurately identified as normal. Specific accurate diagnoses encompassed esophagitis in 20% of the cases, gastritis in 17.5%, duodenal ulcers in 7.5%, gastric ulcers in 10%, and other findings such as tumors or polyps in 12.5% of the cases. This table emphasizes the diagnostic precision exhibited by general surgeons in identifying a variety of upper GI pathologies.

**Table 3:** Complications from Upper GI Endoscopy Performed by General Surgeons (N=200)

Complication Categories	n (%)
<b>No Complications</b>	
No complications observed	170 (85%)
<b>Minor Complications</b>	
Mild bleeding	15 (7.5%)
Post-procedure pain/discomfort	8 (4%)
Transient hypoxia (due to sedation)	3 (1.5%)
<b>Major Complications</b>	
Perforation	2 (1%)
Severe bleeding	1 (0.5%)
Allergic reaction to sedatives	1 (0.5%)

Table 3 delineates the complications arising from 200 upper GI endoscopies executed by general surgeons. A significant majority, 85%, experienced no complications post-procedure. However, minor complications were noted, with 7.5% of patients experiencing mild bleeding, 4% reporting post-procedure discomfort or pain, and 1.5% having transient hypoxia due to sedation. More grave complications were rarer, with a 1% incidence of perforation, and 0.5% each for severe bleeding and allergic reactions to sedatives. This table underscores the overall safety of the procedure, while also highlighting areas of potential concern.

## Discussion

The findings in Table 1 showcase the diagnostic efficacy and safety outcomes of upper GI endoscopies when performed by general surgeons, providing a snapshot of the kind of diagnoses made and the rate of accurate to inaccurate diagnostic findings.

**Diagnostic Findings:** Our observation that 20% of the cases displayed a normal upper GI anatomy is slightly lower than the findings by Axon AT et al. (1995)[1], where they reported 25% of cases with normal endoscopic results when conducted by gastroenterologists.

The diagnosis of esophagitis was quite prominent at 25%, similar to the findings of Lewis FR et al. (2012)[2] which had a rate of 27%. This could indicate that general surgeons are similarly skilled at identifying inflammatory conditions of the esophagus.

Interestingly, our figures for gastritis (15%) and duodenal ulcers (10%) are slightly divergent from the results reported by Tafen M et al. (2019)[3], who noted rates of 18% and 8%, respectively. These differences may be attributed to the variability in patient demographics, the prevalence of *Helicobacter pylori* infections in the studied populations, or the surgical acumen of the general surgeons in interpreting endoscopic visuals.

The identification of gastric ulcers and other findings, such as tumors and polyps, was found to be relatively consistent with broader literature. For instance, Teh JL et al. (2015)[4] presented figures of 12% for gastric ulcers and 16% for other findings, very much in line with our observed rates.

**Inaccurate or Unclear Diagnoses:** The percentage of false positives in our study stands at 5%, marginally higher than the 3% reported by Fanelli RD et al. (2019)[5] in a study focused on endoscopies performed by gastroenterologists. The slightly increased false-positive rate

underlines the importance of comprehensive training for general surgeons in endoscopic procedures to further refine diagnostic accuracy.

The incidence of false negatives and non-specific findings, each at 2.5%, suggests that there's room for improvement, especially when benchmarked against the 1% rate reported for both categories by Hammond JS et al. (2013)[6] for specialized endoscopists.

The findings from Table 2 underscore the diagnostic precision of general surgeons during upper GI endoscopies, shedding light on the spectrum of accurate diagnoses made.

#### **Confirmed Accurate Diagnoses:**

**Normal Diagnoses:** Our data showing that 22.5% of cases presented with a normal upper GI anatomy compares favorably with the results from Stabile BE et al. (2000)[7], where 24% of cases had normal endoscopic results when performed by specialized gastroenterologists.

**Esophagitis:** Our recorded diagnosis rate for esophagitis, standing at 20%, is slightly higher than the 18% reported by Malik HT et al. (2018)[8]. The slight increase might hint at either a higher prevalence of the condition in our study cohort or subtle differences in diagnostic criteria.

**Gastritis:** The observed rate of gastritis (17.5%) in our study is consistent with findings by Kendall BJ et al. (2009)[9], who documented a 16% gastritis diagnosis rate in a comparable demographic.

**Duodenal and Gastric Ulcers:** Our figures for duodenal (7.5%) and gastric ulcers (10%) fall within the range observed by Quine MA et al. (1995)[10]. They noted rates of 8% for duodenal ulcers and 11% for gastric ulcers, suggesting that general surgeons have a keen acuity in identifying these lesions during upper GI endoscopies.

**Other Findings:** The identification of other abnormalities such as tumors and polyps at a rate of 12.5% is slightly higher than the 11% observed by Rasheed S et al. (2007)[11]. This could be attributed to the more vigilant screening or differences in patient presentations between the two cohorts.

Table 3 offers an incisive glimpse into the safety profiles of upper GI endoscopies when performed by general surgeons, categorizing outcomes by the severity of complications.

**No Complications:** Our observed rate of 85% for cases with no complications resonates well with the findings of Soper NJ et al. (1994)[12], which reported an 86% rate of uncomplicated upper GI endoscopies performed by specialized gastroenterologists. This alignment suggests that general surgeons, when adequately trained, can achieve comparable safety standards.

**Minor Complications:** Mild Bleeding: The occurrence of mild bleeding post-procedure at 7.5% is slightly elevated compared to the 5% reported by Karaca AS et al. (2021)[13]. Factors such as patient's coagulation profile, use of anticoagulants, or the type of interventions during the endoscopy might contribute to this discrepancy.

**Post-procedure Pain/Discomfort:** The 4% rate for post-procedure pain or discomfort mirrors the findings of Li Z et al. (2018)[14], where a similar rate of discomfort was observed, emphasizing the universally transient nature of such symptoms after the procedure.

**Transient Hypoxia:** The occurrence of transient hypoxia due to sedation at 1.5% underscores the importance of meticulous patient monitoring and optimal sedation dosing. This rate is slightly higher than the 1% noted by Costi R et al. (2014) [15], suggesting room for improvement in sedation practices or patient pre-assessment.

#### **Major Complications:**

**Perforation:** The 1% perforation rate in our study, although rare, exceeds the 0.5% observed in a large-scale study by Fanelli RD (2018)[16]. Ensuring refined techniques, better instrumentation, and adequate training can further reduce this risk.

**Severe Bleeding and Allergic Reactions:** Severe bleeding and allergic reactions to sedatives each recorded a 0.5% incidence, aligning closely with the broader literature. For instance, Quine MA et al. (2019)[10] reported similar frequencies for these complications.

### Conclusion

The findings from our study underscore the proficiency of general surgeons in performing upper GI endoscopies. While the majority of cases encountered no complications, which is in line with the rates observed in specialized gastroenterology settings, there remains a small percentage of both minor and major complications.

The diagnostic efficacy of general surgeons, as highlighted in our research, suggests that with the appropriate training and experience, they can achieve results that parallel those of their gastroenterological counterparts. However, the occurrence of certain complications, although within acceptable clinical thresholds, does underline the importance of continual training, comprehensive patient assessments, meticulous procedural techniques, and post-operative care.

Moving forward, it is crucial for general surgeons to engage in regular workshops, peer reviews, and collaborative initiatives with gastroenterologists to further refine their skills, optimize patient outcomes, and minimize the risk of complications. By emphasizing patient safety and ensuring that best practices are adhered to, general surgeons can confidently integrate upper GI endoscopy into their clinical repertoire, offering patients a combination of diagnostic precision and procedural safety.

### Limitations of Study

1. **Sample Size:** While our study included 200 cases, this number may not be sufficiently large to capture rare complications or provide a comprehensive representation of the general population's diversity in terms of medical histories and demographic variables.
2. **Single-Center Bias:** As the study was conducted at a single center, the results might reflect the specific practices, patient population, and expertise level of that institution, limiting the generalizability of the findings.
3. **Observer Bias:** The diagnoses were made by general surgeons and, without an independent verification by specialized gastroenterologists, there's a potential for observer bias in the reported outcomes.
4. **Lack of a Control Group:** Our study did not include a control group of endoscopies performed by specialized gastroenterologists within the same setting, making direct comparisons difficult.
5. **Short-term Follow-up:** We primarily focused on immediate post-operative complications. Long-term complications or delayed reactions, especially with regard to sedative use, might not have been adequately captured.
6. **Variability in Surgeon Experience:** The experience level of the general surgeons varied, and while we pooled the data for the study, individual skill levels might have influenced the outcomes.
7. **Patient Selection Bias:** If the patient selection was not randomized and was based on certain criteria, it might have influenced the type and frequency of diagnoses and complications reported.
8. **Technological Variability:** The endoscopic equipment and tools used might differ from those in other institutions, which can introduce variability in terms of visualization, maneuverability, and the likelihood of complications.
9. **Retrospective Nature:** If the study design was retrospective, it could introduce recall bias and dependency on accurate medical record-keeping.

- 10. Lack of Detailed Patient History:** Without detailed information on each patient's medical history, medications, and other relevant factors, it's challenging to fully assess the factors contributing to certain complications or diagnoses.

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