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Surgical Management of Iatrogenic Complications of Gastrointestinal Endoscopy: Experience of the Department of Visceral Surgery, Avicenne Military Hospital, Marrakech

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Abstract **Original Research Article**

Digestive endoscopy is an essential diagnostic and therapeutic tool in the management of gastrointestinal diseases. Despite its relative safety, it is not devoid of complications, some of which, although rare, can be severe and require urgent surgical intervention. This study aims to describe the epidemiological, clinical, and therapeutic features of iatrogenic complications of gastrointestinal endoscopy managed surgically in our department and to analyze the outcomes. We conducted a retrospective descriptive study in the General Surgery Department of Avicenne Military Hospital, Marrakech, over a four-year period (January 2021 – December 2024). Eight patients who developed post-endoscopic complications requiring surgical management were included. Epidemiological, clinical, paraclinical, therapeutic, and outcome data were analyzed. The mean age of patients was 48.5 years (range: 27–70 years), with a male predominance (sex ratio 1.66). Complications were mainly digestive perforations (87.5%) and post-sphincterotomy hemorrhage (12.5%). Perforations occurred in the sigmoid colon in 62.5% of cases and in the duodenum in 37.5%. All patients underwent median laparotomy. Procedures performed included simple suturing, diversion colostomy, or duodenal exclusion, depending on the site and severity of the lesion. Postoperative outcomes were favorable in 75% of cases, with 25% requiring intensive care, and no deaths were reported. Although rare, iatrogenic complications of gastrointestinal endoscopy can be life-threatening. Early, multidisciplinary management is essential. Prevention relies on strict indication, technical proficiency, and adequate infrastructure. Close collaboration between endoscopists and surgeons remains key to a favorable prognosis.

Keywords: Gastrointestinal endoscopy – Iatrogenic complications – Perforation – Hemorrhage – Surgical management.

INTRODUCTION

Gastrointestinal endoscopy is a major advancement in the diagnosis and treatment of gastrointestinal diseases. It allows mucosal exploration, biopsies, and minimally invasive therapeutic procedures such as polypectomy, sphincterotomy, or stricture dilation.

However, despite its relative safety, gastrointestinal endoscopy can lead to iatrogenic complications, sometimes severe, requiring urgent surgical intervention [1,2].

Among these complications, digestive perforations and post-procedural hemorrhages are the most feared. Early diagnosis and appropriate treatment are crucial for patient survival and functional outcomes.

The aim of this study is to report the experience of the Department of Visceral Surgery at Avicenne Military Hospital, Marrakech, in the surgical management of iatrogenic complications of gastrointestinal endoscopy, highlighting epidemiological, clinical, therapeutic, and outcome aspects.

MATERIALS AND METHODS

Study Design and Setting

This was a retrospective descriptive study conducted in the General Surgery Department of Avicenne Military Hospital, Marrakech, over a four-year period (January 1, 2021 – December 31, 2024).

Study Population

Eight patients who developed iatrogenic complications from diagnostic or therapeutic

gastrointestinal endoscopy requiring surgical intervention were included.

Inclusion criteria

- Post-endoscopic complications (upper or lower) confirmed clinically and/or radiologically;
- Surgical management performed in our department;
- Complete and accessible medical records.
- Patients managed exclusively by medical treatment were excluded.

Data collection and analysis

Data collected included:

- Epidemiological characteristics (age, sex, medical history);
- Endoscopy data (type, indication, timing of complication);
- Mode of discovery, paraclinical findings, surgical management, and outcomes.

Data analysis was performed using Microsoft Word and Excel.

RESULTS

Epidemiological data

The mean age was 48.5 years (range 27–70). Five patients were male (62.5%) and three female (37.5%), with a sex ratio of 1.66. Three patients (37.5%) had relevant medical or surgical history (hypertension, smoking, prior cholecystectomy).

Endoscopic data

- Upper gastrointestinal endoscopy (UGIE): 3 cases (37.5%) – all therapeutic (sphincterotomy for biliary stones).
- Colonoscopy: 4 cases (50%) – three for rectal bleeding, one for chronic constipation.
- Combined endoscopy (EGD + colonoscopy): 1 case (12.5%).

Complications occurred immediately in 75% of cases and were delayed (8–24 h) in 25%.

Types of complications

- Digestive perforations: 7 cases (87.5%)
  - Sigmoid colon: 5 cases (62.5%)
  - Duodenal bulb: 2 cases (25%)
- Post-sphincterotomy hemorrhage: 1 case (12.5%)

Common clinical signs included tachycardia, fever, abdominal pain, and rigidity. Pneumoperitoneum was observed in all delayed complication cases.

Surgical management

All patients underwent median laparotomy. Procedures included:

- Simple suturing with drainage (4 cases);
- Diversion colostomy (1 case);
- Duodenal suturing (2 cases);
- Duodenal exclusion with external biliary diversion (1 case).

All patients received amoxicillin–clavulanic acid antibiotic therapy.

Outcomes

Six patients (75%) had an uncomplicated postoperative course. Two patients (25%) required intensive care. No deaths or major secondary complications were reported.

DISCUSSION

Gastrointestinal endoscopy is a high-yield diagnostic and therapeutic procedure but is not risk-free. Iatrogenic complications occur in 0.1–0.5% of cases [3,4].

Perforations are the most feared complication, with an incidence of 0.03–0.8% depending on location and procedure type [5]. Therapeutic interventions (polypectomy, sphincterotomy, stricture dilation) increase the risk.

In our series, the predominance of sigmoid perforations aligns with previous reports [6,7], highlighting the vulnerability of the left colon and mechanical risks during colonoscopy.

Duodenal perforation following sphincterotomy, though rare, is a major surgical emergency and may be associated with hemorrhage, as observed in one case in our study.

Surgical management remains standard when endoscopic closure is impossible or in cases of generalized peritonitis [8].

The choice of procedure depends on the location and size of the perforation:

- Simple suturing for localized, early-diagnosed perforations;
- Colostomy or duodenal exclusion for extensive contamination.

The favorable outcome in 75% of cases reflects the effectiveness of rapid, multidisciplinary management involving surgeons, endoscopists, and anesthesiologists.

Prevention is essential:

- Stricte indication for endoscopy;
- Technical proficiency of the operator;
- Appropriate equipment and strict disinfection protocols [9,10].

CONCLUSION

Iatrogenic complications of gastrointestinal endoscopy are rare but potentially severe. Early diagnosis and appropriate treatment are critical for survival.

Surgery remains essential, particularly for extensive perforations or uncontrolled hemorrhage. Successful management relies on prompt intervention, multidisciplinary collaboration, and prevention through ongoing training and improved instrumentation.

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