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## Peptic Ulcer, Disease and Treatment

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### ABSTRACT:

Peptic Ulcer Disease (PUD) is a common gastrointestinal disorder characterized by mucosal erosions in the stomach or duodenum due to an imbalance between mucosal defence mechanisms and aggressive factors such as acid and pepsin. The primary etiological factors include *Helicobacter pylori* infection and nonsteroidal anti-inflammatory drug (NSAID) use. Effective management includes eradication of *H. pylori*, acid suppression therapy, and lifestyle modifications. This review explores the pathophysiology, clinical presentation, diagnostic methods, and modern treatment strategies for PUD.

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### Introduction

Peptic ulcer disease encompasses gastric and duodenal ulcers. It affects millions worldwide and poses a significant health burden. Historically, ulcers were thought to be primarily caused by stress and diet, but the discovery of *H. pylori* radically changed this understanding.

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### Aetiology and Pathophysiology

PUD results from the disruption of the mucosal barrier due to several key factors:

**Helicobacter pylori:** A spiral-shaped gram-negative bacterium that colonizes the gastric mucosa and induces inflammation, leading to mucosal damage [1].

**NSAIDs:** These inhibit prostaglandin synthesis, reducing mucosal protection and increasing vulnerability to acid [2]

**Hypersecretory states:** Conditions like Zollinger-Ellison syndrome cause excessive acid secretion.

**Smoking and alcohol:** These can impair mucosal defense mechanisms and delay healing.

**Genetic factors:** May influence susceptibility to ulcer development.

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### Clinical Presentation

Typical symptoms include:

Epigastric pain (burning or gnawing)

Bloating, nausea, or early satiety in severe cases: hematemesis or melena (signs of bleeding)

Asymptomatic ulcers are common, especially among NSAID users.

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### Diagnosis

Diagnosis involves:

**Endoscopy:** Gold standard for visualization and biopsy of ulcers.

**Non-invasive testing:** Urea breath test, stool antigen test, or serology for *H. pylori*.

**Barium radiography:** Occasionally used when endoscopy is unavailable.

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### Treatment Approaches

#### 1.1 *H. pylori* Eradication

#### 1.2 Triple or quadruple therapy regimens:

Triple therapy: Proton pump inhibitor (PPI) + clarithromycin + amoxicillin/metronidazole [3].

Bismuth-based quadruple therapy: PPI + bismuth + metronidazole + tetracycline

## Acid Suppression

### 1.3 Proton Pump Inhibitors (PPIs): First-line agents to reduce gastric acid and promote healing [4].

H2-receptor antagonists: Alternative for patient's intolerant to PPIs

Antacids and sucralfate: Offer symptomatic relief and mucosal protection.

### 5.3 NSAID-Induced Ulcers

Discontinuation of NSAIDs if possible.

Use of PPIs or misoprostol for prophylaxis in high-risk patients [5]

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## Complications:

Untreated or severe PUD can lead to:

Bleeding

Perforation

Gastric outlet obstruction

Malignancy (rare, mostly gastric ulcers)

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## Prevention and Lifestyle Modifications

Avoid NSAIDs or use COX-2 inhibitors where necessary.

Quit smoking and limit alcohol intake.

Stress management and dietary adjustments can help reduce symptom severity.

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## Conclusion

Peptic Ulcer Disease remains a significant medical issue with potential complications if not properly managed. Advances in the understanding of *H. pylori* and the development of effective eradication and acid-suppressive therapies have significantly improved outcomes. Ongoing research and adherence to treatment guidelines are essential for optimal care.

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