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Peptic ulcer disease: symptoms, causes, diagnosis and treatment

Peptic ulcer disease (PUD) is a defect in the mucosa of the stomach (**gastric ulcer**) or duodenum (**duodenal ulcer**) extending more than 5 mm through the muscularis mucosae. Approximately **5-10 %** of adults develop a peptic ulcer during their lifetime [1]. More than 90 % of cases are caused by either **Helicobacter pylori infection** or **NSAID use** (ibuprofen, diclofenac, aspirin).

Symptoms

The classical symptom is **burning or gnawing epigastric pain**:

- **Duodenal ulcer**: pain **2-5 hours after meals** and at night - relieved by food or antacids.
- **Gastric ulcer**: pain **triggered or worsened by eating** - patients often lose weight.

Other symptoms: nausea, bloating, early satiety, heartburn, acid regurgitation.

Alarm symptoms (urgent gastroscopy):

- Black tarry stool (melena) or hematemesis
- Unexplained weight loss
- Persistent vomiting
- Dysphagia
- Iron-deficiency anemia

Causes

Cause	Share	Mechanism
Helicobacter pylori	50-70 %	Disrupts mucosal barrier, increases acid output
NSAID/aspirin	20-30 %	Inhibits COX-1 → reduced prostaglandin protection
Stress ulcer	<5 %	ICU patients, burns, critical illness

Cause	Share	Mechanism
Zollinger-Ellison syndrome	<1 %	Gastrin-producing tumor → extreme acid output
Idiopathic	5-10 %	No identifiable cause

Risk factors: smoking, alcohol, older age, concomitant steroids or anticoagulants.

Diagnosis

1. **Oral** or **nasal gastroscopy** - gold standard. Direct visualization, biopsy to exclude malignancy (all gastric ulcers), and **CLO test** for *H. pylori*.
2. **H. pylori testing**: ^{13}C-urea breath test, stool antigen, or serology.
3. **Blood tests**: hemoglobin, ferritin (iron deficiency from chronic bleeding), gastrin (suspected ZES).
4. **Repeat gastroscopy** after 8-12 weeks for gastric ulcers to confirm healing and rule out cancer [2].

Treatment

First-line - H. pylori eradication (positive test):

- **Triple therapy 14 days**: PPI bid + amoxicillin 1 g bid + clarithromycin 500 mg bid.
- **Bismuth quadruple therapy** if clarithromycin resistance suspected.
- Eradication reduces recurrence from ~60 % to **<10 %** [3].

General ulcer healing:

- **Proton pump inhibitor (PPI)** - omeprazole/pantoprazole 40 mg daily for 4-8 weeks.
- **Stop NSAIDs** - or switch to a selective COX-2 inhibitor with PPI cover.
- **Smoking cessation** and alcohol reduction accelerate healing.

Surgery (rare - complications only):

- Perforation (acute peritonitis → emergency laparotomy)
- Uncontrolled bleeding despite endoscopy
- Gastric outlet obstruction
- Suspected malignancy

Complications

- **Bleeding** (15-20 %) - presents as melena or hematemesis.
- **Perforation** (5-10 %) - sudden, knife-like abdominal pain, "board-like" abdomen.
- **Penetration** into pancreas - back pain, raised amylase.
- **Stenosis** (1-2 %) - vomiting of undigested food.

Prevention

- Test and treat *H. pylori* in patients with family history of gastric cancer.
- Co-prescribe PPI with long-term NSAIDs in patients >65 or with previous ulcers.
- Minimize NSAID dose; consider paracetamol first-line.

Treatment at Kirurgen.dk

We offer outpatient **oral and nasal gastroscopy** with direct CLO testing for *H. pylori*, biopsy and photo documentation - typically within 1-2 weeks. See also: Helicobacter pylori, GERD reflux, black stool, nasal vs. oral gastroscopy.

References

1. Lanas A, Chan FKL. *Peptic ulcer disease.* Lancet 2017;390(10094):613-24.
2. Banerjee S, Cash BD, Dominitz JA, et al. *The role of endoscopy in the management of patients with peptic ulcer disease.* Gastrointest Endosc 2010;71(4):663-8.
3. Ford AC, Gurusamy KS, Delaney B, Forman D, Moayyedi P. *Eradication therapy for peptic ulcer disease in Helicobacter pylori-positive people.* Cochrane Database Syst Rev 2016;(4):CD003840.