

## Pain is the Most Common Symptom of Peptic Ulcer Disease

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### Abstract

*The term peptic ulcer distinguishes this condition from other ulcerative diseases that affect other parts of the body. Peptic ulcer refers to erosions of the stomach and duodenum. The disease is characterized by damage to the mucous membrane of the stomach, sometimes to the stomach muscle itself or to the duodenum, which causes open wounds. Mucous membranes are usually swollen and irritated. Peptic ulcer occurs when the wall of these organs is eroded by the aggressive action of gastric juice. Decomposition of one's own mucosa occurs as a result of a disturbed balance of aggressive factors that normally exist in the stomach and are used for food digestion and mucosal defense factors.*

**Keywords:** PUD, Pathophysiology, Manifestations, Complications, Treatment, Health

### 1. Introduction

Each year, peptic ulcer disease (PUD) affects 4 million individuals around the world [1]. Complications are experienced in 10–20% of these patients and 2–14% of the ulcers will puncture. Perforated peptic ulcer (PPU) is generally uncommon, but life-threatening with the mortality changing from 10 to 40%. When PPU are analyzed speedily and expeditiously treated, results are amazing. Mortality ranges from 6 to 14% in later thinks about. Destitute results have been related with expanding age, major restorative sickness, per-operative hypotension, and delay in conclusion and administration (more noteworthy than 24 h).

Peptic ulcer may be a incessant ulcer that ordinarily includes the distal stomach or proximal duodenum [2]. The ulcer comes about from absorption of the mucosa by acid gastric juice. Individuals who discharge huge volumes of acidic gastric juice and who are tainted with *H. pylori* are inclined to ulcers. The microscopic organisms is display in about all patients with duodenal ulcer infection but isn't, in itself, sufficient to cause the disease; numerous individuals harboring the specialist don't create ulcers. As it were almost 75 percent of patients with gastric ulcers have *H. pylori* contamination, and cases in noninfected patients are likely related to other causes.

The beginning occasion is likely a little, shallow disintegration of the gastric or duodenal mucosa. Gastric corrosive and pepsin start to process the more profound tissues, which have been bared of covering epithelium. Hypersecretion of acid (in portion related to inflammation caused by *H. pylori* infection) show up critical in this prepare *H. pylori* isn't by and large found within the duodenum (but rather the gastric mucosa), so an roundabout part for the life form in fortifying corrosive discharge appears

likely. Endeavors at recuperating within the nearness of proceeding absorption inevitably lead to impressive scarring at the base of the ulcer. Clinically, ulcers create torment that's as a rule calmed by ingestion of nourishment or stomach settling agents that neutralize the gastric acid.

Peptic ulcer is by and large treated by stomach settling agents, which neutralize the abundance gastric corrosive, or by drugs that block the emission of acid by the gastric epithelial cells (histamine receptor blockers and proton pump inhibitors). Anti-microbials are utilized to dispense with *H. pylori*. Triple therapy, employing a proton pump inhibitor combined with two anti-microbials (clarithromycin and amoxicillin), is fruitful in up to 90 percent of cases and is frequently attempted within the nonattendance of research facility affirmed bacterial disease.

### 2. Pathophysiology

Upper stomach torment is one of the foremost common complaints experienced in essential care [3]. Numerous patients have generous useful clutters (ie, no particular pathology can be recognized after demonstrative testing), but others have possibly more genuine conditions, such as PUD or gastric cancer. Authentic clues, information of the the study of disease transmission of diseases, and a few straightforward research facility appraisals can offer assistance to partitioned generous from genuine causes of torment. Be that as it may, endoscopy is frequently vital to affirm the diagnosis.

The two major hazard components for creating PUD are incessant contamination with *H. pylori* and the utilize of NSAIDs (nonsteroidal antiinflammatory drug). Certain destructiveness variables of *H. pylori* are imperative for creating ulcer arrange-

ment and incorporate urease, adhesins, and cytotoxins. Urease is a protein that hydrolyzes urea into ammonium carbonate, in this way creating an antacid environment, and is a fundamental destructive calculate for *H. pylori* to outlive within the stomach. Adhesins (BabA, OipA) encourage the connection of *H. pylori* to the gastric epithelium. Nearly all *H. pylori* contain the vacA quality, which encodes for a vacuolating cytotoxin that causes gastrointestinal inflammation. However, not all *H. pylori* express the vacA protein. Therefore, the part of this particular quality within the pathogenesis of PUD remains vague.

Utilize of NSAIDs is another major hazard figure for the advancement of PUD, basically intervening ulcer arrangement by hindering the constitutively communicated cyclooxygenase 1 (COX-1)-derived prostaglandins. Restraint of these prostaglandins is associated with disabled gastric guards inside the have, such as diminished vasodilation of mucosal blood vessels and moo emission of gastric bodily fluid and bicarbonate. The hazard of ulcer arrangement due to NSAIDs is measurements subordinate and may even occur within days of NSAID utilize.

Zollinger-Ellison syndrome (ZES) may be a uncommon, however exceedingly tried, cause of ulceration that includes a gastrin-producing tumor (“gastrinoma”; ordinarily found within the pancreas), coming about in corrosive hypersecretion. This condition ought to be suspected in case patients have ulcers hard-headed to standard therapeutic treatment, ulcers in bizarre areas (eg, jejunum), or ulcers without a history of NSAID utilize or *H. pylori* contamination. Endoscopy appears numerous gastric ulcers and prominent rugae of the gastric mucosa. Almost 25% of gastrinomas happen in patients with multiple endocrine neoplasia I (MEN I) disorder, an autosomal overwhelming hereditary clutter characterized by parathyroid, pancreatic, and pituitary neoplasms. To analyze ZES, the primary step is to degree a fasting gastrin level, taken after by a secretin incitement test, which incomprehensibly hoists gastrin levels (> 1000 pg/mL). Once ZES is suspected, an imaging ponder (eg, stomach computed tomography [CT]) is utilized to localize the tumor.

### 3. Manifestations

PUD shows when gastric acid dissolves the mucosal and muscularis layers of the gastrointestinal tract, driving to the formation of an ulcer [3]. These ulcers are most commonly found within the stomach (gastric ulcer) or duodenum (duodenal ulcer). Patients ordinarily display with a gnawing/burning torment, found in the epigastrium without radiation to the back and calmed by stomach settling agents (ie, calcium carbonate, aluminum-magnesium hydroxide). Other related side effects may shift, depending on the area of the ulcer. Gastric ulcers ordinarily display with postprandial stomach torment, driving to an abhorrence of nourishment, sickness, heaving, and weight misfortune. Patients with duodenal ulcers may involvement weight pick up since the torment related with these ulcers is at first calmed amid meals, when ingestion of nourishment fortifies bicarbonate emission into the duodenum. The torment, in any case, compounds 2 to 5 hours afterward, when acidic gastric substance are purged from the stomach and enter the duodenum, straightforwardly bothering the ulcer. Torment related with duodenal ulcers may more-over decline at night due to circadian incitement of corrosive discharge.

Youthful patients without alert highlights may experience non-invasive testing, such as serology for *H. pylori* counter acting agent, urea breath test, or fecal *H. pylori* antigen test. The urea breath test and serology for the *H. pylori* counter acting agent are the most commonly used noninvasive tests to distinguish dynamic contamination. In any case, serologic testing for *H. pylori* is as it were valuable on the off chance that the persistent has never been already treated for *H. pylori* since antibodies will be positive for life, indeed after effective treatment.

Dyspepsia refers to upper stomach torment or distress that can be caused by PUD, but it moreover can be created by a number of other gastrointestinal disarranges [4]. Gastroesophageal reflux regularly produces “heartburn,” or burning epigastric or mid chest torment, as a rule happening after suppers and compounding with recumbency. Biliary colic caused by gallstones regularly has intense onset of serious torment located in the right-upper quadrant or epigastrium, ordinarily is accelerated by dinners, particularly greasy foods, lasts 30 to 60 minutes with unconstrained determination, and is more common in ladies. Crabby bowel disorder could be a conclusion of avoidance but is recommended by constant dysmotility indications (bloating, cramping) frequently calmed with defecation, in some cases rotating clogging and loose bowels, without weight misfortune or GI bleeding. On the off chance that these causes are avoided by history or other examinations, it is still troublesome to clinically recognize the patients with PUD from those without ulcers, named nonulcer dyspepsia.

The classic symptoms of duodenal ulcers are caused by the nearness of corrosive without nourishment or other buffers. Side effects are ordinarily created after the stomach is emptied but food-stimulated corrosive generation still endures, ordinarily 2 to 5 hours after a feast. They may stir patients at night, when circadian rhythms increment corrosive generation. The torment is ordinarily diminished inside minutes by neutralization of corrosive by nourishment or stomach settling agents (eg, calcium carbonate, aluminum-magnesium hydroxide).

Gastric cancers may show with torment symptoms, with dysphagia in the event that they are found within the cardiac locale of the stomach, with diligent heaving in case they square the pyloric channel, or with early satiety by their mass effect or invasion of the stomach divider. Since the rate of gastric cancer increments with age, patients older than 45 a long time who display with new-onset dyspepsia ought to for the most part experience endoscopy. In expansion, patients with alert side effects (eg, weight misfortune, repetitive heaving, dysphagia, prove of GI bleeding, or iron-deficiency iron deficiency) ought to be alluded for incite endoscopy. Finally, endoscopy ought to be prescribed for patients whose indications have failed to respond to empiric treatment. When endoscopy is attempted, other than visualization of the ulcer, biopsy tests can be taken to avoid the plausibility of threat, and examples can be gotten for urease testing or minuscule examination to demonstrate current *H. pylori* contamination.

### 4. Pregnancy

An ulcer is an harm to or interference of the mucosal lining of the gastrointestinal tract amplifying through the muscularismu-

cosa [5]. Peptic ulcer disease (PUD) is an vital cause of horribleness and mortality within the common populace; be that as it may, seriousness of indications and recurrence of complications related with PUD diminish amid pregnancy.

The frequency of PUD is low in pregnant ladies. It is troublesome to ascertain the true frequency of PUD in pregnancy since symptomatic testing is for the most part dodged. Indications of PUD may be credited to GERD (Gastroesophageal reflux disease) or queasiness and spewing of pregnancy with determination of indications upon treatment, subsequently blocking assist testing. Patients may also avoid therapeutic consideration by self-treatment with nonprescription medications for gentle to direct gastrointestinal side effects.

A number of speculations have been proposed for the low frequency of PUD in pregnancy. Plasma levels of histaminases are expanded amid pregnancy due to placental amalgamation. The histaminases can metabolize maternal histamine driving to diminished gastric acid secretion during pregnancy. Expanded estrogen levels can result in hypochlorhydria, and gestational progesterone may increment amalgamation of the protective gastric mucous layer. Immunologic resistance amid pregnancy may allow development and colonization of *Helicobacter pylori* without immunologic response and mucosal harm. Maternal evasion of ulcerogenic factors, such as smoking, liquor, and nonsteroidal anti-inflammatory medicate (NSAID) utilize, and diminished psychologic push may also play a part in the diminished frequency of PUD during pregnancy.

## 5. Investigation

Noninvasive testing for *Helicobacter pylori* (HP) has been recommended as an approach to extend symptomatic surrender and rationalize the use of endoscopy [6]. Lack of HP disease is a great indicator for the nonattendance of peptic ulcer illness or gastric cancer. Alternately, 20–50% of dyspeptic patients who test positive for HP will have prove of basic ulcer infection or duodenitis. This approach is subordinate on effortlessly available and accurate HP tests, particularly for essential care doctors. It has not been appeared to diminish endoscopy workload in planned clinical thinks about.

More as of late, a ‘test and treat’ procedure has been proposed. Patients who test positive for HP are given a course of HP annihilation treatment on the off chance that there are no alert indications or modern onset of indications at age 45 and over. Endoscopy is limited for disappointment of symptomatic reaction or backslide of dyspeptic indications after destruction treatment. The method of reasoning is that compelling HP eradication will treat peptic ulcer illness and may advantage patients with utilitarian dyspepsia (FD), without the require for assist investigations.

HP disease can be analyzed noninvasively by serology, or by 14C or 13C urea breath test. Patients are ordinarily exhorted to suspend proton pump inhibitors (PPIs) for at slightest 2 weeks earlier to the breath test. A ordinary triple treatment HP annihilation plot comprises of two anti-microbials (clarithromycin 500 mg, metronidazole 400 mg/tinidazole 500 mg or amoxicillin 1

g) and one standard-dose PPI (choice of omeprazole, lansoprazole, pantoprazole, or rabeprazole) given twice day by day for 7 days. Fourfold treatment with the consideration of tripotassium dicitratobismuthate (bismuth chelate) 120 mg four times day by day or an extra anti-microbial (tetracycline 500 mg four times every day) to the over regime can be given for 2 weeks in case annihilation isn't accomplished with triple treatment.

Clinical ponders and choice investigation models have shown that the good thing about the test-and-treat methodology is comparable to that of early endoscopy. In an unselected cohort of patients with dyspepsia, anti-microbial treatment diminishes dyspeptic indications by 14% in those patients with positive HP serology. Be that as it may, one ought to take into consideration that as it were around 30–50% of unselected dyspeptic patients have positive HP serology. Studies comparing ‘test and treat’ with early endoscopy in a essential care setting appeared comparable clinical result measures at 1 year counting dyspepsia-free days, quality of life, or visits to the physician. The technique diminishes the request for endoscopy, in this manner creating considerable investment funds, at slightest within the brief term. Advance considers ought to clarify in the event that a test-and-treat strategy has any prevalence over early endoscopy in terms of understanding satisfaction, healthcare utilization or long-term by and large improvement in patient outcomes.

*H. pylori* infection is regularly worldwide within the stomach, but histological changes are primarily located within the gastric antrum where glandular pulverization, polymorph and lymphocyte penetration more profound than the epithelium; intestinal metaplasia; and gastric disintegrations are all common [7]. Tragically the plainly visible acknowledgment of gastritis caused by *H. pylori* disease is completely questionable and histological proof is continuously required.

Contaminations are constant and tireless unless compelling treatment is given. Critical epidemiological prove exists to link *H. pylori* with the aetiology of gastric carcinoma and ischaemic heart disease, but these observations are not of significance to individual patients.

There's wrangle about almost whether all *H. pylori* contaminations create in early life and from there on hold on, or whether there's an calculable rate of modern contaminations up to the age of 70. It is known that after effective annihilation re-infection is uncommon, happening at a rate of around 1% per year.

## 6. Complications

Around 70% of peptic ulcers are asymptomatic and may go unnoticed until complications create [3]. The foremost common extreme complication of PUD is hemorrhage. Patients may complain of hematemesis (“coffee ground emesis”) or melena. Constant ulcers may result in gastric outlet obstacle indications due to arrangement of strictures. Essentially, ulcers found close the pyloric channel may also cause obstructive indications due to mass impact. Transmural ulcers may cause aperture inside the gastrointestinal tract. Ulcers that puncture the lesser ebb and flow of the stomach or back divider of the duodenum may cause hemorrhage due to association of the cleared out gastric supply

route and gastroduodenal supply route, separately. Puncturing of the front divider of the duodenum may lead to peritonitis (eg, bounce back delicacy, automatic guarding) and alluded torment to the bear due to phrenic nerve aggravation caused by free discuss aggregation underneath the stomach. Puncturing close the pancreas may result in pancreatitis. Both obstructive and peritoneal side effects are signs for surgery.

Additionally, not at all like duodenal ulcers, which have a low penchant for threatening change, roughly 5% to 10% of gastric ulcers are dangerous (eg, gastric adenocarcinoma). Gastric ulcers ought to be assessed endoscopically with an EGD (esophagogastroduodenoscopy) and biopsied to prohibit gastric cancer, which may too show as nausea/vomiting, dysphagia, and early satiety. Persistent *H. pylori* disease may moreover result within the advancement of a gastric MALT (mucosa-associated lymphoid tissue) tumor.

In common, patients more seasoned than 45 a long time who display with new-onset dyspepsia ought to experience endoscopy since the chance of threat increments with age. Besides, patients with alert indications (eg, weight misfortune, repetitive spewing, dysphagia, prove of GI (gastrointestinal) bleeding, or iron-deficiency anemia) or who fall flat to reply to empiric treatment ought to too be alluded for incite endoscopic assessment.

Dangerous obstruction of the gastric outlet is found basically within the antropyloric locale and is generally due to progressed gastric neoplasia and is less commonly related to metastatic cancer or attack of adjoining malignancies (bile channel cancer, gallbladder cancer) [8]. By differentiate, malignant obstruction of the duodenum is basically found at the level of the primary portion and the moment portion of the duodenum and is for the most part due to attack of the duodenum by a pancreatic cancer. Gastric neoplasia capable for hindrance are adenocarcinoma and more once in a while carcinoid tumors, though tumoral obstacle due to lymphomas or gastrointestinal stromal tumors appears to be remarkable. Gastric adenocarcinomas which lead to hindrance are progressed cancer and may show themselves on CT as huge, segmental, or diffuse divider thickening with unpredictable lobulation and regularly ulceration or as expansive, polypoid, fungating injuries. Duodenal hindrance is experienced in an progressed organize of pancreatic cancer and is once in a while display at the time of the determination, for occurrence, in as it were three of 76 sequential patients with pancreatic cancer, or in progressed peritoneal carcinomatosis. Indeed in the event that duodenal intrusion isn't itself a basis for unresectability, it is frequently related with criteria for unresectability, such as vascular intrusion or liver metastasis well appeared by CT. In metastatic infection, gastric and duodenal intrusion may be related. In a consider depicting imaging highlights of gastroduodenal obstacle in 438 sequential ladies with ovarian cancer, the recurrence of gastroduodenal obstacle was 2.5%, with five cases of transcendent inclusion of the gastric body and six of the gastric outlet and duodenum.

## 7. Endoscopy

Endoscopy is the basic step in overseeing patients with UGIH (Upper gastrointestinal haemorrhage) [9]. It permits conclusion,

gives prognostic data and can control bleeding. It has been appeared in randomized thinks about of peptic ulcer to lead to a lessening in blood transfusion, abbreviated seriously care unit and healing center remain, diminished require for surgery and lower mortality rate. Endoscopic haemostasis is now accepted as the first-line treatment in patients with active bleeding. A few controlled trials have appeared that endoscopic treatment employing a assortment of combined methods altogether diminishes the require for blood transfusion and crisis surgical intercession. Whereas most considers relateto peptic ulceration, endoscopic treatment has been appeared to be successful in treatment of other causes, in specific, Dieulafoy or Mallory-Weiss injuries.

The Forrest classification of endoscopic appearance of peptic ulcers is utilized to donate prognostic data: F1a spurting discharge, F1b overflowing drain, F11a non-bleeding obvious vessel, F11b disciple clot, F11c level pigmented spot and F 111 clean base. Endoscopic treatment ought to be utilized when there's dynamic dying or a unmistakable vessel. For F11b injuries, there's no agreement as thinks about have clashing comes about, and the choice whether to expel the clot to permit treatment ought to be made on a case-by-case premise. The treatment will depend on the encounter of the endoscopist and the hardware accessible and incorporate infusion of epinephrine, heater-probe coagulation, bipolar terminal coagulation, laser coagulation, argon plasma coagulation, endoscopic clips and banding devices.

Patients displaying with an UGIH who balance out rapidly with negligible revival ought to have endoscopy inside 24 h. Wrangle about proceeds on the relative merits of emergency endoscopy in these patients as there's expanded chance of the method and it may be problematic due to blood and clots making treatment troublesome. Patients who are well and are found to have low-risk ulcers likely don't require inpatient checking. The utilize of chance scoring frameworks may offer assistance to recognize the low-risk patients reasonable for outpatient administration; in any case, a later ponder from Denmark found that none of the prevalent chance scoring frameworks inspected were appropriate for anticipating hazard of rebleeding or 30-day mortality, conceivably due to inter-country variety in quiet characteristics.

## 8. Laparoscopy

Laparoscopic surgery has brought modern conceivable outcomes within the way these cases are overseen: laparoscopy permits the affirmation of the conclusion and moreover permits the distinguishing proof of the position, site, and measure of the ulcer [1]. The method too permits sewing the deformity and satisfactory peritoneal cleanup without the require for a huge laparotomy that, something else, in an open get to would be required. Within the uncommon event of expansive aperture with a significant defilement, change may be required for total peritoneal lavage.

It remains exceptionally clear that the surgical steps of the treatment must be treatment of the perforation, peritoneal desire, and delicate lavage and omental fix, in the event that conceivable, together with seepage situation. It is questionable in the event that there's any standard laparoscopic method to treat the puncturing. Considering that one of the issues with crisis cases is the specialized trouble, a few creators have supported sutureless

ulcer repair, which would streamline the laparoscopic method. Nevertheless, it was considered as secure as suture repair, but it carried additional costs such as the utilize of fibrin glue, and, in spite of the fact that the basis of this sutureless procedure was to rearrange the strategy and abbreviate agent time, it did not pick up wide acknowledgment owing to its tall spillage rate as compared to suture repair (16–6 %).

## 9. Treatment

The two primary treatment choices for patients with peptic ulcer infection are proton-pump inhibitors and annihilation of *Helicobacter pylori*, as both medications make strides ulcer mending [10]. Be that as it may, there's no prove that either treatment can be utilized a essential preventive degree. A later Cochrane review established that, within the setting of NSAID-induced ulceration, proton-pump inhibitors, misoprostol, and double-dose H<sub>2</sub> enemies can diminish the rate of gastric and duodenal ulceration. The cost-effectiveness of such preventive measures is unknown. Ordinarily, prophylactic treatment is saved for patients who would have a destitute forecast ought to they create peptic ulcers, for illustration, elderly patients getting anticoagulation medicine. Specific COX-2 inhibitors were at first thought to be anti-inflammatory drugs that would not cause the gastrointestinal ulceration related with NSAIDs. Unfortunately, they are still related with gastrointestinal ulceration and aperture, in spite of the fact that the risk is lower than with NSAIDs. There's a well-established affiliation between *Helicobacter pylori* and gastric cancer, and a few observational thinks about from Japan and China have appeared that annihilation of *Helicobacter pylori* reduces the frequency of stomach cancer. In any case, this result cannot be exchanged to general therapeutic hone without bigger thinks about, as these discoveries may relate to the higher frequency of stomach cancer in these nations.

Incessant contamination with *H. pylori* is the most common cause for both gastric and duodenal ulcers [3]. Subsequently, the standard of care is to test the quiet for disease and treat with triple or fourfold treatment in the event that show. In spite of the fact that triple treatment has customarily been the gold standard for *H. pylori* destruction, clarithromycin-resistant strains of *H. pylori* have been distinguished, coming about in diminished viability of triple treatment. Fourfold treatment is favored in the event that the persistent has ever had introduction to macrolides for any reason, on the off chance that nearby clarithromycin resistance rates are > 15%, or in case destruction rates with triple treatment are < 85%. A follow-up visit inside 4 to 8 weeks is suggested to guarantee *H. pylori* destruction. Fecal *H. pylori* antigen testing may be utilized to affirm annihilation taking after treatment. In the event that the quiet is more seasoned (> 45 a long time) or presents with alert indications, an esophagogastroduodenoscopy (EGD) with or without biopsy, depending on gastric (high chance) versus duodenal (low hazard) ulcer, ought to be performed to run the show out threat.

Treatment for PUD caused by NSAIDs comprises of discontinuing the insulting operator and starting a PPI (proton pump inhibitors) to diminish corrosive discharge and advance ulcer recuperating.

## 10. Conclusion

Symptoms of a peptic ulcer depend on the location of the ulcer and the age of the patient. Many patients, especially the elderly, have few or no symptoms. Pain is the most common symptom of peptic ulcer, often localized in the epigastrium, has a burning or biting character, and can also spread to the back or to the right rib cage, which is usually a sign of complications. Sudden sharp and very strong pain indicates a perforation. The pain appears on an empty stomach and 2 to 3 hours after a meal. It often occurs during the night. After taking a small amount of food or an antacid, the pain stops.

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