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# Gastric Outlet Obstruction Due to Actinomycosis, An Uncommon Presentation of a Rare Disease: A Case Report

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## ABSTRACT

**Background:** Actinomyces is gram positive Bacterium part of normal human flora. Even though actinomyces infect various organ systems, including the gastrointestinal tract (GIT), gastric outlet obstruction is extremely uncommon.

**Case Presentation:** We present a case of a 66-year-old female patient who presented with nausea, vomiting and unintentional weight loss. Clinical imaging and upper GI endoscopy revealed narrowed gastric pylorus diagnosed as gastric outlet obstruction (GOO).

The Patient required multiple gastroscopies with balloon dilatation and biopsy specimens. Histopathology was consistent with Actinomyces. Subsequent appropriate antibiotics therapy led to GOO resolution and clinical improvement.

**Discussion:** Actinomyces presenting as GOO is a rarely seen clinical diagnosis that may mimic malignancy. It must be considered in the differential diagnosis of abdominal masses broadly and tumor-like infiltrative lesions of the stomach particularly. Proper antibiotic therapy renders favorable outcomes and eliminates unwarranted invasive intervention.

**Conclusion:** Actinomyces presenting as GOO is a rare differential diagnosis of abdominal masses broadly, and tumor-like infiltrative lesions of the stomach particularly. Proper antibiotic therapy facilitates favorable outcomes and eliminates unwarranted invasive interventions. Our patient is such an example where gastric actinomycosis was managed medically and the patient improved, avoiding unnecessary surgical interventions.

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**Abbreviations**

**GIT:** Gastrointestinal Tract
**GOO:** Gastric Outlet Obstruction
**EUS:** Endoscopic Ultrasound
**NSAID:** Non-Steroidal Anti Inflammatory Drugs
**PPI:** Proton Pump Inhibitors

## Introduction

Actinomycosis is caused by gram-positive, anaerobic actinomyces bacteria species. It is well known to cause infection of the cervicofacial, respiratory tract, and abdominopelvic regio [1]. Gastrointestinal tract actinomycosis is rare and mostly involves the ileocecal valv [2]. Gastric actinomycosis is extremely rare, it has variable clinical presentation like Gastrointestinal (GI) bleeding, gastritis, or gastric outlet obstruction [2].

The most common modality of diagnosis is on surgical specimens. Diagnosis by endoscopic Biopsy is very unlikely. Here we are going to present a case of gastric outlet obstruction due to actinomycosis diagnosed on gastroscopic biopsy [3]. Case report is approved by medical research council of Hamad medical corporation Qatar, MRC No-04-23-665.Written consent obtained from the patient prior to the publication.

## Case Presentation

A 66-year-old female known to have hypertension, dyslipidemia and gastroesophageal reflux disease diagnosed previously and under follow-up. The patient was on long-term Proton pump inhibitors (PPI) therapy. She started to experience gradually

progressive nausea, vomiting, unintentional weight loss of 5-6 Kilograms and mild upper abdominal pain over 6-8 weeks.

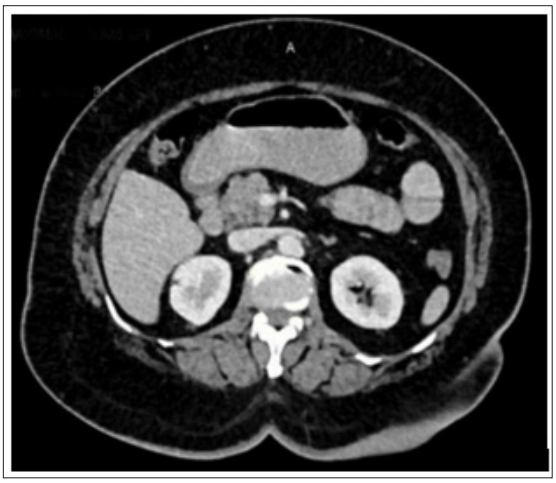

**Figure 1:** Abdominal CT scan with Contrast Showing Circumferential Wall Thickening and Narrowing of the Pyloric Lumen, Accompanied by a Dilated Stomach.

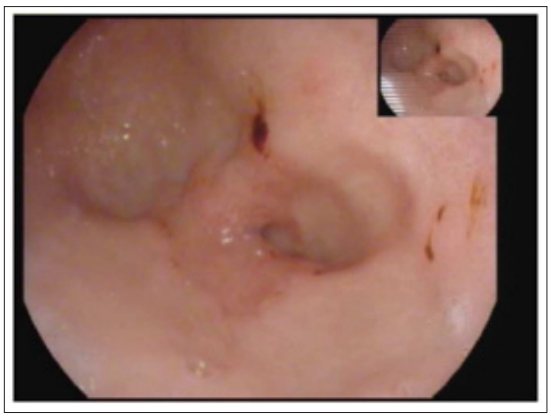

**Figure 2:** Esophagogastroduodenoscopy Revealing a Severely Narrowed Gastric Pylorus, through which A 9.2 mm Adult Scope was unable to Pass.

She denied history of acute GI bleeding. She reported no history of smoking, alcohol, or taking non steroidal anti-inflammatory (NSAIDs) drugs. She had a Past surgical history of laparoscopic cholecystectomy 7 years ago. The Patient had normal vital signs. Abdominal examination was significant for mild epigastric fullness but no tenderness, guarding, ascites or palpable organs. Laboratory tests revealed hemoglobin 11.5 g/dl (13-15) normal platelet and white cell counts. Serum Urea, Creatinine, potassium, sodium, alanine aminotransferase, (ALT), Bilirubin, alkaline phosphatase (ALP), and C reactive protein (CRP) were normal. Computerized tomography (CT) scan of the abdomen showed dilated gastric lumen, circumferential wall thickening and narrowing of the pylorus (Figure 1). There was no evidence of mass lesion or abdominal lymphadenopathy. Her gastroscopy showed Los angles grade B reflux esophagitis, narrowed pyloric antrum, ulcerated mucosa. The adult scope was not able to pass through it (Figure 2). Gastric antrum biopsy revealed severe chronic active inflammation. The patient underwent repeat gastroscopy with balloon dilatation session. Repeat biopsy from the gastric antrum showed a similar type of chronic active inflammation as before (Figure 3). Despite dilatation, the patient's symptoms did not improve. The patient underwent another session of balloon dilatation. The biopsy taken from the narrowed segment of antrum this time showed actinomyces Organism with Helicobacter pylori on special stains (shown in Figure 4). The Patient was administered Injection Ceftriaxone 2 gram daily for a total 6 weeks followed by oral amoxicillin 500mg three times daily for total duration of 6 months. The Patient showed improvement in symptoms and started to tolerate oral diet. Repeat gastroscopy three months after the treatment showed relatively narrowed pyloric channel but a pediatric scope was able to pass through this time. Repeated Biopsy showed mild chronic active gastritis, negative for actinomycosis and Helicobacter pylori. Plans for further surgery or dilatation were deferred as the patient had clinical improvement. The patient is still being followed in the clinic, asymptomatic not on any treatment.

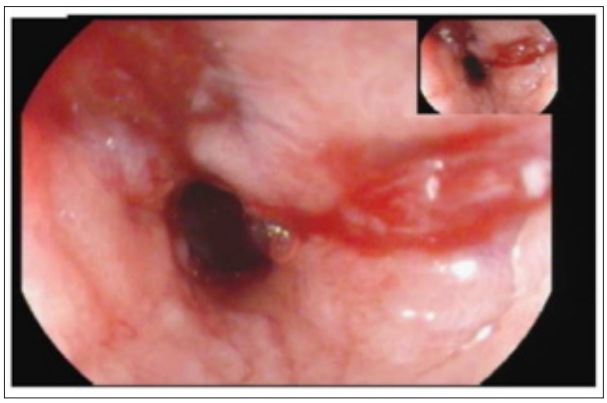

**Figure 3:** Esophago Gastro Duodenoscopy: Gastric Pylorus Image Post Balloon Dilatation to 14mm.

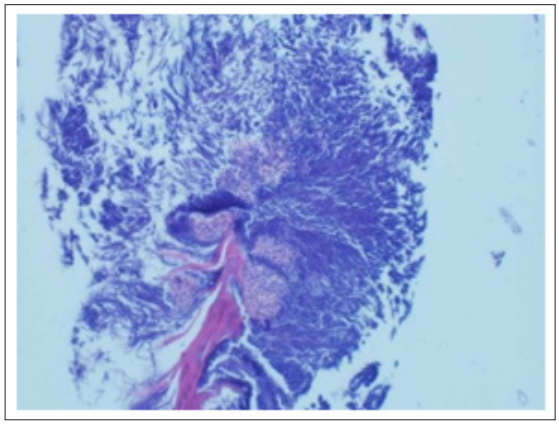

**Figure 4:** Biopsy Showing Bacterial Colonies with Basophilic Radiating Filaments, Consistent with Actinomyces Infection (H&E, 40x).

**Discussion**

Actinomycosis is a chronic granulomatous infection caused by the opportunistic bacterium Actinomyces, which is part of the normal flora of the gastrointestinal and respiratory tracts [4]. Actinomyces Israeli is the most common one clinically [5]. Common sites of infection are cervicofacial, abdominopelvic, thoracic, and cerebral. Abdominal actinomycosis accounts for 20% of all actinomycosis [3]. The exact mechanism of transmission is still unknown, there is no evidence of person-to-person transmission so far. PPI, immunodeficiency, discontinuity in the mucosal barrier, local inflammation or trauma can lead to proliferation of bacterium and allow direct invasion to the host tissue [3]. Risk factors for abdominopelvic infection include abdominal surgery, bowel perforation, abdominal trauma, and foreign bodies like drains and mesh [2]. Our patient had a cholecystectomy, and she was on long-term PPI likely a predisposing risk factor for her. The most common sites of gastrointestinal tract involvement are the terminal ileum, appendix, and ileocecal valve [6]. The extremely rare GI sites include hepatobiliary organs and the stomach [7].

The usual presentations of abdominal actinomycosis are epigastric pain, low-grade fever, weight loss, upper GI bleeding [8]. Presentation as gastric outlet obstruction is very rare. Symptoms tend to occur over the course of a few weeks [9]. Our patient had symptoms of gastric outlet obstruction for 6-8 weeks.

Actinomyces induces granulomatous type of inflammation, extensive necrosis and fibrosis of tissues [8]. Often this bacterium invades deeper layers of the gastric wall making diagnosis by gastroscopic biopsy very difficult [2]. That is why many cases reported are diagnosed mainly by surgical specimen after partial or total gastric resection [2]. Our patient was diagnosed with a biopsy on her third gastroscopy. Endoscopic findings of actinomycosis are variable and often mimic malignancy. It causes nonspecific gastric mucosal inflammation, focal nodular swelling, and tumor like infiltration. Inflammation and fibrosis cause gastric antral narrowing and outlet obstruction [3]. One case presented with gastric subepithelial lesion was dissected through over the scope clip and later diagnosed as actinomycosis [9]. Our patient had gastric antrum narrowing with gastric erosion. Deep gastric biopsies give a high yield for diagnosis [3]. Radiologic studies in gastric actinomycosis are nonspecific. Computerized topography (CT) scan appearance shows an infiltrative or mass like picture of the stomach with gastric wall thickening and gastric dilatation due to obstruction (Figure 1). These findings suggest a wide differential of adenocarcinoma, lymphoma, metastasis, or infiltrative disease [2].

Fernández Aceñero et al, suggested that aspiration core needle biopsy of the gastric lesion with atypical features under ultrasonographic endoscopy (EUS) or CT-control may provide a diagnosis of actinomycosis but there is no data about the EUS findings of gastric actinomycosis [5].

Diagnosis is confirmed by histopathology examination on surgical specimens or endoscopic Biopsy [2]. Culturing the organism is difficult and often negative because of low suspicion most of the Biopsy samples are preserved in formalin which kills bacteria. Histologic examination of actinomycosis shows abundant periodic acid Schiff (PAS), Grocott and gram-positive rod-like bacteria with the presence of brownish Iron negative pigment [2].

Penicillin, Ampicillin, Amoxicillin, tetracycline, macrolides, Clindamycin, chloramphenicol, and Cephalosporins have activity against actinomycosis. Our patient was given a total 6-month course of ceftriaxone and amoxicillin and clinically improved [5]. Literature suggests that with antimicrobial treatment alone surgery could be avoided, however a permanent cure is rarely achieved. Open surgery is often needed for the inflammatory and fibrotic process because it is difficult to reach therapeutic levels of antibiotics in deep-seated scarred and avascular lesions [1].

## Conclusion

Although rare, gastric actinomycosis should be considered a potential differential diagnosis for gastric outlet obstruction. Diagnosing this condition via gastroscopic biopsy is challenging; however, repeated and deep tissue samples have a higher yield. Once diagnosed, gastric actinomycosis can be treated medically, often avoiding the need for surgery. In our case, repeated gastric biopsy samples led to a diagnosis of actinomycosis, and the patient showed clinical improvement three months after starting antibiotics. Reporting such cases raises awareness among physicians about this important and treatable disease.

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