

## Gastric Pylorus Gland Adenoma in a Pug: A Case Report

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### ABSTRACT

A 1.5-year-old female Pug with a history of chronic intermittent vomiting revealed multiple polypoid growths in the pyloric region of the stomach on endoscopic examination. Cytology revealed the presence of cohesive cells with a round nucleus and prominent nucleoli, coarse chromatin material. The masses were removed by open surgery, and samples were processed for histopathology, which showed multiple layers of atypical epithelial cells exhibiting areas of malignancy and the absence of an apical mucin cap. Alkaline phosphatase was the only hemato-biochemical parameter found to be increased significantly. Based on the above findings, the case has been concluded as a pyloric gland adenoma.

**Keywords:** Pug, Pylorus, Adenoma

### INTRODUCTION

The pathophysiology of gastric polyps in canines is still unexplored, but chronically damaging mucosa is suspected to culminate in gastric polyps (Pezhouh and Park, 2015). Gastric polyps are comparatively rare in dogs and cats than in humans, and they are typically observed inadvertently during a gastric endoscopy or necropsy. Gastric polyps are usually asymptomatic, but large neoplastic polyps can cause hemorrhage, abdominal pain, and obstruction. The precise etiology or pathology of gastric pyloric polyps in dogs remains unknown. According to human pathology, they are thought to be related to *Helicobacter pylori* in more than 90% of patients (Kim *et al.*, 2022). Though several reports of gastric polyps and adenoma are available in human pathology, the data in the veterinary field is scarce, so this

study aimed to report a case of gastric pyloric gland adenoma.

### CASE HISTORY AND OBSERVATION

A female dog of the Pug breed, age 1.5 years, having a history of chronic intermittent vomiting and loss of condition, was presented to the Department of Veterinary Surgery and Radiology. The animal was examined using an endoscope. Surgery was performed under general anesthesia and growths were removed. Touch impression smears were taken for cytology and air-dried. The tissue sample has been sent to the Department of Veterinary Pathology for further diagnosis. Leishman staining was performed for cytopathology. Tissue samples were fixed in 10% neutral buffered formalin, followed by processing, paraffin wax embedding, section cutting (5µm) and Hematoxylin and Eosin staining as described by Luna (1968). Blood sample was collected hematology and serum enzyme estimation by an automated system.

### RESULTS AND DISCUSSION

Endoscopy showed the presence of multiple polypoid growths measuring 0.5 to 2.0 cm in the pyloric region of the stomach (Figure 1). The nodular masses showed tiny multifocal areas of congestion. Cytological examination revealed the presence of cohesive cells having round nucleus with coarse chromatin and prominent nucleoli (Figure 2) in more than 50% cells. X-ray imaging showed a dilated stomach (Figure 3). Histopathology revealed tightly packed tubular glands lined with cuboidal or columnar cells showing dysplastic arrangement. The cytoplasm was eosinophilic to amphophilic 'ground glass' like with round to oval nuclei containing

prominent nucleoli at places. The cells lack well-formed apical mucin caps. In certain areas, there was the accumulation of multiple layers of atypical epithelial cells that exhibited malignancy (Figures 4 and 5).

Serum biochemistry revealed significant increase in Alkaline Phosphate (217U/L) and slight increase in globulin (4.3g/dl) and slight reduction in albumin (2.4g/dl) and normal Aspartate Aminotransferase (AST), Alanine Aminotransferase (ALT), Total, A/G Ratio, Blood urea, Creatinine, Uric acid, Calcium, Phosphorus, Sodium, Potassium and Chloride. All the hematological data were within the normal range. Gastric pyloric gland adenoma (polyps) encompasses a wide range of lesions with varying histology and neoplastic potential. Similar to our findings Pezhouh and Park (2015) also reported polypoid, dome-shaped, or fungating masses measuring an average of 1.6 cm by using an endoscope. In addition to chronic injury, it has also been linked to autoimmune metaplastic atrophic gastritis, *Helicobacter pylori* and chemical gastritis (Pezhouh and Park, 2015).

Chronic mucosal injury may act as a nidus to develop pyloric gland adenomas, which can further develop into invasive adenocarcinoma. Gastric cancer occurs more frequently in dogs than in other domestic animals. Shafiuza et al. (2015) documented carcinomas as the most common, accounting for 50–90% of gastric malignancies, while leiomyosarcomas and malignant lymphomas are less prevalent. However, Tanaka et al., (2023) reported the highest cases of hyperplasia and adenoma (10/17), followed by adenocarcinoma (3/17), gastrointestinal stromal tumour (2/17), polyposis and pyogenic granuloma (1/17) in dogs. Older females are more prone. Against this finding, anaemia and haemorrhage is common in human beings, which is due to achlorhydria, vitamin B12 deficiency or blood

loss leading to iron deficiency and resultant anaemia. (Bertz et al., 2021, Kim et al., 2022). In comparison to gastric foveolar-type adenomas, PGAs lack a well-formed mucin cap but may contain gastric-type mucin in cytoplasm (Pezhouh and Park, 2015). The findings of Watanabe et al. (1990) suggested that alkaline phosphatase expression was more likely to occur in highly differentiated gastric carcinoma and was highly specific for gastrointestinal carcinoma.

## CONCLUSION

Gross appearance of multiple polypoid growth on endoscopy, cohesive cells with round to oval nuclei having coarse chromatin in cytology, branched gastric foveolae with ground glass-like cytoplasm and absence of apical mucin cap in histopathology, and markedly increased serum alkaline phosphatase leads to the diagnosis of the present case as pyloric gland adenoma.

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Figure 1: Gross picture of luminal gastric pylorus showing polypoid growths; Inset: Operated tumour tissue with multifocal area of congestion

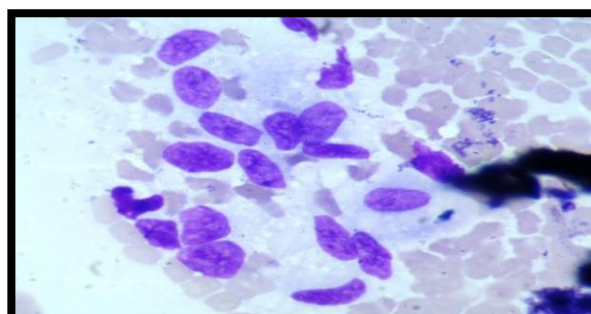


Figure 2: Cytology: Bizarre cells with multiple nucleoli (Leishman stain;1000X)



Figure 3: X-ray image showing a distended stomach

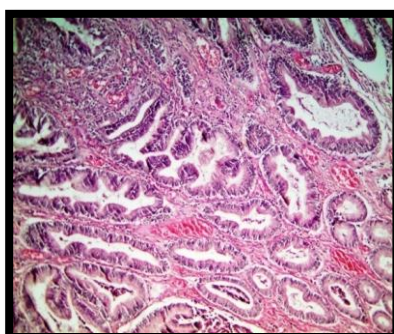


Figure 4: Histopathology: Multiple irregular papillary projections in the luminal area with prismatic columnar epithelium, basal nuclei, pale eosinophilic cytoplasm, and ectatic foveolas (H&E; 100X)

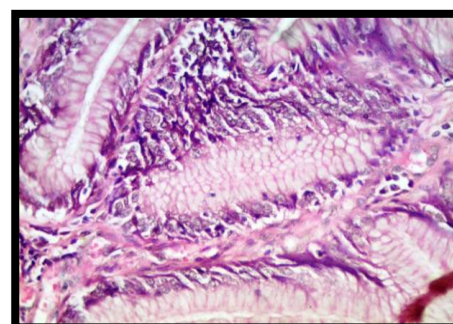


Figure 5: Histopathology: Pyloric glandular epithelium with cells having multiple layers, hyperchromatic and unusual nuclei, prominent multiple nucleoli and foveolae structures: The glands have a stellar pattern, indicating invasive tubules in lamina propria (H&E; 400X)