

# Histopathological and Clinical Implications of Duodenal Gastric Heterotopia- Review

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**Abstract**—Duodenal gastric heterotopia is the condition where gastric mucosa present in duodenum as a polyp or abnormal mass. Very few cases were published, and literature was so limited. It may be asymptomatic or progressed with serious complications and even may have carcinogenic potential. Early detection and evidence of duodenal gastric heterotopia can prevent the obstruction of gastrointestinal tract, due to multiple duodenal polyps and spread of metaplasia in some cases. The knowledge of present literature can upgrade the appropriate timely treatment may lessen the risks, like gastrointestinal tract mucosal ulcerations, perforations, and progression to metaplasia.

**Keywords**— Gastric heterotopia, Duodenum, Oesophagus.

## I. INTRODUCTION

The literal meaning of heterotopia is different location, which was derived from Greek origin. The type of tissue which is found in human body but located in abnormal region, that can be present in anywhere of gastrointestinal tract [1]. Heterotopic gastric mucosa is a condition which gastric mucosal epithelial tissue present outside the stomach. This sort of abnormal gastric tissue can be observed in gastrointestinal tract which includes, oesophagus, duodenum, gall bladder, cystic duct, and rectum. Untreated cases can lead to mucosal ulcers because of high quantities of gastric acid secretion and in advanced cases observed fistulous tracts, strictures, oesophageal webs and can turn to precursor to adenocarcinoma [2,3,4]. Generally, of gastric mucosal heterotopias arise like multiple polyps, masses, tumours growths, nodules resulting as gastrointestinal tract massive bleeding, perforations [5]. Histological picture of Heterotopic gastric mucosa exhibits aggregation of oxyntic glands which composed of chief and parietal cells, and the covering surface often exhibits gastric foveolar mucinous epithelium called apical mucin cap which secretes high amount of gastric acid [6]. When the stomach gland is observed in the duodenum, corresponding to pathology naming methods, it is termed as heterotopic gastric mucosa in the duodenum. Morphological characteristics of the present disease was first described by Belber under endoscopy as nodule and polypoid. [7]. Incidence of this disease and duodenal lesions were very uncommon when patients diagnosed under esophagogastroduodenoscopy (EGD), and it was only 1%-5% [8]. Heterotopic gastric mucosa in the small intestine especially in duodenum is a very rare condition seen in the present case which existing variety of different symptoms like epigastric burning pain with bloody diarrhea with hypochromic microcytic anemia.

## II. MATERIALS & METHODS

A review of the literature was conducted, focusing on studies that discuss different clinical manifestations and histopathological observations, prevalence and complications that may lead due to duodenal gastric heterotopia. Google Scholar, ScienceDirect, Web of Science, PubMed/Medline and Research Gate were used to collect data as evidence from already published literature.

## III. DISCUSSION

Heterotopic gastric mucosa in duodenum is not a common condition, the manifestation of gastric epithelium in duodenal bulb mucosa was first time reported in 1927 by Taylor. He was classified heterotopic gastric mucosa into congenital and acquired type based on the presence of histological features. Congenital type resides of well differentiated gastric mucosal epithelium with normal glandular components and acquire type observed as patchy replacement of natural mucosa by gastric epithelium after inflammation and ulceration [9]. One of the hypotheses suggested that occurrence of heterotopic gastric mucosa was abnormal differentiation of local tissue and an error in the differentiation of pluripotent primitive endoderm stem cells could lead to the gastric mucosa being present anywhere throughout the gastrointestinal tract and they can differentiate into cell types of its own gastrointestinal epithelium [10,11]. This condition may happen due to Cdx2 modifying the expression of molecules. Cdx2 promotes markers of enterocyte differentiation. Null mutation of Cdx2 leads to the development of ectopic lesions with a gastric phenotype in the midgut endoderm [12].

The prevalence of Heterotopic gastric mucosa widely seen in the oesophagus it varies from 0.1 to 13.8% but in the duodenum, it was from 0.5 to 8.9% [13]. Results of another study showed, among 86 patients 51 cases were noticed in oesophagus 0.75% and 35 cases were duodenal, 0.51% [14]. A study reported about presence of heterotopic gastric mucosa affecting 84 cases of oesophagus (8%), 74 cases of duodenum

(11 %) and no cases (0%) of colorectum out of 158 cases [15]. There have been reported few cases of present condition in different locations of gastrointestinal tract as follows, a bleeding gastric heterotopic polyp in 16-year-old teenage male patient's duodenum [16], about 2cm submucosal polypoid lesion with a short peduncle in the third duodenal portion was noticed in 20-year-old male patient [17]. A 67-year-old male patient who was evaluated with esophagogastroduodenoscopy (EGD) and biopsy revealed a mass consisting of heterotopic gastric mucosa in duodenal bulb along with an oesophageal ulcer [18]. In the present case it was noticed that heterotopic gastric mucosa presents in duodenum in the form of polyps and observed rapid transition of mucosal epithelium from duodenal to gastric mucosa with symptoms of epigastric burning pain with bloody diarrhea but not identified any dysplasia or malignancy changes.

Clinical manifestation of heterotopic gastric mucosa differs and depends on the location and size of the heterotopic tissue. Intestinal ulcerations are observed some cases due to the peptic secretion of gastric glands [19,20]. Intestinal mucosal ulceration with Gastrointestinal tract bleeding was the most common complication of the condition and Intestinal perforation and fistula formation to adjacent structures was also noticed in one case [21]. Heterotopic gastric mucosa can be diagnosed by clinical manifestations, radiologic imaging techniques, endoscopic procedures, and histopathological evaluation. Treatment which includes endoscopic surgical resection of the abnormal mass [22].

#### IV. CONCLUSION

Duodenal Gastric heterotopia is the condition which, gastric tissue present outside of the stomach and can be observed anywhere in the gastrointestinal tract, even though it is very unusual in the duodenum. Most of the cases found congenital, but recurring exposure to gastric acid can also lead to its developmental disease. In present case it was noticed abrupt transition of epithelium from duodenal mucosa to gastric mucosa, and it was histologically diagnosed as Duodenal Gastric heterotopia. Routine surveillance is required to differentiate the condition perfectly to avoid its complications and to also stop progressing towards metastasis.

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