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HOURGLASS DEFORMITY OF STOMACH- A CASE REPORT

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ABSTRACT

Hourglass deformity of the stomach represents a distinctive anatomical alteration characterized by focal constriction of the gastric lumen, resembling an hourglass shape. This deformity can arise from various etiologies including gastric ulcers, tumors, benign strictures, and external compressive forces. Clinical manifestations typically include symptoms of gastric outlet obstruction such as early satiety, nausea, vomiting, and upper abdominal discomfort. Diagnosis involves a combination of imaging modalities such as contrast-enhanced CT scans and upper gastrointestinal series, alongside endoscopic evaluation for tissue sampling. The stomach, a key digestive organ, exhibits significant variability in shape and position influenced by muscle tone, body position, and respiratory phases. Clinically, it is classified into sthenic, hypersthenic, and hyposthenic types, each with distinct characteristics and ulcer risks. During a routine anatomical dissection at Sri Dharmasthala Manjunatheshwara College of Ayurveda and Hospital, Hassan, an hourglass deformity was discovered in the stomach of a 56-year-old male cadaver. This rare anomaly featured two prominent pouches connected by a narrow canal, measuring 22 cm in length. The pouches were nearly identical in size, with a 4 cm diameter canal linking them, caused by an unusual notch on the greater curvature. While many stomach shape variations are asymptomatic, they hold clinical significance. Previous studies have classified these anomalies into malrotated, herniated, and congenital categories.

The hourglass deformity observed in this cadaver is considered congenital due to the absence of ulcer evidence at the constriction and no abnormal peritoneal bands. Unlike typical cascade stomachs, where the esophagus opens into the upper chamber, this case showed the esophagus opening into both pouches. Such anomalies, though often unnoticed, are crucial for radiologists to recognize to avoid misdiagnosis during barium meal radiographs. In conclusion, awareness of anatomical stomach variations, like the hourglass deformity, is vital for accurate diagnosis and effective clinical management.

KEYWORDS: Hourglass deformity, Stomach, Greater Curvature.

INTRODUCTION

The stomach, a muscular bag, is the widest and most distensible part of the digestive tube. It connects above to the lower end of the esophagus and below to the duodenum. Functioning as a food reservoir, it aids in the digestion of carbohydrates, proteins, and fats. Positioned obliquely in the upper left abdomen, it occupies the epigastric, umbilical, and left hypochondriac regions, mostly under the cover of the left costal margin and ribs.

The shape of Stomach is influenced by the tone of its muscles and those of the body. In active individuals, it typically has a somewhat J-shaped appearance. In thin, tall individuals, it also appears J-shaped, while in broad, strong, and highly active individuals, it tends to be horizontal.[1]

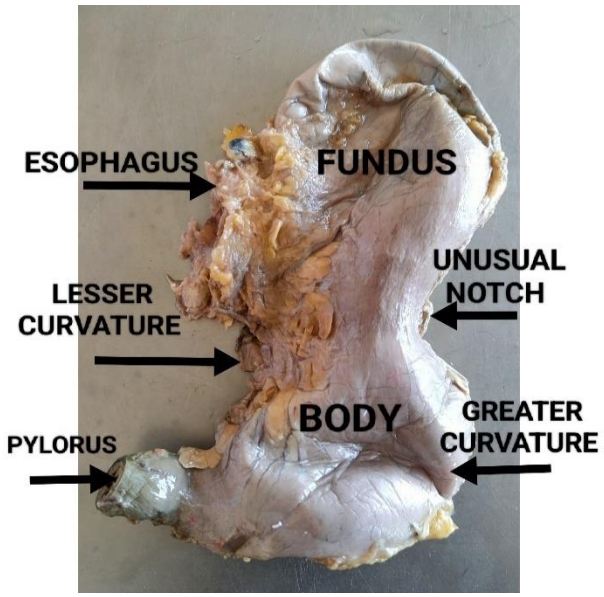
The shape and position of the stomach can vary significantly based on its contents, body position, and respiratory phase. Clinically, three types of stomachs are recognized: sthenic, hypersthenic, and hyposthenic. The sthenic type, considered normal, has a proper 'J' shape. The hypersthenic type, also known as a "steer-horn" stomach, is more susceptible to duodenal ulcers. The hyposthenic or asthenic type is mostly vertical, and individuals with this type are at a higher risk of developing gastric ulcers.[2]

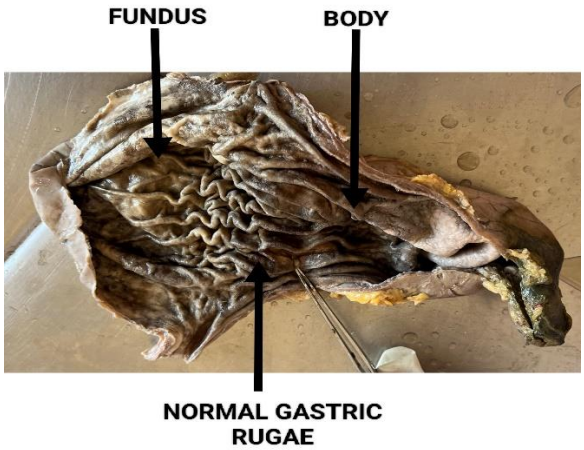
CASE REPORT

During a routine anatomical dissection of a cadaver for Postgraduate scholars in Sri Dharmasthala Manjunatheshwara College of Ayurveda and Hospital Hassan, an interesting anomaly was discovered in the stomach of a 56-year-old individual. This anomaly, known as an hourglass deformity, represents a unique and rare anatomical variation that warrants further exploration and discussion within the medical community.

The cadaver was that of an adult male aged approximately 56 years, and no other notable anomalies were found in the abdomen. The stomach measured 22 cm in length and exhibited two prominent pouches connected by a narrow canal.

Both the upper and lower pouches were nearly identical in size. The upper pouch measured 12x10 cm vertically and transversely, while the lower pouch measured 10 cm vertically and 11 cm transversely. The canal linking the two pouches had a diameter of 4 cm. These two pouches were formed due to an unusual notch on the greater curvature, with the depth of notch from the greater curvature to the lesser curvature measuring 3cm.





DISCUSSION

Variations in the shape and topography of the stomach are commonly observed, often without accompanying clinical symptoms. Research has categorized anatomical variants into several types, including malrotation, herniation, and congenital anomalies.[3]

Munteanu documented a rare case involving an upside-down stomach associated with a hiatal hernia, a specific type of organo-axial volvulus affecting the entire stomach. This condition represents a significant anatomical aberration requiring careful diagnostic evaluation and management.[4]

Rhinerhart also reported a rare developmental anomaly characterized by an inverted stomach, highlighting the diverse range of structural variations that can occur within gastric anatomy.[5] These cases underscore the importance of comprehensive anatomical knowledge in clinical

practice for accurate diagnosis and effective treatment planning, even in the absence of overt clinical symptoms.

Burdan et al. studied the anatomy of 2034 operated stomachs and categorized them into five groups: Group 1 for abnormal position along the longitudinal axis, Group 2 for abnormal position along the horizontal axis, Group 3 for abnormal shapes, Group 4 for stomach connections, and Group 5 for mixed forms with combined features of the previous groups.[6]

The frequency of cascaded stomachs is estimated to be 3%.[7] This condition is believed to be caused by a sling of oblique fibers encircling the greater curvature of the stomach.[8] A cascade stomach is prone to kinking on itself, forming a volvulus, also known as hinge volvulus or jack-knife stomach.[9]

Pathological Conditions causing Hourglass deformity of Stomach

1. Peptic Ulcer Disease

Chronic peptic ulcer disease, particularly in the stomach (gastric ulcers), can lead to scarring and fibrosis. This fibrosis can cause a constriction in the stomach, resulting in an hourglass appearance.[10]

2. Chronic Gastritis

Long-standing inflammation of the stomach lining, often due to Helicobacter pylori infection, can lead to fibrosis and scarring. This can cause a narrowing at the site of the inflammation, contributing to the hourglass deformity.[11]

3. Post-Surgical Complications

Surgical procedures involving the stomach, such as partial gastrectomy or gastrojejunostomy, may result in scar formation at the site of anastomosis. This scarring can lead to a constricted section of the stomach.[12]

4. Malignant Tumors

Stomach cancers, particularly those in the middle or body of the stomach, can cause localized narrowing due to tumor growth. This can create an hourglass deformity as the tumor infiltrates and constricts the stomach.[13]

5. Granulomatous Diseases

Conditions such as sarcoidosis or tuberculosis can lead to granuloma formation in the stomach wall, resulting in fibrosis and hourglass deformity.[14]

6. Congenital Causes

Although rare, congenital malformations can lead to an hourglass-shaped stomach. These cases are typically associated with developmental abnormalities during fetal growth.[15]

7. Caustic Ingestion

Ingestion of corrosive substances can cause severe burns to the stomach lining, leading to scarring and strictures that may cause an hourglass deformity.[16]

CONCLUSION

The anatomy and variations of the stomach are complex and clinically significant. The shape of stomach and position are influenced by several factors, including muscle tone, body type, and physiological conditions. While many variations are asymptomatic, certain anatomical differences, such as the hourglass deformity observed in a 56-year-old cadaver, can present unique challenges and implications for medical practice.

The reported case involves an atypical type of hourglass stomach, believed to be a congenital anomaly due to the absence of ulcer evidence at the constriction. No abnormal peritoneal bands were attached to the stomach, ruling out this as a cause. Unlike the cascade stomach described in literature, where the esophagus opens into the upper chamber, in this case, the esophagus opened into both the upper and lower pouches equally. This type of stomach may remain unnoticed throughout life without causing complications.

However, knowledge of this anomaly is important for radiologists interpreting barium meal radiographs, as the double-pouched appearance might be misinterpreted as a constriction caused by a gastric ulcer. Gastroscopic examination can reveal normal mucosa, but clinicians may remain intrigued about the exact cause of this condition.

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