



**Case Report:**

**An Atypical “Hourglass” Stomach Due to the Presence of an Unusual Incisure at the Greater Curvature**

**Authors**

**Satheesha Nayak B**, Professor, Department of Anatomy, Melaka Manipal Medical College, Manipal Campus, Manipal University, Manipal, Karnataka State, INDIA,

**Naveen Kumar**, Assistant Professor, Department of Anatomy, Melaka Manipal Medical College, Manipal Campus, Manipal University, Manipal, Karnataka State, INDIA,

**Bincy M**, Associate Professor, Department of Anatomy, Melaka Manipal Medical College, Manipal Campus, Manipal University, Manipal, Karnataka State, INDIA,

**Snigdha Mishra**, Senior Grade Lecturer, Department of Anatomy, Melaka Manipal Medical College, Manipal Campus, Manipal University, Manipal, Karnataka State, INDIA,

**Srinivasa Rao S**, Assistant Professor, Department of Human and Clinical Anatomy, College of Medicine and Health Sciences, Sultan Qaboos University, Muscat, Al Khudh 123, Oman,

**Surekha D Shetty**, Senior Grade Lecturer, Department of Anatomy, Melaka Manipal Medical College, Manipal Campus, Manipal University, Manipal, Karnataka State, INDIA,

**Jyothsna Patil**, Senior Grade Lecturer, Department of Anatomy, Melaka Manipal Medical College, Manipal Campus, Manipal University, Manipal, Karnataka State, INDIA.

**Address for Correspondence**

**Dr. Naveen Kumar,**

Assistant Professor, Department of Anatomy,  
Melaka Manipal Medical College (Manipal Campus)  
Manipal University, Manipal,

Udupi District Karnataka State, INDIA - 576 104

**E-mail:** naveentonse@gmail.com

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**Abstract:** Shape and position of the stomach can vary greatly with or without any physiological disturbances. However some of its rare shapes may result in the formation of volvulus or may increase the risk of gastric ulcer. Variant shapes of the stomach may be of congenital occurrence or are acquired later on in life. We report here an atypical form of hourglass stomach. The stomach in the present case exhibited 2 distinct pouches. The two pouches were formed due to the presence of an unusually deep notch at the greater curvature. Both the pouches communicated with the distal end of the esophagus. This variation is possibly of congenital origin and may lead to radiological misinterpretations.

**Key Words:** Stomach, greater curvature, gastric, hourglass

**Introduction:**

Stomach is the most dilated part of the digestive tube and acts as a reservoir of food. It occupies the epigastric, left hypochondriac and umbilical regions of the abdomen. In the living individual it is ‘J’ shaped. Both the shape and position of the stomach vary greatly according to the status of its contents, position of the body and phase of respiration. Clinically three types of stomachs may persist; sthenic, hypersthenic and hyposthenic. Sthenic type is considered as normal type with a proper ‘J’ shape. The hypersthenic type; also known as “steer-horn” stomach is prone to be affected by duodenal ulcer. The hyposthenic or asthenic type lies mostly

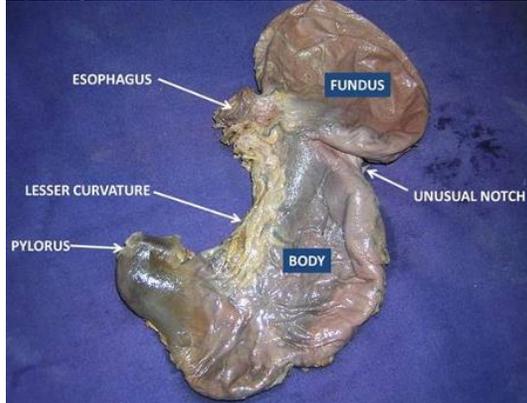
vertical and people with this type are at a high risk of getting gastric ulcers.[1]

Among the variant shapes of the stomach, the hourglass stomach is one of the well-known shapes. The hourglass stomach was first described by the Italian Anatomist Morgagni in the 18th century and the condition commonly results due to the contracture of the stomach wall in response to a gastric ulcer.[2] The “cascade” variety of the stomach is one of the subtypes of the hourglass stomach. In both the cases stomach is incompletely divided into two or more parts. In the cascade stomach, the food usually enters the upper chamber first and only when the upper chamber is filled, it gets entry to lower chamber.[3] Here, we report a rare type of hourglass stomach, probably of congenital origin because of the absence of any signs of ulcers on its mucous membrane at the site of constriction in its wall.

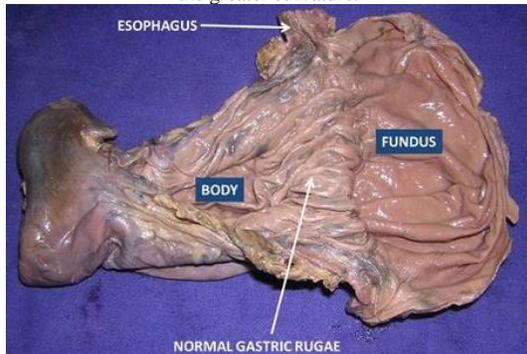
**Case Report**

During regular dissection classes for medical undergraduates, we found an atypical type of hourglass stomach. This was found in an adult male cadaver aged approximately 70 years. There were no other notable anomalies in the abdomen. The stomach was 20 cm long and had 2 prominent pouches connected to each other by a narrow canal (Figures 1 and 3). The upper pouch was smaller and was formed by the fundus. It measured 9x9 cm vertically and transversely. The lower pouch was larger and measured 6 cm vertically and 11 cm transversely. The canal connecting the two pouches had a

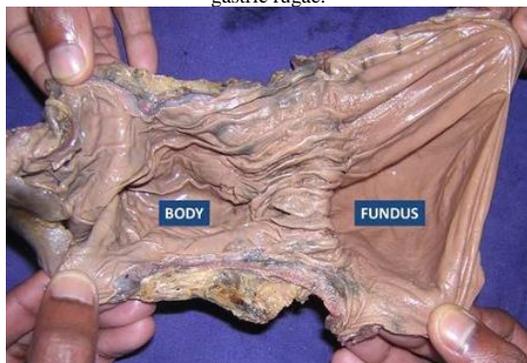
diameter of 3 cm. The two pouches were formed because of an unusual notch on the greater curvature (Figure 1). The depth of the notch from the greater curvature towards the lesser curvature was 4 cm. The esophagus opened into both the pouches since it was at the junction of two pouches (Figure 1). Interior of the stomach had a normal appearance with plenty of parallelly arranged gastric rugae at the greater curvature, especially at the region of the unusual notch (Figures 2 and 3).



**Figure 1: Photograph of the atypical hourglass stomach.** Note the two pouches and the abnormal notch at the greater curvature.



**Figure 2. Interior of the stomach as seen after opening it through the lesser curvature.** Note the parallelly arranged gastric rugae.



**Figure 3. Interior of the stomach showing 2 distinct pouches.** Seen after opening the stomach along the lesser curvature.

#### Discussion

Variations in the shape of the stomach are encountered very frequently without any clinical symptoms. One of the studies on the shape and topography of the stomach has classified the anatomical variants of stomach as malrotated, herniated and congenital variations.[4]

Munteanu has reported a rare case of upside-down stomach associated with hiatal hernia representing a special form of organo axial volvulus of the entire stomach.[5] A rare case of developmental anomaly showcasing the inverted stomach has been reported by Rhinerhart.[6]

Burdan et al studied the anatomy of 2034 operated stomachs and categorized them into 5 groups. Group 1 & 2 according to abnormal position of the stomach along its longitudinal and horizontal axis respectively, group 3 on abnormal shapes, group 4 about stomach connections and the group 5 comprising the mixed form with the combined features of two or more of the former groups.[7]

Bi-loculation of the gastric cavity into a ventral and a dorsal recess may be a part of congenital, functional or secondary to organic disorders with the most probable case of peritoneal adhesions.[8] In 18th century, hourglass stomach was thought to be of two types; congenital or acquired. However the recent reports suggest that it results as a consequence of gastric ulcer in the postnatal life.[2]

The frequency of the cascaded stomach is estimated to be 3%.[9] It is believed to be formed by the sling of oblique fibers encircling the greater curvature of the stomach.[10] A cascade stomach is liable to get kinked on itself to form volvulus of the stomach, which is also termed as Hinge volvulus or Jack-knife stomach.[11]

The case being reported here is an atypical type of hourglass stomach and we feel that it was a congenital anomaly because of the absence of evidence of any ulcers at the constriction. It was not caused because of any abnormal peritoneal band since there were no abnormal peritoneal bands attached to the stomach. It is not a cascade stomach as explained in the literature because in cascade stomach, the esophagus opens into the upper chamber. But in the current case the esophagus opened into both upper and lower pouches equally. This type of stomach may go unnoticed throughout life without any complication. However, knowledge of this case may be of importance to radiologist in interpretation of a barium meal radiograph. The double pouched appearance may result in misinterpretation of the case as a constriction resulted due to a gastric ulcer. The gastroscopic examination may help in seeing the normal mucosa but it might keep the clinicians intrigued about the exact cause of the condition.

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