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Case Report

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Cascade stomach: a case report

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ABSTRACT

Cascade stomach is an entity wherein there is biloculation of gastric cavity. The upper loculus is spherical in shape and the lower loculus is a narrow and tubular structure. Due to its morphological features, it is also known as "cup and spill stomach" or "champagne cup deformity". Cascade stomach is well known to radiologists but its clinical spectrum is not well researched and there is much speculation about its pathological basis. There is limited data on the treatment of this condition in the literature. Treatment varying from psychiatric management and conservative measures to surgical intervention has been reported in individual case reports. We present a case of cascade stomach successfully treated with laparoscopic Nissen's fundoplication along with the review of literature available on the subject.

Keywords: Cascade stomach, Gastric anomaly

INTRODUCTION

Cascade stomach is a congenital or acquired functional deformity of stomach in which there is biloculation of stomach. The upper loculus is formed by an out pouching of the fundus backwards and downwards. The lower loculus is narrow, tubular portion formed by body of stomach representing the Pars Media.[1]

Its clinical presentation is of nonspecific upper gastrointestinal symptoms. The upper gastrointestinal contrast study under fluoroscopy is diagnostic. Mild cases respond to medical management whereas the severe cases require surgical treatment.

An interesting case of cascade stomach treated surgically with Nissen's Fundoplication is presented here.

CASE REPORT

A 57 years old male presented with pain in the epigastrium, heartburn and sour eructation's for 3 years. He lost 5-6 kg weight over these 3 years. He was a chronic alcoholic for 20 years, but had given up alcohol 4 years back. Patient had undergone exploratory laparotomy through upper midline incision 28 years ago for penetrating injury to the abdomen of which no records were available. There was no significant finding on general physical examination and systemic examination of the patient. Routine hematological investigations and USG abdomen were normal. UGI endoscopy revealed grade II Gastro esophageal reflux disorder. Barium swallow showed a normal oesophagus, biloculation of gastric cavity, double bubble sign, ridge and "cup and spill" picture in the stomach characteristic of cascade stomach.

Patient was prescribed antacids, H_2 blockers and proton pump inhibitors (PPI) sequentially for 8 months. Patient responded partially to the medical treatment and cessation of the treatment resulted in relapse. Specific breathing exercises were advised but patient did not comply.

We performed laparoscopic nissen's fundoplication procedure on this patient. There were minimal adhesions between fundus and posterior abdominal wall which were removed. The floppy upper gastric loculus was used to make a 360 degrees wrap around the lower end of the oesophagus and was hitched to the oesophagus. Post-operative period was uneventful.

In the follow up of 5 years there was been complete resolution of symptom's and a weight gain of 3, 1/2 kg weight.

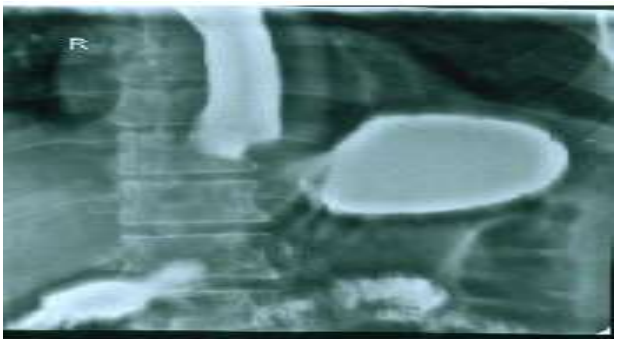

Figure 1: Barium swallow showing normal oesophagus and filling up of fundal sac.

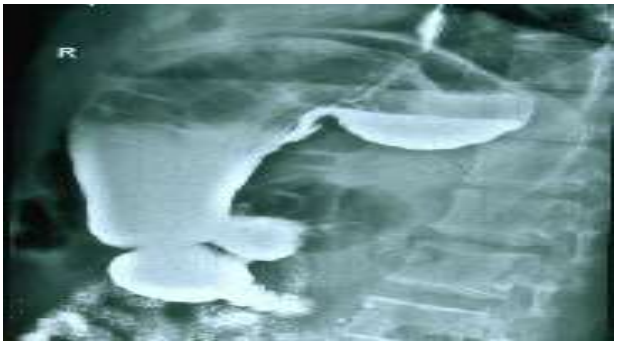

Figure 2: Lateral view showing biloculation of gastric cavity, posterior outpouching of the fundus and double air fluid levels (double bubble sign).

Figure 3: Barium Swallow showing spilling of barium from fundal sac over the ridge (marked with arrow) into the body of the stomach like a cascade.

Figure 4: Barium retained in fundus even after pylorus has emptied.

DISCUSSION

Cascade stomach was first described by Reider.[1]

In the limited studies available in the literature, incidence of cascade stomach has been reported to be 4-13% of patients who underwent barium meal studies of patients for upper gastrointestinal symptoms. There is male preponderance with a female to male ratio of 1:2.7.[2,3,4]

The age of affected patients ranges from 20-80 years with a mean age of 47.7 years.[2,4]

The symptoms are non-specific like nausea (40%), vomiting (31%), eructation (42%), heartburn (31-49%), epigastric pain (23-33%), early satiety (70-82%), and fullness after meals (44%), weight loss (13%) and gas belching due to aerophagy.[2-5]

In extreme cases, the stomach seems to empty only when the patient lies prone or on left side.[5]

There is nothing characteristic about the physical examination. However an abnormal fullness of left hypochondrium and an unusual prominence of 7th, 8th and 9th ribs on the left side has been reported by some authors.[6]

Etiopathology

There are probably as many theories as the number of authors reporting this entity. Some of the principal theories are as under:[1,5,6]

- Spasms of oblique muscle fibres. (Barclay)
- Short mesocolon and short gastro hepatic ligament with adhesions (Feisseley and Fried).
- Increased pressure due to swallowed air. (Malarque and Baize)
- Lateral displacement of the spleen with a resulting posterior pocket, the stomach folding backward over the pancreas and splenic artery. (Zollschan)
- Displacement of splenic flexure upward with consequent pressure on the fundus. (Webster)

- Abnormal motility of the fundus from lack of support, due to absence or elongation of phrenico-gastric ligament. (Upham)
- Twisting of stomach on a transverse axis going from midline to the left side of the abdomen. (Andre Pumont)
- Psychological predisposition as this condition occurs in nervous or neurotic types of patients with sedentary habits. (McLeod)
- Organic lesions-both intrinsic and extrinsic like diaphragmatic adhesions, stomach ulcers, stomach tumors, mass in the pancreas etc. (Keller).[4,7]

It is possible that a number of factors are at work and for this reason; no one treatment could be universally applied.

The diagnosis is made by upper gastrointestinal contrast study under fluoroscopy. Plain X-ray of the abdomen may be suggestive. Wherein, a large collection is seen in the region of splenic flexure and under the left diaphragm. The Barium meal picture taken during ingestion of dye is characteristic.[5,7] Barium flows from the oesophagus into a large, inert, globular sac. This sac exhibits no attempt at peristaltic action and in the upright position does not empty itself. It is not until it is completely filled and distended that barium spills over its anterior wall, like a waterfall, into the body of stomach, which exhibits active or hyperactive peristaltic action and as a rule empties quickly (Figure 2). It is this cascading phenomenon which has been classically used in radiological literature to describe cascade stomach (Figure 2). Left Anterior oblique view in erect posture is best suited to delineate the upper part of posterior portion of the body of the stomach.[7] By rotating the patient it becomes obvious that the upper sac lies to the left and posterior to the main body of the stomach.[2] Bending forward to left or right can make radiological finding in mild cases disappear.[1]

Medical treatment like antacids, PPI, H_2 blockers and antispasmodics usually are of no benefit or bring temporary relief if at all.

Breathing exercises during meals like taking a swallow of food followed by three to four breaths help. But it is tiresome and embarrassing and meal time gets unusually prolonged. Resting in prone position after taking meals also benefits.[2,6]

There are quite a few operative procedures published in the literature as individual case reports for the treatment of cascade stomach.

Gastropexy was described as early as 1941 wherein after removing adhesions and the pathological condition, the floppy fundus of the stomach is hitched to the undersurface of the diaphragm to prevent dropping of the fundus.[6]

Gastrogastric anastomosis was done laproscopically by Battisi et al in 1998.[8] Here upper gastric cavity was anastomosed with the lower part thereby creating an alternative channel for the passage of food.

Gastric sleeve resection is another procedure that was described by Schaffner.[6] It helps by reducing the size of redundant floppy loculus and preventing the axial rotation of the stomach. Lately this procedure was done laproscopically by Schouten et al in a patient of recurrent gastric cascade with satisfactory result.[1]

Nissen fundoplication seems to be a logical alternative.[9] The floppy upper gastric loculus is used to make a wrap around the lower end of the oesophagus. Not only does this work like gastropexy but it also obliterates the dead space of the upper loculus.

All the above procedures reportedly help in resolution of symptoms; however there are no guidelines available as to which treatment is to be offered to what kind of patient.

CONCLUSION

Cascade stomach as a clinical entity is infrequently recognized because of vague and non-specific symptoms, scant diagnostic investigations and lack of data on its natural history. Nissen's fundoplication is a logical and effective procedure in treating this condition. More comprehensive studies are required to formulate guidelines for the management of this condition.

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REFERENCES

1. Upham R. Cascade stomach: a review. Am J Digest. Dis. And Nutrition. 1935;2;38.
2. Ostensen H, Bucho PC. Gasric cascade: A diagnosisi without clinical importance? Scand J Gastroentrol. 1983;18(4):487-9.
3. Oguchi G, Miyashita H, Thukioka J. Clinical studies of cascade stomach on clinical symtoms. 1968;3(4):322-3.
4. Schouten R, Freijer PL, Greve JW. Laproscopic sleeve resection of a recurrent gatric cascade: a case report. J Laproendosc ADv Surg Tech A. 2007;17(3):307-10.
5. McLeod JW. Cascade stomach associated with impaired oesophageal emptying in a case of nervous indigestion. Cand. Mass. J. 1937;36;242.
6. Schaffiner VD, Burton GV. Cascade stomach, Canad. Mass. J. 1941;7:52-6.
7. Keller RJ, Khilnani MT, Wolf BS. Cascade stomach-roentgen appearance and significance. Am J. Roentgenol Radium Ther Nucl Med. 1975;123(4):746-54.

8. Battisi G, Natali G. Cascade vomniting-laproscopic treatment. Endoscopy. 1998;30(8):92-3.
9. Jon Mikel IÃ±arritu. Cascade stomach: An unsusual cause of abdominal pain. Unbounded Medicine, Medical Images 2006.

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