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## A Rare Cause for Intractable Hiccups in a Patient with Chronic Kidney Disease

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### Abstract

Hiccups are self-limiting disorder caused due to involuntary spasms of the diaphragm and intercostal muscles leading to sudden inspiration and a characteristic sound. Hiccups are known to occur in patients with Chronic kidney disease but usually get corrected on dialysis and rectification of electrolyte imbalance. Here we describe a 60 year old male with Diabetic Nephropathy with intractable hiccups which persisted even after regular haemodialysis and electrolyte management. On Upper GI endoscopy, we found a gastric diverticulum in fundus with pus oozing from within which was confirmed to be Gastric diverticulitis. Hiccups got alleviated with antibiotic course. Incidence of Gastric Diverticulum is very rare (0.01-0.11%) on endoscopy. Presenting with hiccups is even more rare and has not been described till now. This case also highlights the importance of full inflation while performing an endoscopy.

**Keywords:** Hiccups; Chronic Kidney Disease; Diabetic Nephropathy; Endoscopy; Gastric Diverticulum.

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### Introduction

Hiccups, or singultus, are involuntary spasms of the diaphragm and intercostal muscles causing sudden inspiration and a characteristic sound. Hiccup is usually a self-limited disorder. However, when it is prolonged beyond 48 hours, it is considered persistent whereas episodes longer than 2 months are called intractable hiccups [1].

In this case we describe a patient with chronic kidney disease due to Diabetic Nephropathy presenting with intractable hiccups of 3 months duration and fever of 1 week duration with no localising signs. Endoscopy done on him showed a gastric diverticulum in fundus with pus coming out from it. It was missed on a previous endoscopy. Imaging showed it to be Gastric Diverticulitis which was probably irritating the diaphragm and was the reason for his hiccups. Incidence of Gastric Diverticulum is very rare (0.01-0.11%) on endoscopy [1,2].

We report this case to highlight the importance of full inflation while performing a routine endoscopy and also the rarity of Gastric diverticulum presenting with hiccups.

### Case Report

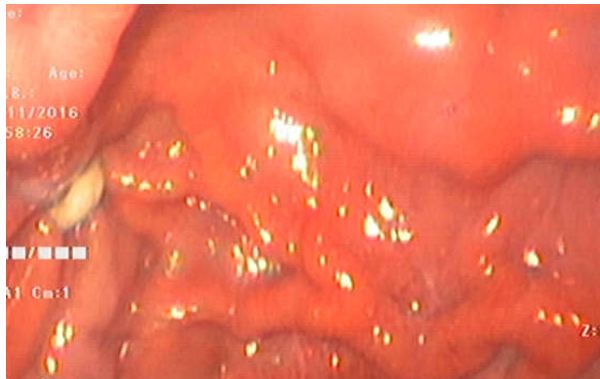
A 60 year old male Mr. C, known patient of long standing Diabetes mellitus, Hypertension with Chronic kidney disease-stage-V on maintenance Haemodialysis presented with hiccups for a duration of 3 months for which he received multiple medication and he reported now with fever for 1 week. There were no clinically localising signs for fever. Abdominal examination was unremarkable. He was admitted and started on appropriate antibiotics after cultures. Blood counts were mildly elevated. Blood sugar was in normal range, Serum Electrolytes were within normal range. Chest radiograph and ECG were normal. Ultrasound abdomen showed renal parenchymal changes. Fever subsided with

medication but hiccups persisted even after haemodialysis and correction of fluid status. Proton pump inhibitors, antacids, prokinetics and baclofen were given but the hiccups persisted. Endoscopy was done which showed a diverticulum like opening in gastric fundus with pus discharge from it. A CT abdomen was done which showed a sacular outpouching from posterior wall of gastric fundus which was filled with air and opacified with iodinated contrast lying in close proximity to the diaphragm. This could explain the intractable hiccups in patient.

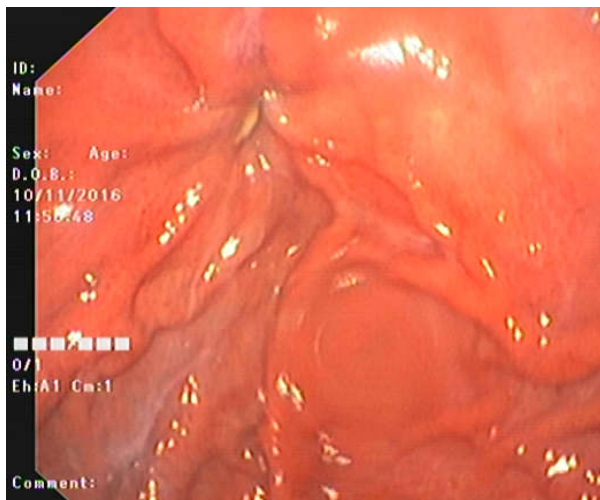
Incidence of Gastric diverticulum is rare and presenting with hiccups is even more rare. In this patient, hiccups got alleviated over time with medication-antibiotics and Antisecretory therapy.

He is planned for surgery at a later date.

Gastric diverticulum is a very rare cause for persistent hiccups and has not been described till date.



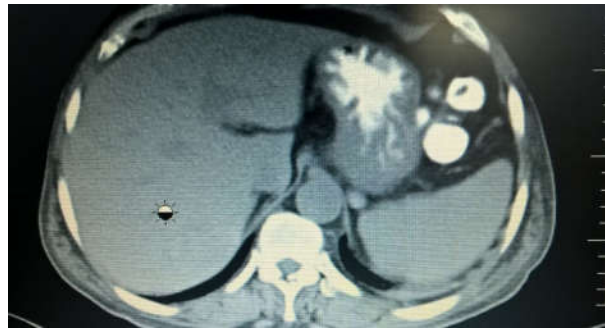
**Fig. 1:** Fundus on endoscopy, pus noted draining from a diverticulum



**Fig. 2:** Pus from the diverticular opening



**Fig. 3:** CT Abdomen showing sacular outpouching with air focus in gastric diverticulum, proximity to diaphragm



**Fig. 4:** CT abdomen showing enhancement and contrast in diverticulum

## Discussion

Hiccups are a common phenomenon in patients with chronic kidney disease. In this patient we describe an unusual cause of hiccups, a gastric diverticulum in fundus causing it. The overall incidence of gastric diverticulum is rare and it was actually missed on a previous endoscopy, found on repeat endoscopy. Another point to stress here is about full inflation while performing an endoscopy.

## Literature Review

### *Pathophysiology of Hiccups*

A reflex arc involving peripheral phrenic, vagal and sympathetic pathways and central midbrain modulation is likely responsible for the phenomenon of hiccup. Accordingly, any irritant like physical or chemical factors, inflammation, neoplasia invading the arc leads to hiccups. Renal failure can lead to uremia, electrolyte disturbances, gastritis and stress ulcers which can also lead to hiccups. In this patient the infected gastric diverticulum probably was irritating the diaphragm and causing hiccups.

Gastric diverticula is outpouching of the gastric wall and is the rarest form of gastrointestinal diverticula, with a reported prevalence of 0.01-0.11%

[1-3]. And 0.02% on autopsy studies [4]. It occurs equally in men and women, most commonly in the fifth and sixth decades of life [2]. Gastric diverticula can be congenital [4] (true), typically located on the posterior side of the cardia and containing all wall layers [1,4,8] or acquired (false), forming in association with weakened gastric wall musculature and without involvement of the muscularis propria [2,7]. Seventy-five percent of true gastric diverticula were located in the posterior wall of the fundus of the stomach, 2 cm below the oesophagastric junction and 3 cm from the lesser curve. False gastric diverticula are less common, are associated with peptic ulcer and regional inflammatory conditions [7]. They are usually asymptomatic. Symptomatic patients may present with a variety of clinical manifestations, including epigastric or lower chest pain, nausea, non-bilious emesis, dyspepsia [4,7], weight loss, iron deficiency anemia, bowel obstruction, bleeding, or even gastric perforation. Fotor ex ore (halitosis) on belching because of food retention was described in few reports [4]. Diverticulitis appears to be extremely rare as the mouth of the diverticulum is relatively wide [6].

Gastric diverticula have been reported radiologically as air- or contrast-filled suprarenal masses and have been mistakenly reported as necrotic adrenal masses on CT imaging [5]. They may not be appreciated on barium contrast studies without lateral views. It is stated that the GD is best identified during UGI study using a right, anterior oblique view with the patient in a supine, slightly left lateral decubitus and Trendelenburg position. In a large review, Palmer reported that 14 of 262 (5%) GDs are missed during UGI study. Juxtacardiac diverticula are best appreciated on retroflexed view during endoscopy [5].

### *Management*

Pharmacotherapy of Hiccups include Proton pump inhibitors, chlorpromazine, baclofen, gabapentin, serotonergic agonists, prokinetics and lidocaine [1]. There is no need to treat incidentally-discovered proximal Gastric diverticula. Symptomatic patients may be treated conservatively with H<sub>2</sub>-receptor blockers or PPIs. As distal gastric diverticula have been associated with malignancy, surgical management with amputation, segmental resection, or invagination is advised [5].

Diverticulectomy is required in settings of perforation or malignancy and has been suggested in the presence of bleeding refractory to endoscopic therapy or diverticular size >4 cm [4].

Endoscopic management of cases of gastric diverticulum that presented with active upper GI bleed can be done by injection and endoclip placement [6].

Surgical management Surgical resection is recommended when the diverticulum is large, symptomatic or complicated by bleeding, perforation or malignancy. Both open and laparoscopic resection yield good results.

### **Conclusion**

Hiccups are a common symptom in patients with chronic kidney disease. Evaluation could reveal treatable cause of it.

In this patient, there was a gastric diverticulum which got infected and presented with fever as well as intractable hiccups. It was suspected on endoscopy and confirmed on CT abdomen.

He was managed conservatively with antibiotics and is planned for surgery if the problem recurred. Two points to be highlighted here is the rare presentation of gastric diverticulum and reiterating the importance of full inflation while performing an endoscopy .

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