

# WHEN A WARNING SIGN IS NOT A WARNING SIGN: CHILADITI'S SIGN IN A PATIENT WITH HEART FAILURE AND EPIGASTRIC HERNIA

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## ABSTRACT

Malposition of hepatic flexure of colon in sub diaphragmatic space, Chilaiditi syndrome, is usually an asymptomatic anatomical aberrancy of position. It is usually noted as a coincidental finding in chest X-ray. We present a case of 63 years old male who presented as an out-patient in the department of general medicine in rural hospital. The patient had features of heart failure and also had Chilaiditi syndrome as an incidental finding. This case is presented to remind ourselves of a harmless condition in the myriad of grave conditions that account for gas under the diaphragm in a chest X-ray.

## KEY WORDS

*Chiladiti sign, chilaiditi syndrome, gas under diaphragm*

## INTRODUCTION

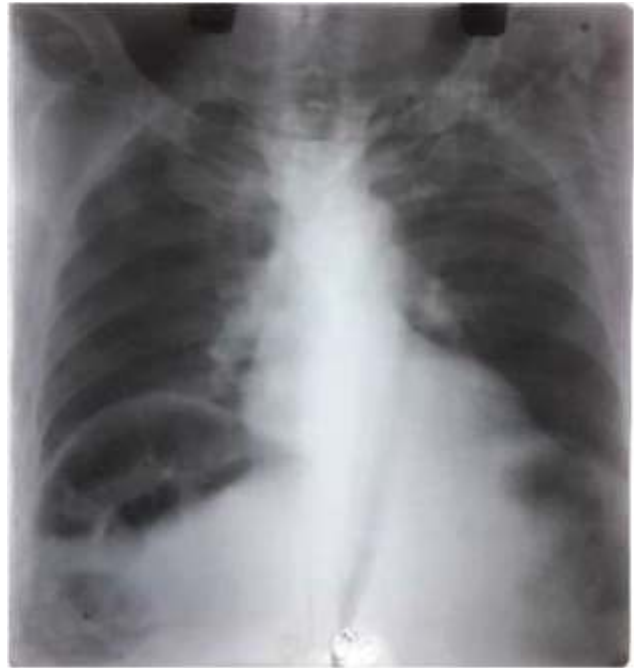
Gas under diaphragm is an alarming sign that warrants immediate intervention in medical fraternity. Gas under diaphragm is commonly due to hollow viscus perforation which needs immediate surgical intervention and repair. However, abdominal laparotomy is not required in all cases where free gas under diaphragm is seen in radiology. Austrian radiologist Demetrius Chilaiditi in 1910 reported cases where intestinal loop was positioned between right sub-diaphragmatic space and liver.<sup>1</sup> After his name this sign is known as Chilaiditi sign. The distinguishing feature of this condition with other cases of pmo-peritoneum is absence of agonizing pain. Although this condition is reported a century ago it is uncommon finding with incidence of 0.025–0.28% in general population.<sup>2</sup> This condition is best treated by conservative methods rarely requiring laparotomy. We report such a rare case of Chilaiditi sign diagnosed at a rural Hospital in Nepal. The case is more unusual because the patient had heart failure and epigastric hernia.

## CASE REPORT

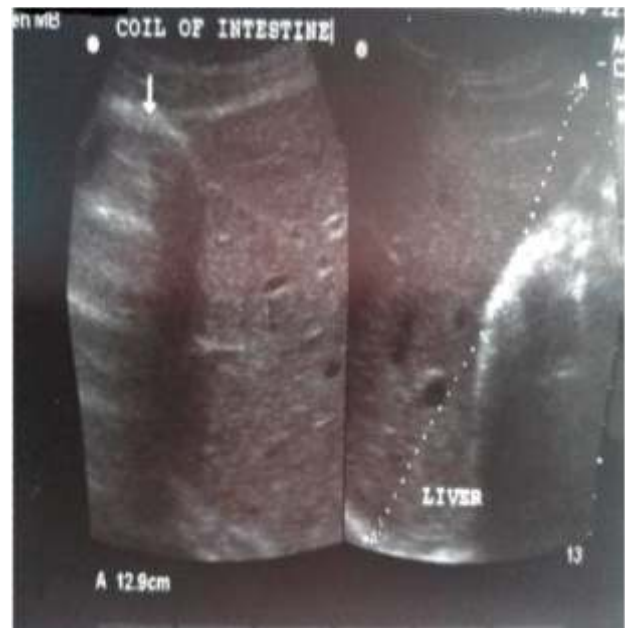
A 63 years old male presented to Emergency Room with chief complaint of bilateral pitting oedema and severe shortness of breath. This dyspnoeic patient had respiratory rate of 30 breaths per minute, blood pressure 90/60 mm of Hg, pulse rate 80 beats per minute with normal body temperature. On chest auscultation, effortful breathing with bilateral basal crepitation was heard without any murmur. On palpation, irreducible soft lump of 2 x 2 cm was noticed on epigastrium. The mass was associated with positive cough impulse which was suggestive of epigastric hernia.

He had no other gastrointestinal symptoms. Routine laboratory investigations and basic metabolic panel were within normal limits. Electrocardiogram showed sinus rhythm without any abnormal finding. As per the findings, possibility of heart failure could not be ruled out based on Boston Criteria; and the Fermingham criteria also suggested heart failure as the diagnosis. The doctor was also concerned for the epigastric mass so advised the patient for chest X-ray which revealed gas under right dome of diaphragm [Figure 1]. This finding made the treating doctor suspicious of bowel perforation. The hospital lacked advanced radiological imaging techniques like

computerized tomography scan, Magnetic resonance Imaging or echocardiogram. It was not until the abdominal sonography which revealed a loop of bowel between the right lobe of liver and the diaphragm [Figure 2]. The patient was treated for heart failure and once he became stable a repeat Chest X-ray was done after 72 hours which did not demonstrate the previous Chilaiditi's sign [Figure 3].



**Figure 1:** Chest X-ray in erect posture showing lucency in right subdiaphragmatic region.



**Figure 2:** Confirmation of Chilaiditi's sign by ultrasonogram.



**Figure 3:** Resolution of right subdiaphragmatic lucency after 72 hours.

## DISCUSSION

Radiologically, the 'Dome Sign' which is bilateral dark crescent shadows representing the free air under diaphragm is taken as a basic sign of bowel perforation and pneumo-peritoneum.<sup>3</sup> Perforated bowel is a surgical emergency where the patients develop localized agonizing pain which is gradually generalized associated with malaise and vomiting. The diagnosis of pneumo-peritoneum is solely radiological and 'dome sign' is the commonest in chest X-ray.<sup>3</sup> Other radiological signs to diagnose pneumo-peritoneum in supine position are 'Rigler's sign', 'Doge's cap sign', 'Cupola sign', 'Triangle sign' and 'Football sign'.<sup>3,7</sup> Pneumo-peritoneum is a surgical emergency which warrants for a prompt laparotomy. Failure to diagnose such a case and provide adequate management denotes incompetency in part of the doctor. However, Chilaiditi's sign mimics pneumo-peritoneum, surgery is absolutely not required.

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In a view of providing quality health care, the government of Nepal has started to mobilize young medical undergraduates to rural health centres and hospitals. Such hospitals lack modern and advanced imaging techniques like computer tomography and magnetic resonance imaging. The rookie doctor has to rely mostly upon the plain radiograph for diagnosis. Interpretation of radiologic finding is again the duty of the same doctor as most hospitals in rural settings have a radiology technician but not a radiologist.

Chilaiditi's sign is an incidental finding and not commonly encountered. Many doctors during their undergraduate course might have read about it however, they might not have seen a single case. During practice if they happen to encounter such a radiologic finding, there would be a chaos as it is a basic sign of perforation. In such cases either a patient is immediately operated upon or immediately referred to higher centre. These unnecessary operations not only possess risk but also generate extra expenses in part of the patient. In part of the doctor it is humiliating and also a ground for litigation.

The best way to differentiate Chilaiditi's sign is not only to depend on the findings upon chest X-ray but to opt for ultrasonogram to distinguish it from pneumoperitoneum.<sup>8,9</sup>

Chilaiditi's sign may present with complications like abdominal pain, torsion of the bowel or shortness of breath as Chilaiditi's syndrome. In our case the patient presented with epigastric hernia. Epigastric hernia in elderly is acquired and usually contains omental fat. The shortness of breath in our case was due to heart failure; however studies suggest that Chilaiditi's sign may be associated with angina.<sup>2</sup>

Chilaiditi's sign as an incidental finding is reported from Nepal too which too stresses to evaluate the patients for symptoms termed as Chilaiditi's Syndrome.<sup>10</sup>

## CONCLUSION

In the present case, the patient has visited the health care provider as outpatient and for shortness of breath rather than for gastrointestinal complaints which made the diagnosis of Chilaiditi's sign easier. When a doctor is posted in an emergency room and finds a Chest x-ray with gas under diaphragm, he is always alerted of emergency. So it is advised to reconfirm the diagnosis by abdominal ultrasonography in any suspicious cases.