



## SILENT GUT GANGRENE- A SURGICAL RARITY

<sup>1</sup>Dr. Snehasis Smrutiranjana Das\*, <sup>2</sup>Dr. Vikyath Shetty HP, <sup>3</sup>Dr. Mari raj M,  
<sup>4</sup>Dr. Gopal Balasubramanian<sup>#</sup>

<sup>1</sup>Junior Resident, Department of General Surgery, JIPMER

<sup>2</sup>Junior Resident, Department of General Surgery, JIPMER

<sup>3</sup>Senior Resident, Department of General Surgery, JIPMER

<sup>4</sup>Additional Professor, Department of General surgery, JIPMER

\*Primary Author, #Corresponding Author

### ABSTRACT

*Mesenteric Arterial Ischemia is an entity which is one of the most important causes for acute abdomen and resulting laparotomy and bowel resection and the associated morbidity. Definitive diagnosis of the same is done by Contrast enhanced CT although mostly laparotomy is indicated by clinical status of the patient and routine blood investigations with blood gas studies. There is also a recent surge in such cases due to COVID 19 pandemic. We present a 52-year-old male who presented with acute abdomen who was found to have Superior Mesenteric Artery Thrombosis with gangrene of near complete small bowel and ascending colon managed with resection of the same. Extensive bowel resection and the resulting short bowel syndrome and associated morbidities makes Mesenteric Ischemia a time sensitive emergency. Mortality is usually associated with increasing time taken for diagnosing the condition. Hence early diagnosis with prompt surgical treatment is key for patient management*

**KEYWORDS:** Mesenteric Arterial Ischemia, gut gangrene, Mesenteric artery thrombosis, Resection and Anastomosis.

### INTRODUCTION

Mesenteric ischemia is an entity involving the occlusion of either the arterial or venous supply of the small intestine and ascending colon. It accounts for 0.1% of all hospital admissions with an incidence of 12.9 per 100000 person years and is one of the potentially fatal abdominal surgical emergencies. This condition predominantly increases in incidence with age along with atherosclerosis, arrhythmias, cardiac disease, advanced age, intra-abdominal malignancies, being the other risk factors <sup>[1]</sup>. Recently the incidence of the same has seen a steep increase due to the COVID 19 pandemic and the associated development of thrombus due to hypercoagulable state usually seen associated with it <sup>[2]</sup>. Emergency Laparotomy is the standard of care where earlier exploration is associated with lesser bowel loss. However, studies have shown that survival in cases of mesenteric ischemia drops from 50 to 30% after 24 hrs of delay [1]. Here we present a case of 52-year-old male with no comorbidities or no history of COVID positivity who presented with acute abdomen and was taken for laparotomy after 60 hrs of

presentation managed with extensive small bowel and large bowel resection.

### CASE PRESENTATION

A 52-year-old male with no known comorbidities presented with complaints of abdominal pain and distension and vomiting for the past 2 days along with obstipation for 2 days. Abdominal pain was predominantly upper abdominal with no radiation increasing on food intake and mild to moderate in intensity which relieved with analgesics. He also had vomiting which was non bilious non projectile and non-blood stained. He also had not passed flatus for the last 48 hrs. He otherwise had no per rectal bleed or breathlessness. He is a known alcohol consumer for the last 30 years with last binge of alcohol being 2 days before presentation. He otherwise had normal bowel and bladder habits prior to presentation and no history of SARS CoV2 positivity in the past. On examination he had mild tachycardia of 112 bpm with normal bp, had an insignificant respiratory system examination. Per abdominal examination showed distended abdomen with mild tenderness in the epigastrium and no guarding or rigidity.



He had normal haemoglobin with significant leucocytosis of 21840 which was neutrophil predominant with otherwise normal serum electrolytes. Renal and hepatic functions tests were normal. Serum amylase was 157. Arterial blood gas analysis was done which showed normal findings with a lactate level of 1.49 mmol/l. Abdominal radiograph showed colon cut-off with dilated small bowel loops with air fluid levels. Ultrasonography of the abdomen was done which showed mildly heterogeneous pancreas with peripancreatic inflammation but otherwise normal study. He was initially admitted as a case of acute pancreatitis and managed with maintaining nil per oral status and with intravenous fluids and analgesics. However, in view of persistent symptoms with tachycardia 24 hrs after admission, CECT abdomen was taken which showed filling defects in the superior mesenteric artery, one at its origin for a length of 2cm and the other 1.5cm distal to first one along with complete filling defect of distal SMA and its branches - s/o thrombosis. Except for the first 15-20 cm of jejunum, ileum, cecum and ascending colon showed no contrast enhancement which was suggestive of frank gangrene. There were also associated scattered atherosclerotic wall calcifications in descending thoracic aorta & abdominal aorta.

## DISCUSSION

Mesenteric Ischemia is a condition that affects the blood vessels of the small intestine which can be due to occlusive or non-occlusive obstruction of the mesenteric arteries or also can be due to obstruction to venous outflow<sup>[3]</sup>. The presentation in these cases can be acute or chronic. Acute mesenteric ischemia presents with sudden onset abdominal pain and distension and is usually a surgical emergency requiring extensive bowel resection. Chronic mesenteric ischemia presents with features suggestive of abdominal angina with post prandial abdominal pain and symptoms which are usually out of proportion of the signs. It usually is most commonly caused by embolism in almost 50% of the cases and least commonly by mesenteric venous thrombosis [ $<5\%$ ]. Mortality is considered almost 60-80% when not operated in the first 24 hrs. This is serious even though considering the fact that mesenteric ischemia only involves about 0.05-0.2% of all acute surgical admissions.

Reperfusion is considered the primary cause of tissue damage in alterations of mesenteric blood flow. The amount of damage depends on the duration of the alteration. Ischemia for short periods of time cause increase in micro vascular permeability whereas ischemia for longer periods can cause disruption of intestinal mucosal barrier due to polymorphonuclear leucocytes and reactive oxygen species<sup>[4]</sup>.

Mesenteric arterial thrombosis especially emboli are usually associated with cardiac disorders like arrhythmias, infective endocarditis or recent MI or cardiac surgery. It is also associated with peripheral vascular disease. Mesenteric venous thrombosis is usually associated with inherited thrombophilias unlike arterial counterparts. Especially when patient has vague features with no outright evidence of gut gangrene, CT is considered diagnostic for any vascular or bowel wall abnormalities. It can also detect the exact area of

the bowel which is gangrenous and which are pre gangrenous in nature<sup>[5]</sup>.

Recanalization and stenting has become is a vital modality of treatment for both acute and chronic thrombotic superior mesenteric artery [SMA] occlusion. Embolectomy: either aspiration or open surgical removal, are usually considered for embolic SMA occlusion. Endovascular therapy is considered in venous thrombosis when anticoagulation fails<sup>[6]</sup>.

Acute mesenteric ischemia has one of the highest rates of misdiagnosis owing to its nonspecific symptoms and inconclusive investigations. These delay and complicate the already present severe physiological dysfunction associated with gut gangrene. Therefore as a part of damage control surgery in the initial stage the gangrenous bowel is resected and ends are stapled off and abdomen is closed temporarily. After stabilising the patient again second stage surgery is done and attempt to restore bowel continuity and complete abdominal closure is done<sup>[7]</sup>.

Complications of short bowel syndrome develop when more than 200cm of small bowel is resected. This can happen in the form of severe dehydration with life threatening electrolyte abnormalities in the initial phase and malnutrition caused by malabsorption of multiple vital macro and micronutrients<sup>[8]</sup>. Therefore prolonged parenteral nutrition till the patient's remnant intestine becomes adapted to the short length is usually recommended.

Due to the advent of prolonged TPN care along with home TPN care the survival in patients with short bowel syndrome has significantly improved. However the high cost of maintenance of such setups along with other complications like central venous catheter induced sepsis, TPN induced cholestasis and liver failure and remain the real therapeutic challenges. Hence it is said that the prognosis depends less on the length of the surviving bowel and more on the physiological homeostasis that the patient is able to achieve with the short bowel syndrome<sup>[9]</sup>.

With a diagnosis of gut gangrene patient was taken up for emergency exploratory laparotomy. He was found to have approximately 1.5 L toxic fluid along with bilio-feculent contamination and frank gangrenous changes- 15cm from DJ flexure up until hepatic flexure with clear sharp demarcation. Resection of the affected segment with the two ends of the remaining bowel and was brought out as separate stomas in the form of an end-jejunostomy and transverse colostomy. Postoperatively patient was started on total parenteral nutrition with counter measures against high output stoma. Gradually the stoma output reduced and patient tolerated orals. He was planned for early restoration of continuity and underwent the same after 4 weeks with no post-operative complications.

## CONCLUSION

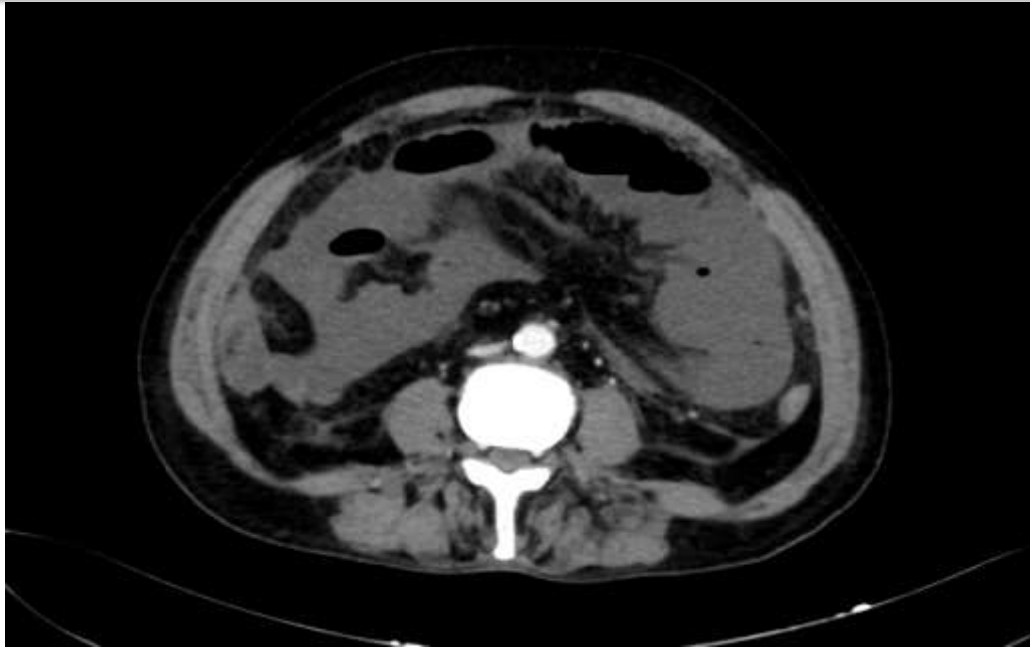
Gut gangrene is amongst the most fatal ailments in the spectrum of cases a general surgeon faces. With the usual malefic prognosis that it bears, the stormy presentation somehow helps in the early diagnosis and hence aids in the surgeon taking redressal steps. However with this case, we would like to confer upon the knowledge that this entity can

present silently with aggravated lethality and hence physicians should have a high risk of suspicion for the diagnosis in case of an atypical presentation. Early surgical ministrations with

adequate hemodynamic resuscitation is the key to an optimal treatment and favourable outcome.



**Figure 1:- Colon cut off with dilated small bowel loops and Air Fluid levels**



**Figure 2:- Non enhancing small bowel loops with moderate ascites**

## REFERENCES

1. Franca E, Shaydakov ME, Kosove J. Mesenteric artery thrombosis. *StatPearls [Internet]*. 2021 May 4.
2. Cheung S, Quiwa JC, Pillai A, Onwu C, Tharayil ZJ, Gupta R. Superior mesenteric artery thrombosis and acute intestinal ischemia as a consequence of COVID-19 infection. *The American journal of case reports*. 2020;21:e925753-1.
3. Gragossian A, Shaydakov ME, Dacquel P. Mesenteric artery ischemia. *StatPearls [Internet]*. 2021 May 4.
4. Oldenburg WA, Lau LL, Rodenberg TJ, Edmonds HJ, Burger CD. Acute mesenteric ischemia: a clinical review. *Archives of internal medicine*. 2004 May 24;164[10]:1054-62.
5. Kim AY, Ha HK. Evaluation of suspected mesenteric ischemia: efficacy of radiologic studies. *Radiologic Clinics*. 2003 Mar 1;41[2]:327-42.
6. Acosta S. Mesenteric ischemia. *Current opinion in critical care*. 2015 Apr 1;21[2]:171-8.
7. Weber DG, Bendinelli C, Balogh ZJ. Damage control surgery for abdominal emergencies. *Journal of British Surgery*. 2014 Jan;101[1]:e109-18.
8. Weale AR, Edwards AG, Bailey M, Lear PA. Intestinal adaptation after massive intestinal resection. *Postgraduate medical journal*. 2005 Mar 1;81[953]:178-84.
9. Schalamon J, Mayr JM, Höllwarth ME. Mortality and economics in short bowel syndrome. *Best Practice & Research Clinical Gastroenterology*. 2003 Dec 1;17[6]:931-42.