

## Post COVID-19 Mesenteric Vascular Occlusion: A Case Report

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### Abstract

12 years old boy had an attack of fever, nose running, body ache, which lasted for a week. He was managed by symptomatic therapy. After one week of recovery, he developed pain and distention of abdomen. On evaluation he was found to be having, raised C reactive protein, D' dimer, dilated bowels on plain X-ray and CT scan demonstrated a loop is fixed dilated bowel, no contrast crossed that part and the intravenous contrast was not taken up, indicating gangrenous loop. He underwent an emergency, resection and anastomosis and received anticoagulant therapy and asymptomatic after 6 months. COVID-19 was considered and treated by surgery and anticoagulation.

**Keywords:** COVID-19; Mesenteric Vascular Thrombosis; Bowel Resection; Anticoagulant

### Introduction

Viral epidemic do occurs periodically on Homo sapiens. But the novel COVID-19 pandemic is unique in the form of highly infectious and spreads by contact of the virus besides the droplet spread and remaining alive for hours to days on surfaces [1]. Once it enters the body by respiratory or enteral route, body response is a violent autoimmune inflammatory reaction [2]. Covid-19 viruses enter the epithelial cells of respiratory tract with cytopathic effect due to viral multiplication leaving non epithelial area, term as endotheliopathy. Same process starts at the vascular endothelium, which generate thrombin and the thrombotic process starts. This leads to activation of other pathways including the immune system and thrombo-inflammatory responses. Damaged epithelium causes thrombosis causing elevation of D-dimer. This coagulation process can involve any organ of the body including mesenteric vessels [3,4]. This COVID-19 related vascular thrombosis of other organs leads to multiple organ failure. These patients needed critical care. The specific therapy would have been anticoagulation rather than steroid and antibiotic. Actually, the treatment was concentrated on anti-inflammatory drugs and anticoagulation therapy became the tertiary leading to big mortality. We concentrate on anticoagulant in view of bowel gangrene. When it involves the mesenteric vessels, may need an emergency abdominal surgery. Such a case is reported here on 12 years old patient Such a case is reported. virus has spread all around the world. All hospital of all countries is falling short of bed and over a crore have lost their life. Because of its complex pathophysiology have confused all the clinician by its viral mediated severe stress response with multi organ damage including thrombosis of blood vessels, warranting critical care to bulk of the patient [5]. It is characterized by low lymphocytes and vascular thrombosis [6,7].

### Case Report

12 years old boy, had cough, cold and body ache with mild fever 2 weeks back. He recovered in a week time with only symptomatic therapy at home. After a week he started having pain abdomen, vomiting. The pain was at right of umbilicus, colicky in nature associated with vomiting of ingested food and got admitted. Initially had few diarrhoeas. Two days later the pain becomes more sever and localized to right lower half of abdomen and subsequently abdomen got distended with localized tenderness and stopped passing flatus/ stool. Bowel sound was present at the upper abdomen. He got admitted to a hospital, was managed conservatively and evaluated. The haematological parameters were near normal, COVID-19 RTPCR was negative. But the CRP 202 mg/L, D' dimer was 2122 ng/ml, grossly elevated and COVID-19 antibody was detected. Plain X-ray abdomen localized dilated bowel, confirmed on CT scan (Image 1 (a- X-ray and b- CT image) same finding fixed dilated bowel loop with no transit of oral contrast and bowel wall was not taking (yellow small arrows) contrast. Emergency laparotomy was done after counselling and consent. The proximal bowel was dilated. The ischemic bowel was covered all around with healthy small bowel and omentum, with a segment of ischemic area (Image 2). The lumen got opened up during the release of adhesion. Resection of the ischemic bowel was resected; the end was closed and side to side anastomosis 3 - 4 cms. away of closed margin. Post -operative period, he received regular heparin 75 unit/Kg loading dose 25 units/Kg/Hr infusion besides the other usual care. He recovered slowly, passed flatus on the 6<sup>th</sup> post-operative day. Discharged on 10<sup>th</sup> post-operative day with low molecular heparin 4mg subcutaneous injection (body weight 38 Kg). After stich removal the heparin was gradually stopped over lapping oral anticoagulant with periodic prothrombin time monitoring to keep the INR twice of normal. The histological report of the specimen reported as gangrenous bowel with both artery and venous thrombosis. He was doing well for two week and developed pain and could be managed conservatively. It was in the early period of COVID-19 pandemic and vaccine was not started in our country. He was on follow up for 6 months and was doing fine.

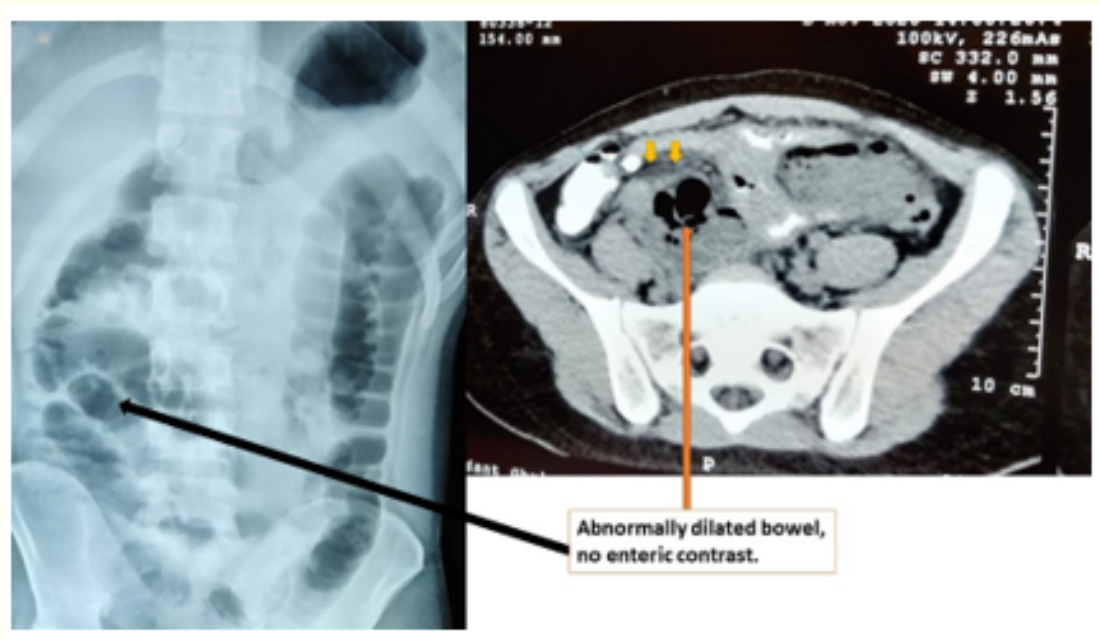


Image 1

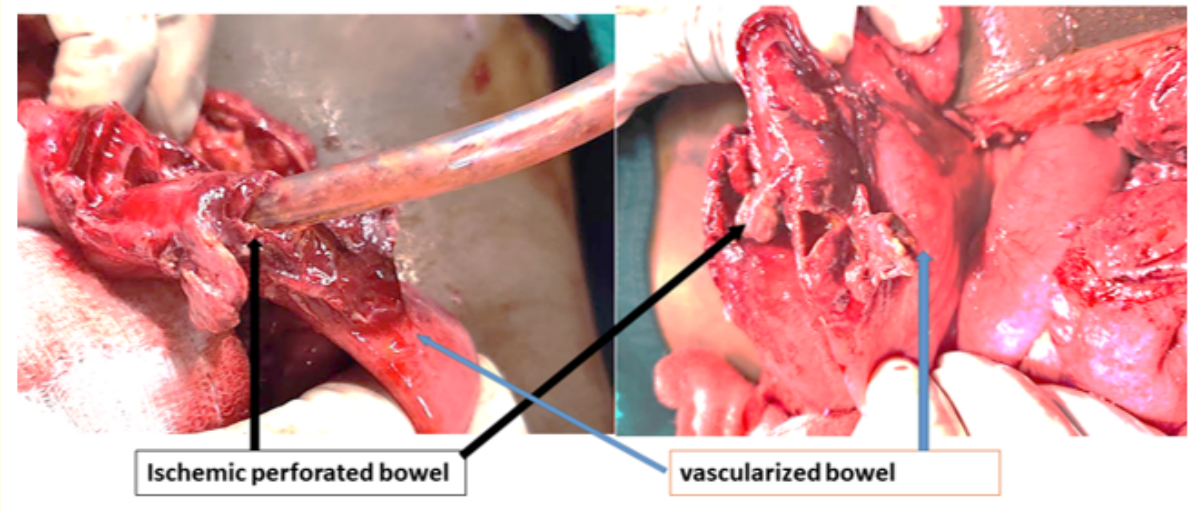


Image 2

## Discussion

The basic pathology in COVID-19 is endotheliopathy that occurs due infection and activation of other pathways including the immune response causing coagulopathy. During coagulopathy the breakdown process of fibrin gives rise to elevation D-dimer [4]. COVID-19 related vascular thrombosis related mesenteric ischemia and non-mesenteric vessels are reported. During the initial days of the pandemic, the fast superior mesenteric artery thrombosis and acute intestinal ischemia was reported on a 55 years old lady having pain abdomen and diarrhoea without any history of fever and never diagnosed as COVID-19. She had an emergency surgery and confirmed the thrombosis in SMA territory [9]. A 50 yrs old COVID-19 positive female was admitted for 2 weeks for respiratory involvement, complaint of abdominal pain on 10 the day of admission with a palpable tender lump at hypochondrium found to be having gangrene of sigmoid colon on the fatal case [10]. Authors recommended to keep bowel ischemia as differential diagnosis in COVID-19 patient with pain abdomen [10]. In such situation Contrast-enhanced CT scan will confirm the diagnosis so that early management can be done like the present case with early initiation of anticoagulant. Non mesenteric ischemia is also reported in a 78 yrs old female, COVID-19 positive, developed dry gangrene fingers with evidence of DIC died [11] Study from Wuhan, the origin source of COVID-19 has confirmed the risk of vascular thrombosis during and after covid-19 infection [12]. The present case, had cough, cold and body ache during early days of the pandemic, which was ignored as common cold. Developed abdominal pain, found a tendered lump after two weeks. Investigation revealed positive COVID-19 antibody with elevated d-dimer and C-reactive protein, thus establishing causal link between Covid infection and thrombosis. The D' dimer elevation and elevated level directly proportionate to the severity is established [8]. Our patient survived possibly due to early diagnosis, correct surgical intervention and appropriate prolonged anticoagulant therapy, which is recommended for survival [12,13].

## Conclusion

Covid-19, infection takes place through respiratory and gastric route. It involves the vascular system and can cause ischemia of multiple organs. Any abdominal complaint bowel ischemia should be thought and evaluated. On confirmation, appropriate surgery and long anticoagulation is the choice.

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