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RESEARCH ARTICLE

NON-SURGICAL MANAGEMENT OF PERFORATED JEJUNAL DIVERTICULUM

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Abstract

Jejunal diverticulitis complicated by perforation is rare and shows an uncharacteristic presentation and thus poses a difficulty in the early diagnosis of the condition. However, diverticulitis and its complications should always be considered in geriatric men who present with an acute abdomen. We describe a 77-year-old man who originally presented with acute abdominal pain having free gas under right dome of diaphragm on X-ray abdomen, upon further evaluation with CT abdomen, a diagnosis of contained jejunal diverticular perforation was made. Once optimized he was then managed non-operatively with intravenous fluids, antibiotics, and total parenteral nutrition and supportive care. His overall recovery during hospitalization was uneventful. A follow-up CT abdomen showed no new pocket of fluid or free air. As jejunal perforation is a rare finding, early laparotomy done based upon free gas on X-ray alone may be correlated with an overall higher risk of mortality due to the disease's proximity to duodenojejunal flexure and thus conservative management in selected group of patients may prevent inadvertent celiotomy and morbidity and mortality arising out of it.

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Introduction:-

A sac-like protrusion from the intestinal wall known as diverticulosis can affect both the small and large intestines. Small bowel diverticulosis is uncommon and not as frequent as colonic diverticulosis, but it remains an essential diagnosis for hospitalizations. There appears to be an association with age older than 60 years, male gender, colonic diverticulosis, and systemic connective tissue diseases [1, 2]. Familial tendencies have also been noted. The pathophysiology has been postulated as smooth muscle motor dysfunction resulting in disordered contractions. This dysfunction causes an increased intraluminal pressure, leading to herniation of the mucosa and submucosa through the mesenteric side of the bowel. [3]. Since this is a rare entity, many a times diagnosis is missed leading to severe complications and mortality. This work aims to propose early diagnosis using Computed Tomography in cases of acute abdomen in males and successful non-surgical management of the patient, thereby avoiding morbidity and mortality arising out of inadvertent celiotomy. Our patient was managed similarly and was discharged without any complications.

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Case Presentation

A man aged 77 years came to the emergency wing with intense pain in the epigastric area which was acute in onset of 5 days duration, associated with obstipation and multiple episodes of vomiting. He was a known hypertensive, controlled with medications. His past surgical history was unremarkable. On clinical examination, his body temperature was 99.6 F, heart rate 110 bpm, blood pressure 164/94 mm of Hg, respiratory rate 22 per minute and oxygen saturation 88% on room air. He had mild abdominal distension and epigastric tenderness. Bowel sounds were sluggish and he was dehydrated. The rest of the examination was unremarkable. "His blood parameters were as mentioned in Tables 1, 2". Abdominal ultrasonography done elsewhere a few hours earlier reported minimal collection intraperitoneally with fine echoes and heterogeneous mesentery. An erect X-ray Abdomen done elsewhere showed free gas under right dome of Diaphragm (Figure 1). Following admission, an immediate CT scan with restricted oral contrast showed free intraperitoneal air along the superior and anterior surface of the liver, in porta hepatis and mesentery. Mesentery and omentum on the left side showed thickening and severe fat stranding along with evidence of focal collection of extravasations of oral contrast from one of the jejunal loops. No free extravasation into the peritoneal cavity was noted. Few small contrast-filled outpouchings were seen arising from the wall of the jejunum. Features suggested a possibility of contained jejunal diverticular perforation. (Figures 2, 3, 4). Bilateral minimal pleural effusions were seen along with basal atelectasis.

The patient was then optimized in ICU and broad-spectrum antibiotics were started. On admission day 2, the patient was hemodynamically stable and hence treated conservatively with a Nasogastric tube, Nil per oral and Intravenous support. On day 4, he had a spike of fever at night which was likely due to thrombophlebitis in the left elbow region and was managed accordingly. On day 5, clinically his abdomen was soft, CECT whole abdomen was done which showed further regression in stranding noted in the left flank region with no new pocket of fluid or free air, also his total count further improved to 12820, hence further conservative management with NPO, broad-spectrum antibiotics and TPN support with a central line was continued. On day 6 he was shifted to the ward and his potassium was 3.7 which was then corrected via IV supplement. On day 7, clear liquids were started which he tolerated, the diet then progressed gradually to a full liquid diet and low residue semi-soft diet on day 8 and day 9 respectively, which he tolerated well. On admission day 11 his plain CT scan was done which showed an extravasated small pocket of contrast had regressed and only fat stranding persisted. (Figure 5). A repeat total count was 10590. On day 11, central lines were removed. Clinically patient 's overall GC was good, afebrile and the abdomen was soft, non-distended and thus was discharged in a stable condition. He was then followed on the 1st and 6th weeks post-discharge and was completely fine.

Table 1: - Blood parameters done elsewhere before admission (26-04-2023).

Parameters with units	Patient's values	Reference values
Blood Urea Nitrogen(mg/dL)	69.17	8-20
Sodium(mmol/L)	142.4	136-145
Potassium(mmol/L)	5.53	3.5-5.0
Chloride(mmol/L)	101.9	95-105
Hemoglobin(g/dL)	11.1	13.5-17.5
White blood count(U/L)	22000	4500-11000
Platelets(U/L)	327	150-400
Serum Creatinine(mg/dL)	2.6	0.8-1.3

Table 2: - Blood parameters done on day 1 of admission (28-04-2023).

Parameters with units	Patient's values	Reference values
Hemoglobin(g/dL)	10.6	13.5-17.5
White blood count(U/L)	15840	4500-11000
Platelets(U/L)	265	150-450
Serum Creatinine(mg/dL)	1.31	0.8-1.3



Fig.1:-Free Gas Under Right Dome of Diaphragm seen on X-rayAbdomen erect view done elsewhereon 26-04-2023.

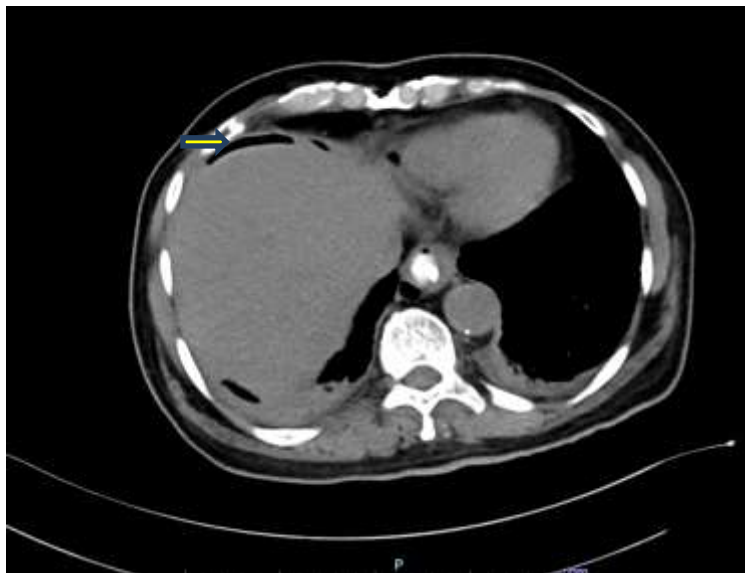


Fig.2:-Free intraperitoneal air along superior and anterior surface of liverseen in CT Scan Abdomen dated 28-04-2023.

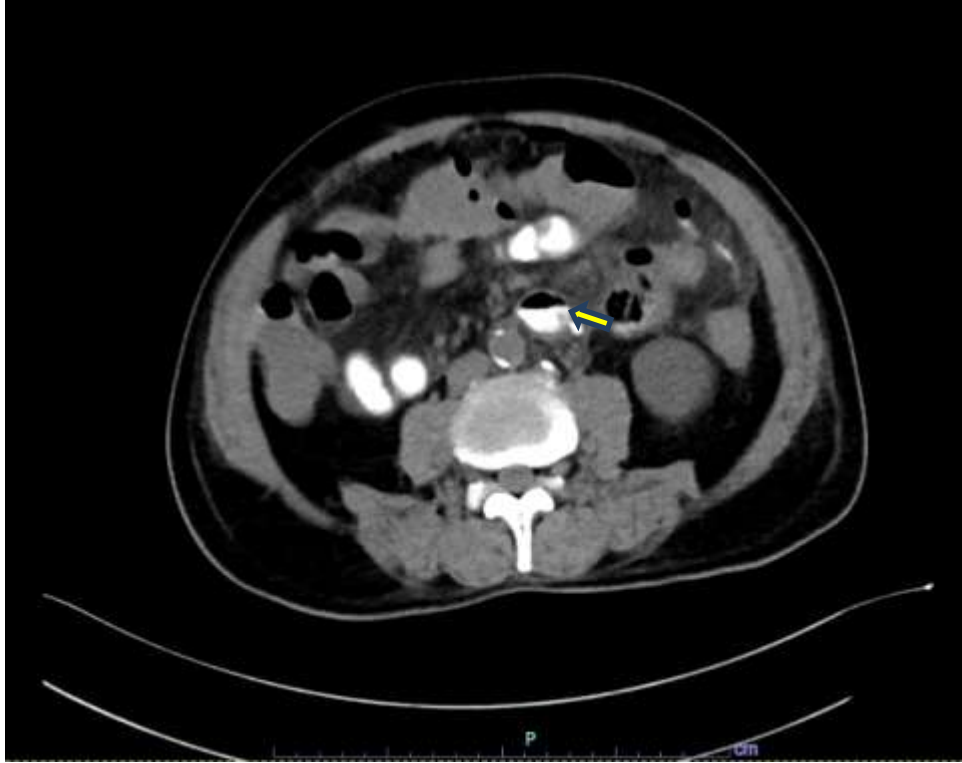


Fig.3:-Jejunal diverticula seen on CT Scan abdomen dated 28-04-2023.

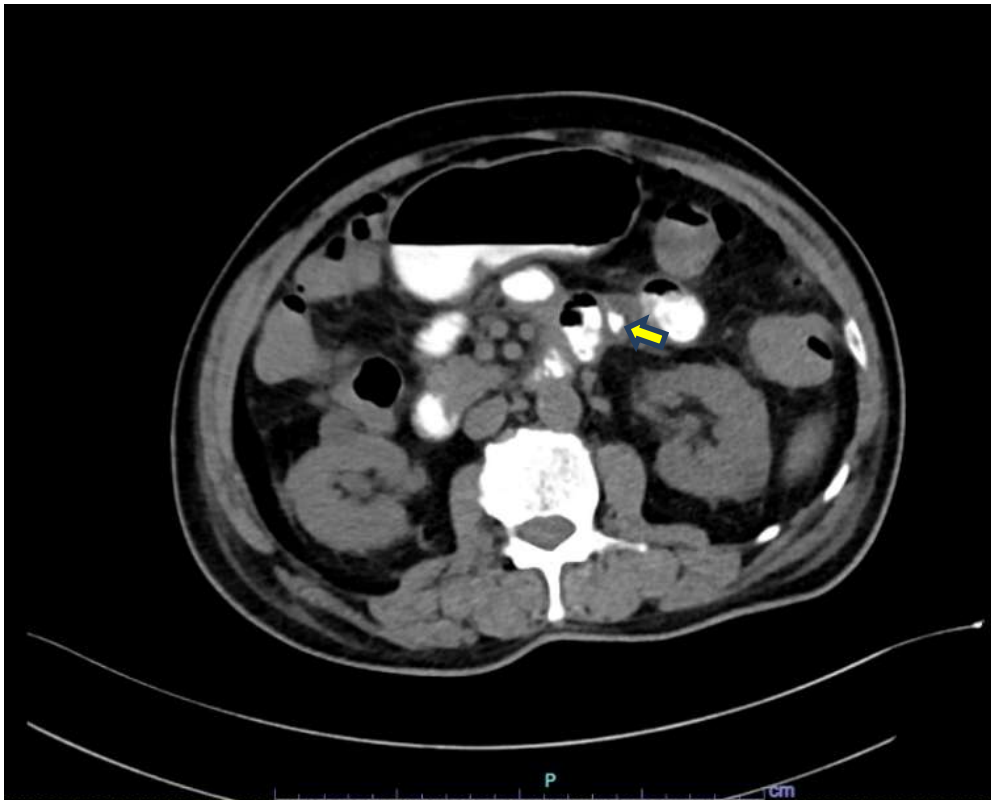


Fig.4:-Contrast extravasation from jejunal diverticula seen on CT abdomen dated 28-04-2023.

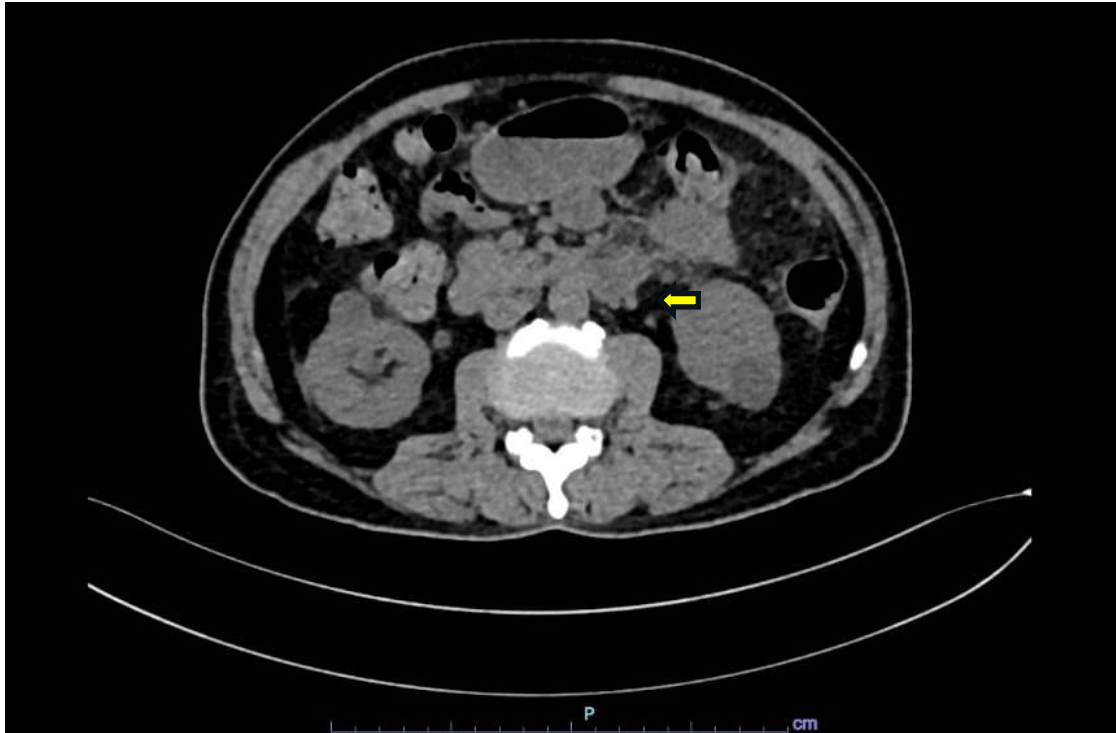


Fig.5:- Resolution of fat stranding seen on Day11 in CT scan dated 08-05-2023.

Discussion: -

Acquired diverticulosis of the small bowel was first described in 1794 by Sommering, and later in 1807 by Sir Astley Cooper [4]. Diverticulitis of the jejunum is a rare diagnosis reported to affect 0.5 to 2.3 per cent of people in X-ray or CT studies and up to 7 per cent in post-mortem studies, and more commonly seen in elderly males.

The majority of patients typically appear with intermittent abdominal pain along with constipation, diarrhea, or flatulence.

Furthermore, as seen in many studies, abdominal x-ray and ultrasonography have low sensitivity and do not help in making a diagnosis of jejunal diverticulitis. Abdominal contrast-enhanced computed tomography is the imaging investigation of choice due to its availability, rapidity, and high diagnostic accuracy. [5]. Findings of small bowel diverticulitis involve the presence of rounded duodenal or jejunoileal outpouchings, which can contain air, simple fluid, or enteric contrast. [6]

Due to its rarity, diagnosis can often be delayed, leading to complications and the need for surgery, which thereby increases morbidity and mortality. Since the diverticula is at the mesenteric border of the bowel, peritonitis caused by perforated jejunal diverticula can be localized and self-limiting because it allows the small bowel mesentery to wall them off [7,8]. If the perforation of a jejunal diverticulum causes only localized peritonitis and the patient remains stable, non-surgical management with intravenous antibiotics and other supportive measures alongside percutaneous CT-guided aspiration of localized intraperitoneal collections may be suitable thus avoiding the need for surgery as stated by Novak et al. [9]. The idea of non-surgically treating perforated jejunal diverticula is relatively recent and the current case illustrates the management of our patient non-operatively to good effect.

Conclusion:-

To summarize, jejunal diverticulum can pose as a diagnostic and therapeutic challenge, delay in which can cause complications and mortality. This reports the importance of an early diagnosis of jejunal diverticular perforation, especially in elderly men presenting with non-specific abdominal pain showcasing diagnostic ambiguity with the help of CT scan and managing them non-operatively whenever possible. Aggressive surgical management based merely on x-ray findings (free air), in a hemodynamically stable patient may lead to inadvertent celiotomy and add

further morbidity and mortality. More reports are needed for better understanding of the mechanism behind its development and thereby to come up with refined treatment options.

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