

# Midgut Non Rotation in a Middle-aged Male with Suspected Pancreatitis

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**Keywords:** Asymptomatic, Malrotation, Pitfalls, Radiology, Surgery

Dear Editor,

Midgut development is a dynamic process that begins from the fifth week of development. During this process, the midgut undergoes physiological herniation in the umbilical cord. Subsequently, it returns to the abdominal cavity through a complex 270° counterclockwise rotation [1]. This normal rotation results in the formation of a duodenojejunal loop on the left-side of the midline, a peripheral large bowel, a centrally located small bowel with the caecum in the right iliac fossa, and the duodenojejunal flexure on the left-side near the pylorus [2]. Disruption of this sequential return can lead to anomalies in midgut rotation, such as non rotation, malrotation, or reverse rotation [1].

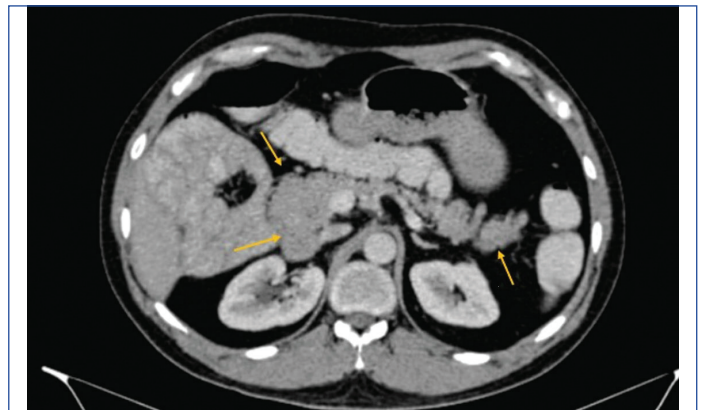
A 33-year-old male patient presented to the Psychiatry Outpatient Department (OPD) with complaints of alcohol dependency. The patient reported consuming at least 90 mL of whiskey daily for 17 years. He experienced low mood, irritability, and aggressive behaviour when attempting to quit alcohol abruptly. The patient was concerned about his aggressive behaviour and expressed a desire to quit alcohol. There is no significant past medical history. The patient was admitted for further evaluation, and a physician's opinion was sought. Routine blood investigations and serum amylase and lipase level tests were recommended. Routine blood investigations were unremarkable, but the serum amylase and lipase levels were abnormal. Three samples were collected three days apart, all showing mild derangement as shown in [Table/Fig-1].

Variables	Day 1	Day 2	Day 3
Serum lipase (10-140 U/L)	568	353	443
Serum amylase (30-110 U/L)	149	114	137

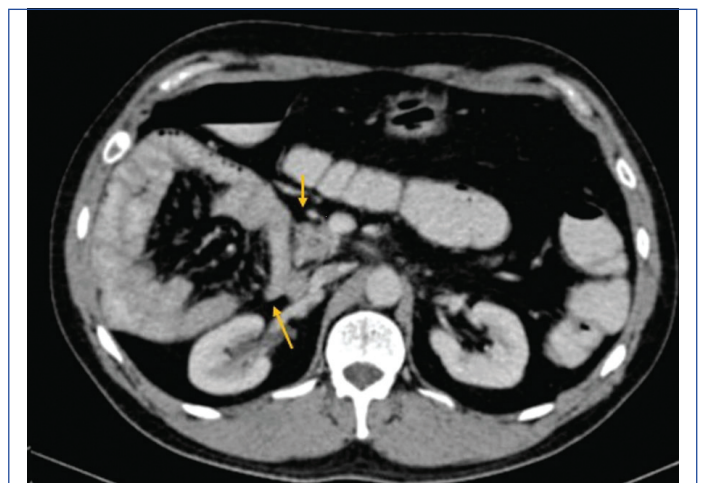
[Table/Fig-1]: Serum lipase and amylase levels.

On the third day of admission, the patient complained of abdominal pain and experienced two episodes of bilious vomiting. An ultrasound investigation was performed to assess the pain, but no abnormalities were found. Subsequently, a Contrast Enhanced Computed Tomography (CECT) scan was conducted to investigate possible pancreatic pathology. The scan revealed a normal appearance of the pancreas, as shown in [Table/Fig-2]. The duodenojejunal loop and duodenojejunal flexure were observed on the right-side of the midline, along with the main bulk of the small bowel and mesentery, as shown in [Table/Fig-3]. The caecum, iliocaecal junction, and appendix were positioned on the left-side of the midline in the left hypochondrium, as depicted in [Table/Fig-4]. The spleen was located on the left, while the liver and gall bladder were on the right and appeared normal, as shown in [Table/Fig-5]. The urinary system appeared unremarkable. The superior mesenteric artery and superior mesenteric vein showed no signs of volvulus and appeared normal, as shown in [Table/Fig-6].

Based on the imaging findings, a diagnosis of incidental midgut non rotation was made, and the patient was advised to undergo



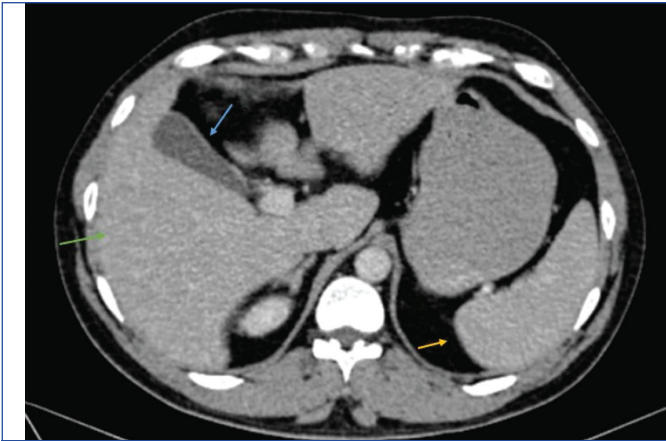
[Table/Fig-2]: Contrast enhanced computed tomography scan, axial section shows normal appearance of the pancreas (yellow arrows).



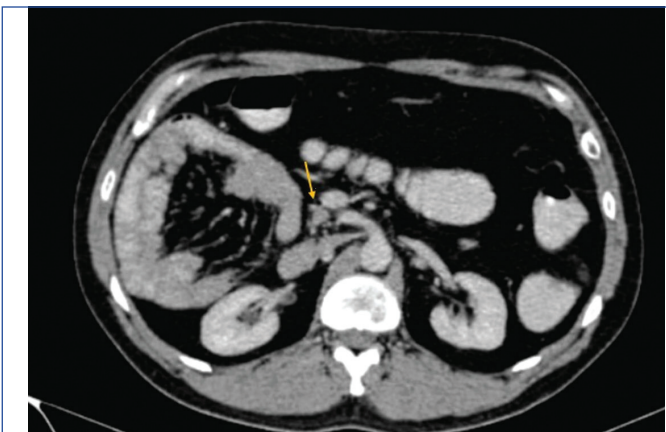
[Table/Fig-3]: Contrast enhanced computed tomography scan, axial section shows duodenojejunal loop and duodenojejunal flexure on the right-side of the midline along with the main bulk of the small bowel and mesentery (yellow arrows).



[Table/Fig-4]: Contrast enhanced computed tomography scan shows the positioning of the caecum, iliocaecal junction and appendix on the left-side of the midline in the left hypochondrium (yellow arrow).



**[Table/Fig-5]:** Contrast enhanced computed tomography scan, axial section shows the normal anatomical location and appearance of the spleen (yellow arrow), liver (green arrow) and gall bladder (blue arrow).



**[Table/Fig-6]:** Contrast enhanced computed tomography scan, axial section shows the normal appearance of the superior mesenteric artery and superior mesenteric vein appear normal with no signs of volvulus (yellow arrow).

gastroscopy. Despite slightly deranged serum amylase and lipase levels, the pancreas appeared normal in appearance. Anomalies of the midgut can be associated with gastrointestinal anomalies such as gastroschisis, omphalocele, duodenal atresia or stenosis, agenesis of the gall bladder, intra or extrahepatic biliary atresia, and hypoplasia or agenesis of the dorsal pancreas [3]. Heterotaxy syndrome is frequently associated with midgut malrotation. Other

possible associations may include choanal atresia, hypospadias, or congenital diaphragmatic herniation [4].

The best way to appreciate midgut anomalies is through a Computed Tomography (CT) scan. On plain abdominal X-ray, midgut non rotation manifests as the absence of caecal gas visualisation in the right periphery of the abdomen. In cases of midgut non rotation, the distal duodenum and proximal jejunum do not cross the midline but instead descend inferiorly, resulting in a corkscrew appearance on a barium meal examination [5]. In the present case, the patient presented with bilious vomiting and abdominal pain. The imaging findings revealed the duodenojejunal flexure on the right-side of the midline, the iliocaecal junction and appendix on the left-side in the left hypochondrium, small bowel anterior and right of the midline, and the large bowel not in the periphery. However, no other associations were identified.

Not all patients with intestinal non rotation exhibit symptoms, and these findings are often incidentally detected. The necessity of intervention in such cases is still a subject of debate. Antenatal diagnosis of midgut rotation anomalies is crucial as the alignment of the bowel is typically completed by the third trimester. When asymptomatic, the need for surgical correction of malrotation is still under discussion.

### Acknowledgement

I would like to express my gratitude to GVM for providing clinical details of the patient. I also extend my thanks to RG and PHP, without whom the discussion on embryology would remain incomplete. Additionally, I would like to acknowledge the contribution of SK in compiling the results of the patient's radiological investigations.

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#### AUTHOR DECLARATION:

- Financial or Other Competing Interests: None
- Was informed consent obtained from the subjects involved in the study? Yes
- For any images presented appropriate consent has been obtained from the subjects. Yes

#### PLAGIARISM CHECKING METHODS: [Jain H et al.]

- Plagiarism X-checker: Jul 14, 2023
- Manual Googling: Oct 18, 2023
- iThenticate Software: Nov 06, 2023 (10%)

#### ETYMOLOGY: Author Origin

EMENDATIONS: 6

Date of Submission: **Jul 14, 2023**

Date of Peer Review: **Sep 25, 2023**

Date of Acceptance: **Nov 09, 2023**

Date of Publishing: **Jan 01, 2024**