

# "Small Bowel Feces Sign" - A Ct Sign In Small Bowel Obstruction.

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## Introduction:

Small bowel obstruction is a common cause of abdominal emergency. Diagnosis helps effective management and prevents complications. CT is an effective tool in evaluation of small bowel obstruction. The small bowel feces sign is a finding observed in small bowel obstruction on Helical CT (6). It is defined as presence of feces like material in the lumen of dilated loops of small bowel proximal to the site of obstruction. This section will illustrate the small bowel feces sign with examples

## Discussion:

Small bowel obstruction is a common cause of acute abdomen. It accounts for approximately 4% of patients presenting with an acute abdomen (1). Clinical signs and symptoms are not always diagnostic. Identifying the cause of obstruction is important for early management. Many other clinical conditions like adynamic ileus, intraabdominal abscess, and gastroenteritis present with similar clinical presentation.

CT scan of abdomen has shown to be effective in diagnosing small bowel obstruction (2), with high degree of sensitivity. It can provide information about the specific cause and site of obstruction. The role of CT in the diagnosis of small bowel obstruction is to identify small bowel dilation and a transition point. The degree of obstruction can be mild, moderate or high grade depending on caliber difference between the dilated and nondilated segment of bowel. High-grade obstruction is greater than 50% difference in caliber of proximal dilated small bowel and collapsed distal small bowel CT in addition to confirming the diagnosis of obstruction is also useful in determining the degree and cause of obstruction, and also complications that require immediate surgery (e.g. closed loop obstruction or bowel ischemia) (3).

Adhesions are the most common cause of small bowel obstruction, accounting for 60-80% of all the cases (ref 4). The other causes include external hernias, inflammatory strictures and tumors. Identifying the transition point (transition point is the zone where the dilated loops abruptly change in caliber to normal/nondilated bowel) helps in evaluating the cause of obstruction and initiating appropriate treatment. Although the identification of transition zone of the obstruction is easy in case of external hernias (fig1) or tumors, it is difficult to visualize in cases of adhesions.

On CT, the usual way is to trace the bowel to the point of transition. However is not always easy on the axial images. It requires either scrolling through the images back and forth or requires multiplanar reformats to identify the zone of transition and the underlying cause.

Small bowel feces sign is a useful CT sign that helps identifying the transition zone (fig 2, 3). It is defined as presence of feces like material mixed with gas bubbles in the lumen of dilated loops of small bowel proximal to the site of obstruction. This sign tends to be most prominent at the zone of transition from the dilated to the collapsed portion of the small bowel. It is likely caused by stasis within the obstructed loop, allowing more time for fluid absorption from the bowel and accumulation of undigested food particles. This sign is seen in mechanical small bowel obstruction due to adhesions, hernias to tumors, and inflammatory stenosis. Mottled material with air collections within the small bowel may also be seen in other conditions such as infections or metabolic bowel disease, rapid jejunostomy tube feedings or bezoars (5); however by definition the small bowel feces sign is presence of feculent material with dilation of proximal bowel and signs of obstruction. Sometime feculent material is seen as normal finding in non-dilated distal ileal loops, which usually results from reflux of fecal material from

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the cecum secondary to an incompetent ileocecal valve (fig 4).

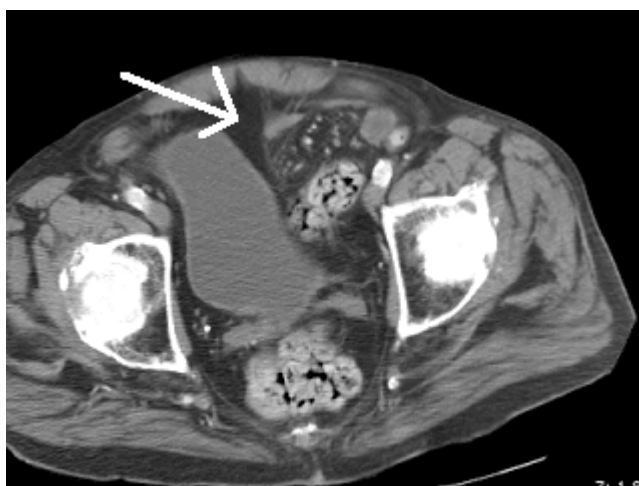
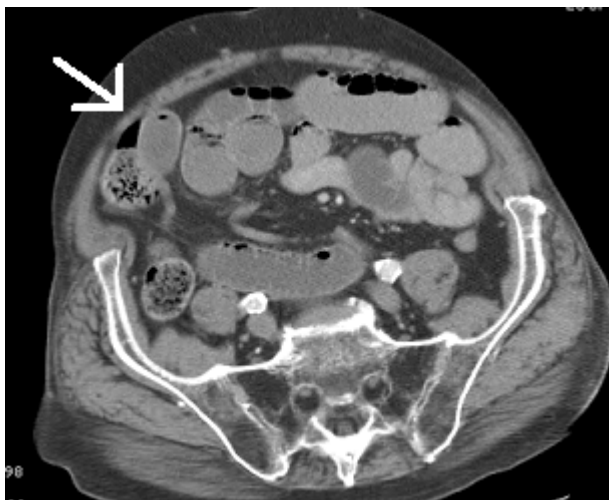


FIG 1. History of left groin pain and abdominal distension.

- a) Axial scans with oral and intravenous contrast demonstrating multiple dilated small bowel loops (arrow)  
 b,c) Caudal scans at the level of the groin demonstrating a left inguinal hernia containing obstructed small bowel with transition within the hernia (arrow)

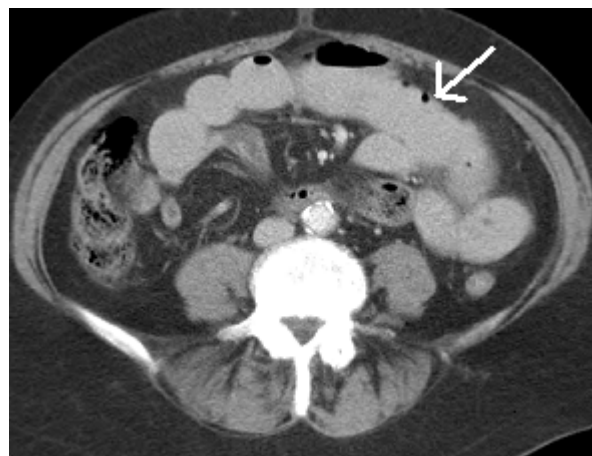


FIG 2. Patient with history of abdominal distension and suspected bowel obstruction

- (a) CT scan of the abdomen and pelvis with oral and intravenous contrast demonstrate Multiple dilated small bowel loops (arrow)  
 (b) The distal small bowel showing feces like material within the lumen (arrow)  
 (c) Caudal axial scan demonstrating the feces sign (large arrow) and the zone of Transition (small arrow)

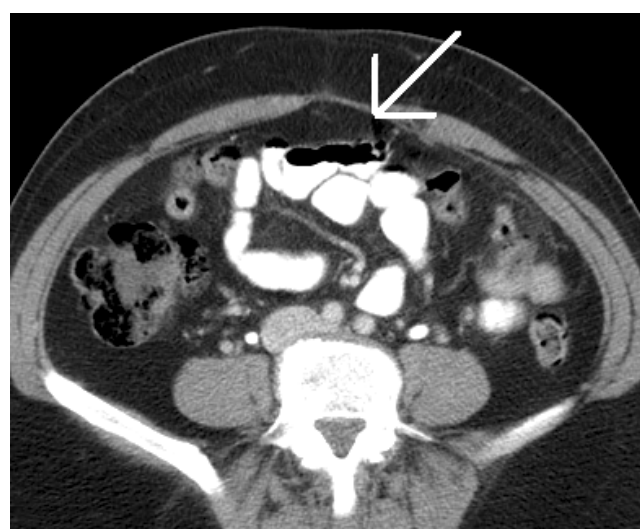
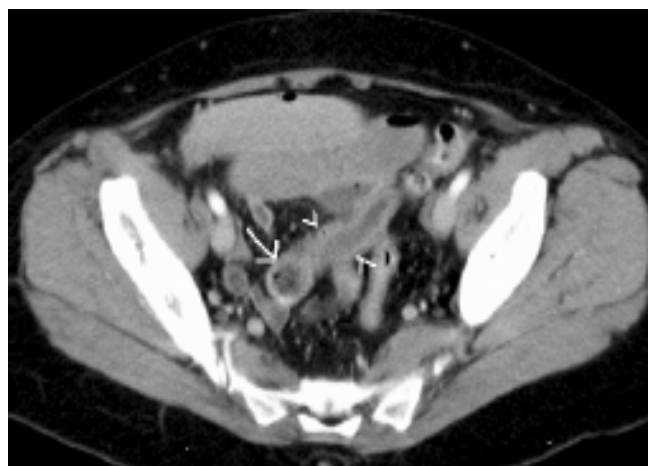


FIG 3. Another example showing small bowel obstruction and small bowel feces sign

(a) Axial scans with oral and intravenous contrast demonstrates multiple dilated proximal small loops with air fluid levels (arrow).

(b) The distal small bowel loop showing feces like material within its lumen (arrow)

(c) Axial images in the pelvis demonstrating the feces sign (large arrow) and the zone of Transition (small arrows)

Fig 4. Normal feces like material within the small bowel

a.b) Axial scans demonstrating feces within the cecum =c (small arrow in fig b) and Within the distal small bowel (large arrow in fig b)

c) The proximal small bowel loops are normal (arrow), there is no evidence of bowel obstruction

The feces sign may be seen in a high percentage of patients with small bowel obstruction. In one of the series it was reported in as many as 82% (18/22) of the sample population with mechanical small bowel obstruction (6). In summary small bowel obstruction is a common clinical problem. Identifying the zone of transition helps in determining the underlying cause and thereby guiding appropriate treatment. The identification of the small bowel feces sign on CT is important because this sign is usually seen at the zone of transition, thus facilitating identification of the site and many times leading to the cause of obstruction. The CT appearance and knowledge of this sign is of value and helps the radiologist in the diagnosis of small bowel obstruction.

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