

# Misleading interpretation of distended post-op bowel images in Helical CT scan



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## Misleading interpretations of distended post-op bowel in Helical CT scan

*Differential diagnosis of distended post-op colon can be misleading when based solely to imaging findings. A case report of an artefact giving the impression of faecal leak or foreign body (gossypiboma) in Spiral Computerized Tomography after colonic surgery is presented. The patient was managed conservatively due to the lack of clinical evidence of abdominal emergency. A second CT scan twenty days later revealed no findings besides minor colonic diverticulas.*

KEY WORDS: Bowel wall thickness, Distended colon, Gossypiboma, Anastomotic leakage, Spongiform mass.

## Introduction

The wall of a distended bowel is not always clearly visualized in CT studies, even when thin slices have been used. As a result, colonic content can be confused with a false image of extra luminal mass or fecal leak following perforation.

Various CT scan findings have been associated with the presence of a surgical swab in the abdomen, depending on the duration of stay and body reaction. A territorial low density well differentiated extra luminal spongiform mass with confluent air bubbles is the usual appearance of a swab with limited stay and reaction (dirty mass). That image could also depict fecal leak following colonic perforation or anastomotic breakdown, fatal surgical emergencies.

We herein present the case of a misleading CT guided differential diagnosis of a foreign body or intestinal leakage which finally turned out to be the content of a distended post-op colon.

## Case report

A 65 year-old man was admitted to our hospital for elective surgery of his sigmoid polyp. An uneventful sigmoidectomy was performed. On the 11<sup>th</sup> postoperative day and under persisting fever of unknown origin, the patient underwent a spiral CT scan of the abdomen (upper and lower) for differential diagnosis reasons. A 10 mm slices with 15 mm table movement and 5 mm image reconstruction technique was adopted. No contrast medium was used (p.o, i.v or endoluminal).

A low density well differentiated spongiform mass with confluent air bubbles was revealed at the lower abdominal cavity, located at the sigmoid mesocolon, radiating to the left side of the pelvis through the mesentery. The mass size was 5x9 cm. It appeared to be outside the colon in direct contact with the sigmoid. No free air or fluid or peritoneal fat degradation was apparent in the remaining abdomen. Images led to the differential diagnosis of anastomotic fecal leakage or retained surgical gauge. However, clinical symptoms and signs did not advocate the acute abdomen diagnosis suggested by the CT imaging findings and decision was taken for the conservative treatment of the patient with antibiotics. Eventually fever subsided and 20 days later a new CT scan was performed. No mass or other soft tissue abnormalities, besides a few small colonic diverticulas were apparent to the latest.

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## Discussion

The CT scan appearance of a “dirty” mass is usually characteristic. It is a various size, with diverse density, confluent air bubbles, and non specific spongiform pattern mass, appearing outside the GI tract in the vicinity of the bowel. Blurred peritoneal fat, and various amount of free fluid and/or intra or extra peritoneal gas may coexist<sup>1-4</sup>. Such an image complies with fecal leakage after bowel perforation or a leaking anastomosis<sup>5,6</sup>. It also complies with intra abdominal foreign bodies<sup>7-10</sup>. The final outcome is inflammation, the intensity residing in length of stay and patient’s immune reaction. When leakage is the case, peritonitis is expected, though in immuno compromised patients only minor finding might be seen<sup>5,6</sup>.

The presence of a retained surgical swab might lead to an aseptic reaction forming a hedging granuloma (textilloma/gossypiboma) with gas bubbles and associated rim or internal calcifications or an exudative reaction which results in abscess formation with more apparent clinical findings<sup>1-4,7-10</sup>. The appearance of gas bubbles does not necessary indicates abscess formation<sup>4</sup>.

The presence of a “dirty” mass calls for extreme cautiousness in defining the exact position of the mass, inside or outside the bowel lumen. That is because, when colon is distended, bowel wall is not always easily recognized as in our case. Increased bowel wall thickness associated with varying pathologies is well documented in published literature<sup>11-14</sup>. Bowel distention has the exact opposite effect. Bowel wall becomes so thin that visualization is hardly evident<sup>15-17</sup>. Wiesner et al. concluded that variations of bowel wall thickness are proportional to its distention. In distended parts with a diameter? 4-6 cm, wall thickness was 0-2 mm making recognition obscure. When distention was not present wall thickness was 0.5-8 mm and lumen was easily differentiated from the surrounding soft tissues<sup>17</sup>.

Anticipated postoperative ileus in patients undergone bowel surgery, leads to colon distention. Depending on colon diameter and therefore wall thickness, the intra or extra luminal location of a visualized mass is not sure and the presence of feces could be misdiagnosed as a “dirty” mass. The local presence of blurred peritoneal fat and/or free air or fluid may further confuse the diagnosis referring to inflammation besides being usual post op findings<sup>1-4</sup>. The course of the bowel should be carefully examined and correlated to the suspicious mass. The position of the mass should be established with the maximum possible certainty and results associated with the clinical findings of the patient since fecal leak or foreign bodies are usually symptomatic. A later repetition of the CT scan may further support the diagnosis.

A precise diagnosis is of major importance. The presence of unrecognized surgical pathology multiplies morbidity and mortality while misdiagnoses may lead to unnecessary surgical operation. Generally, the distended colon walls should be carefully evaluated because they may not be visible on the CT scan<sup>15-17</sup>.

In our patient the position of the mass outside the large intestine during the first CT scan was false, despite thin slices of spiral CT. Fecal leak or surgical gauze would also give findings at the second CT. Besides that, clinical manifestations did not correlate to the differential diagnosis, especially to that of fecal leak as we had no evidence or clinical manifestations of peritonitis. Explaining the findings of the first examination we believe that the mass was finally inside the bowel, in an area of distended colon with very thin walls thus giving the wrong impression. The correlation of imaging findings with clinical data saved our patient from an unfortunate laparotomy. We therefore conclude that no therapeutic decisions should be taken based solely in imaging criteria. We stress that radiological findings must always be correlated to the clinical findings.

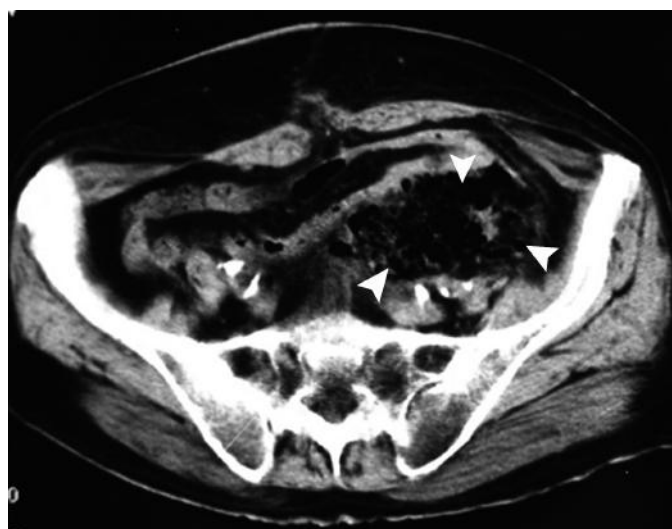


Fig. 1: First CT scan revealing the presence of an extra luminal spongiform mass at the area of sigmoid mesocolon.

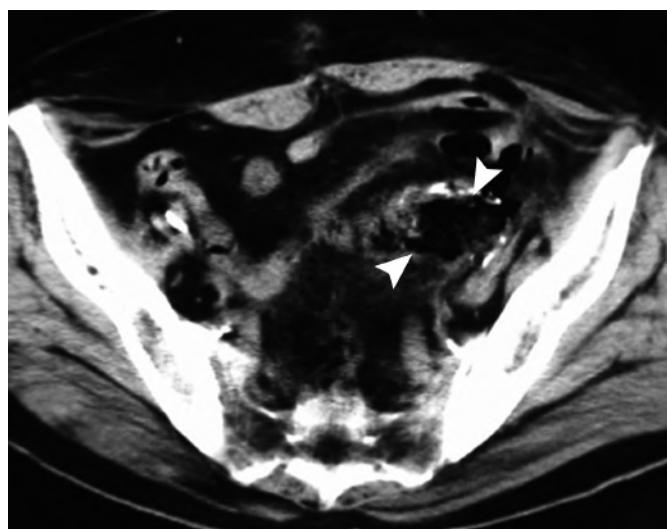


Fig. 2: First CT scan lower level slice, demonstrating the position of the mass outside the colon.



Fig. 3: Second CT scan, 20 days later with no evidence of the mass besides post op findings.

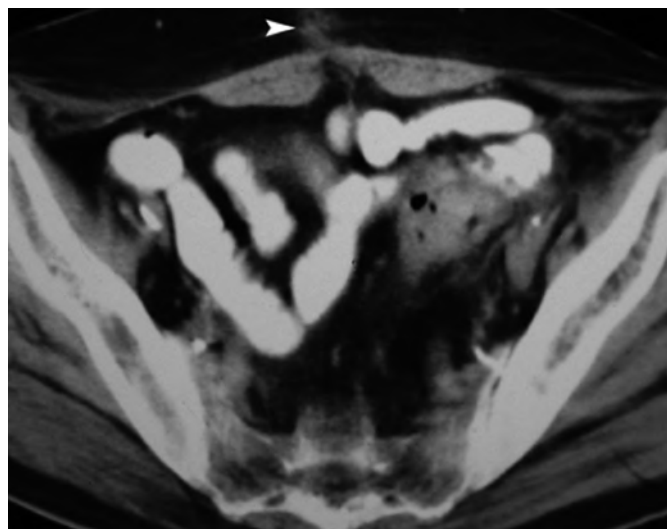


Fig. 4: Second CT (lower slice) scan with no evidence of the mass.

## Riassunto

La diagnosi differenziale delle possibili cause di distensione colica nel post-operatorio, può essere difficile e delle volte anche fuorviata, se basata solamente ai reperti delle usualmente di proposito utilizzate tecniche di diagnostica per immagini.

Nel caso da noi riportato, si fa riferimento ad un artefatto reperito nel contesto di una Tomografia Computerizzata a Spiraglio, eseguita dopo l'intervento, ad un paziente operato al colon. Detto artefatto, dava l'erronea impressione di fuoriuscente dal lume colico materiale fecale oppure di corpo estraneo extraluminale (gossypiboma). Il paziente è stato trattato di proposito, in modo conservativo, senza essere rioperato, in quanto - per fortuna - non c'era alcuna evidenza di emergenza chirurgica, quale ad esempio potrebbe essere il quadro di un addome acuto. Una seconda TAC, eseguita ad una distanza di venti giorni dalla prima, non rilevò nessuno dei "pericolosi" reperti suddetti, ma solamente dei piccoli diverticoli colici di minore importanza.

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