Post Mini Gastric Bypass Peterson Hernia, To close the defect or not

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- Internal hernia (IH) through Petersen's defect after gastro-jejunal bypass is not common, but it is a serious complication.
- Petersen's defect first described in 1900 by Walter Petersen, can happen after any gastro-jejunal bypass, IH is more common after laparoscopic surgery than open due to the formation of less adhesions.
- The incidence of IH is around 1% after open R- en-Y bypass (RYGB) meanwhile it is around 1-4% after laparoscopic RYGB, yet the occurrence after minigastric bypass (MGBP) is underestimated.

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- Peterson’s hernia is much less occurrence after MGBP, review of literatures showed case reports, it is less frequent than after RYGB because of longer small intestine loops and longer mesenteric defect, it is estimated to be 1/5000.

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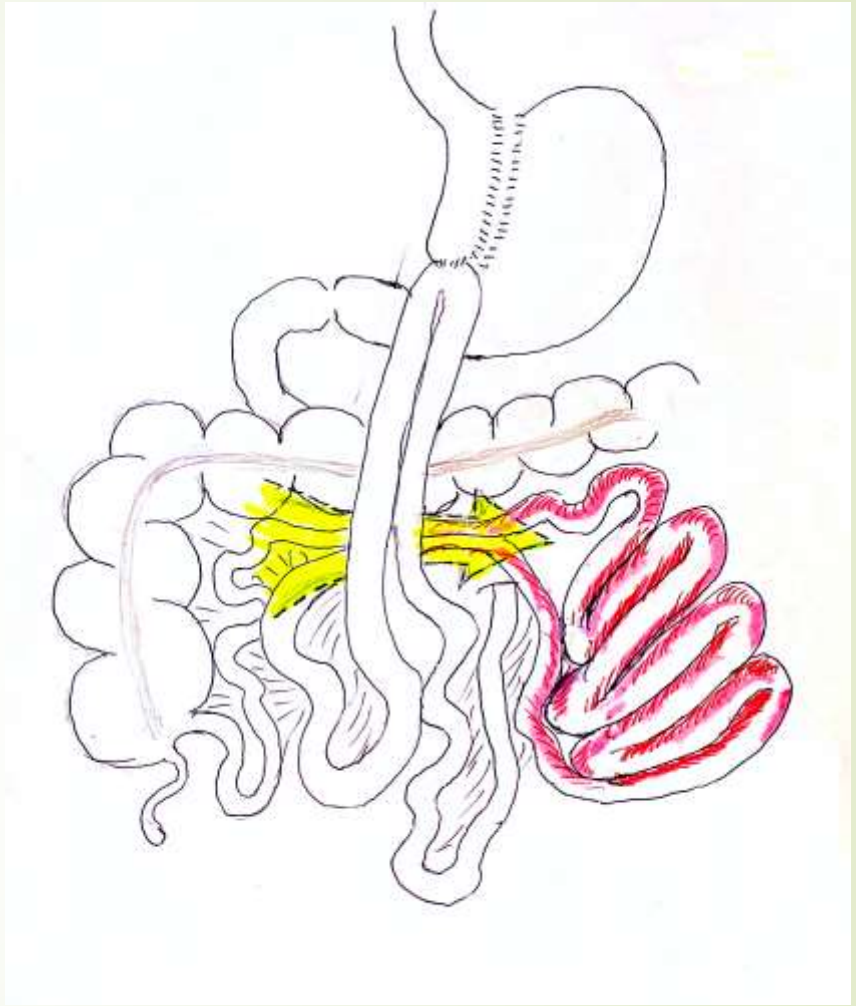
- IH may affect the afferent loops or more common the efferent loops.
- In this series the herniated bowel was the efferent loops, i.e. the hernia was from the right to the left.



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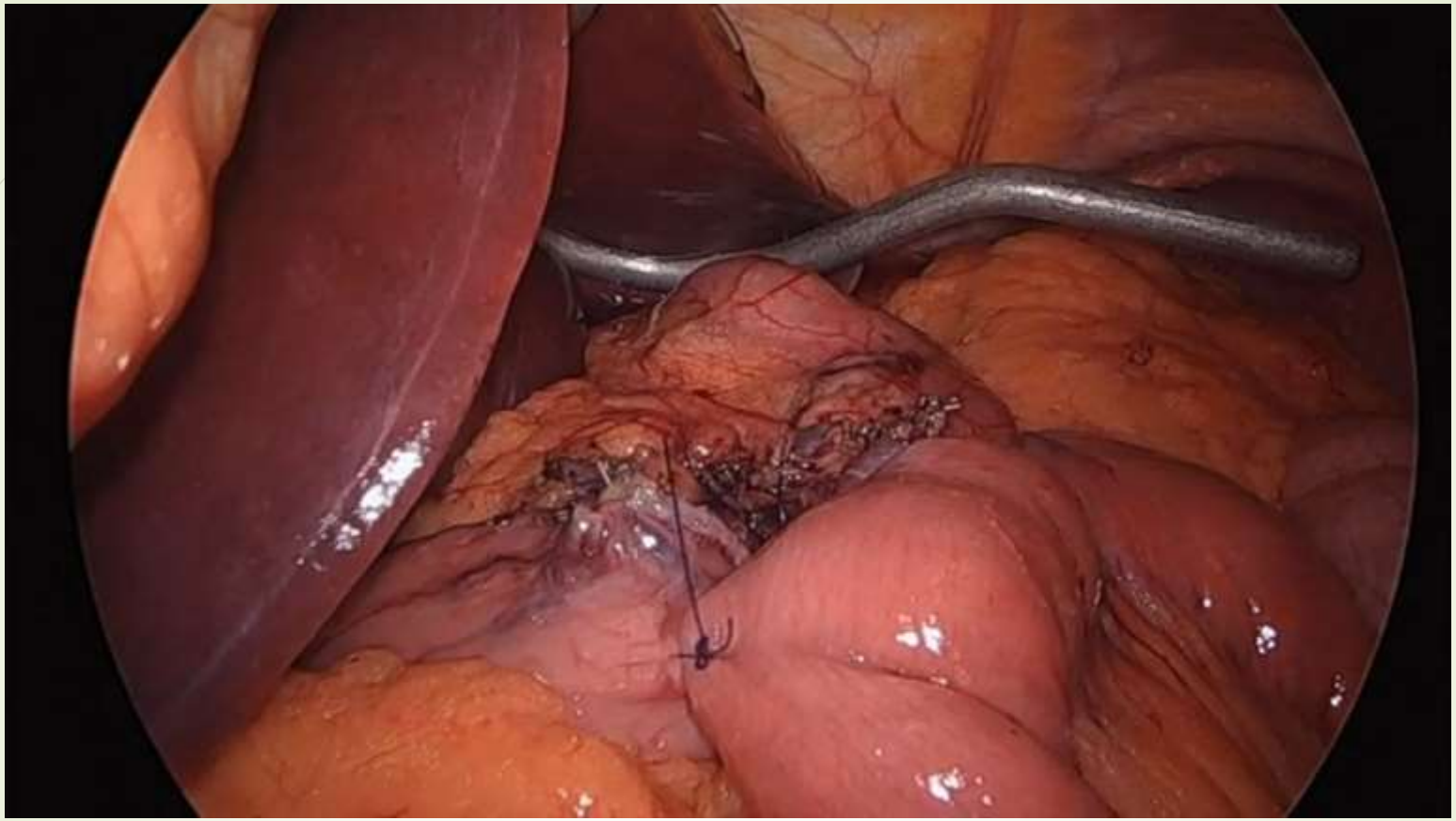

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- The typical history of a post MGBP IH is;

Patient presents with recurrent bouts of vague abdominal pain, usually associated with nausea, +/- vomiting and distension, these bouts overtime develops into acute small bowel obstruction (SBO) which if missed my progress into intestinal ischemia, usually affecting major segment of the small intestine.

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- In his series three patients developed SBO due to IH after MGBP,
- The third patient in this series, the surgeon tried to close the defect during the MGBP procedure.

Case 1

- **SL**, 27 yrs old male, underwent MGBP + Mid Cal banding in Feb 2019 for morbid obesity with basal body weight of 142 kg and BMI 42%.
- The patient few weeks after surgery developed recurrent bouts of vomiting, intolerance to food and upper abdominal pain. He was fully studied, gastroscopy, abdominal CT scan and barium flow through, all were reported to be non remarkable.
- 8 months postoperatively he was admitted to hospital for removal of the band as an elective procedure.

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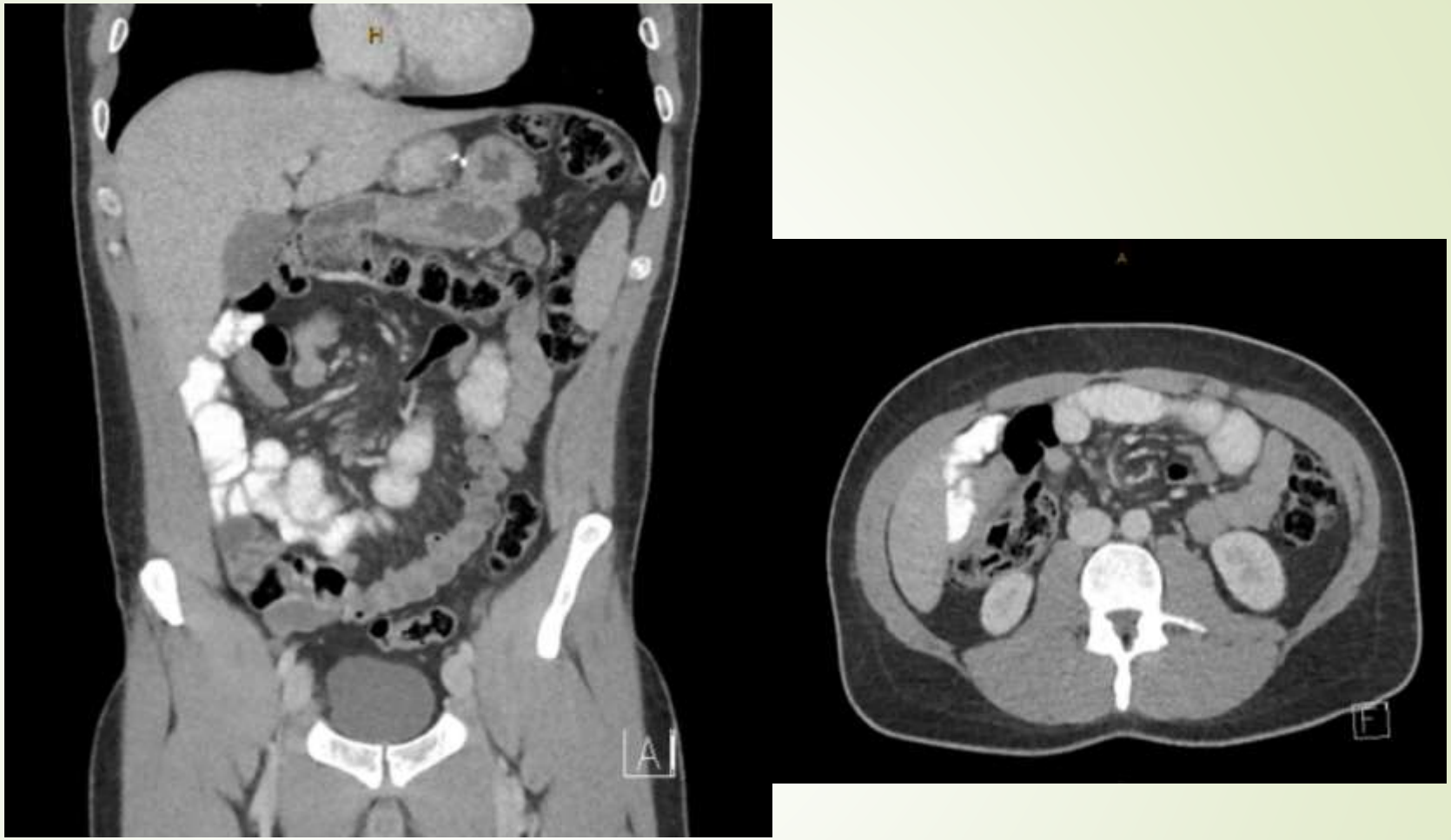
- CT performed six months before SBO developed,
- Reported as NAD



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- The patient remained not well, with bouts of upper abdominal pain, nausea continued for few months.
- Admitted to the ED with features of acute SBO, this time CT scan of the abdomen confirmed the diagnosis acute SBO due to internal hernia.
- Emergency laparotomy showed clockwise herniation of most of the efferent small bowel loops through the Petersen defect, viable bowel, the bowel loops were reduced back and the defect closed with continuous Ethibond suture.

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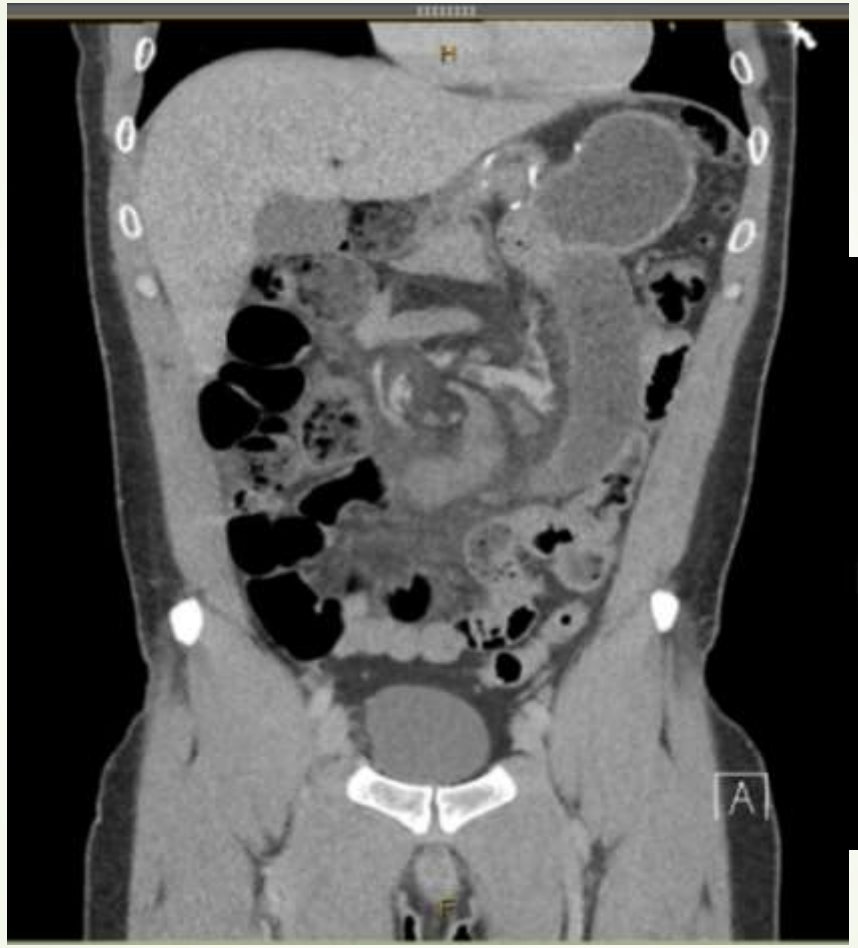
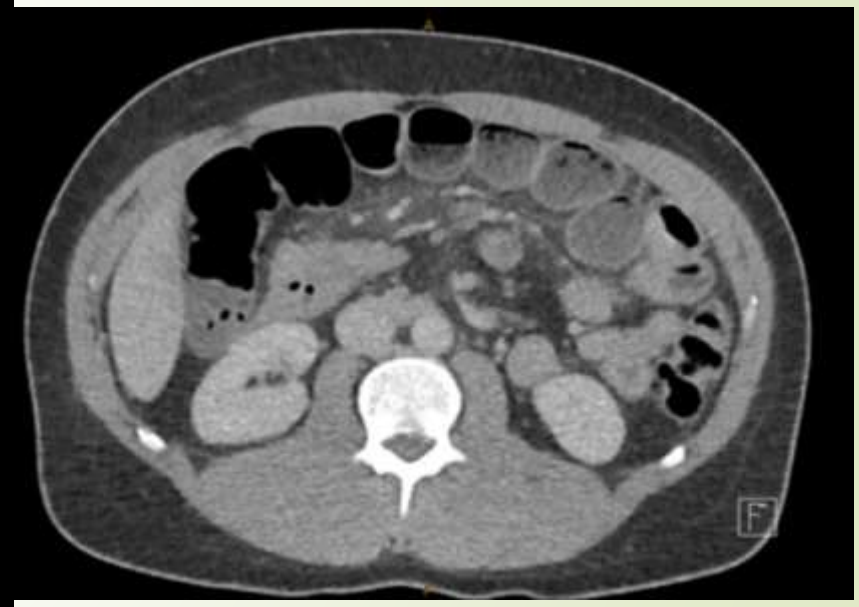
- Acute abdomen with SBO due to Petersen's hernia.
- Emergency laparotomy, hernia reduced, viable bowel
- Petersen's defect closed with Ethibond stitch.





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Case 2

- **KL**, 43 yrs, old female, with body weight of 78 kg and BMI of 32%, complications of adjustable gastric banding, that was inserted few years earlier, persistent severe reflux that was not responding to PPI, converted to MGBP plus MidCal band in July 2020.
- Six months postoperatively , she was admitted to the ED with CT diagnosis of SBO which resolved spontaneously without the need for surgery.

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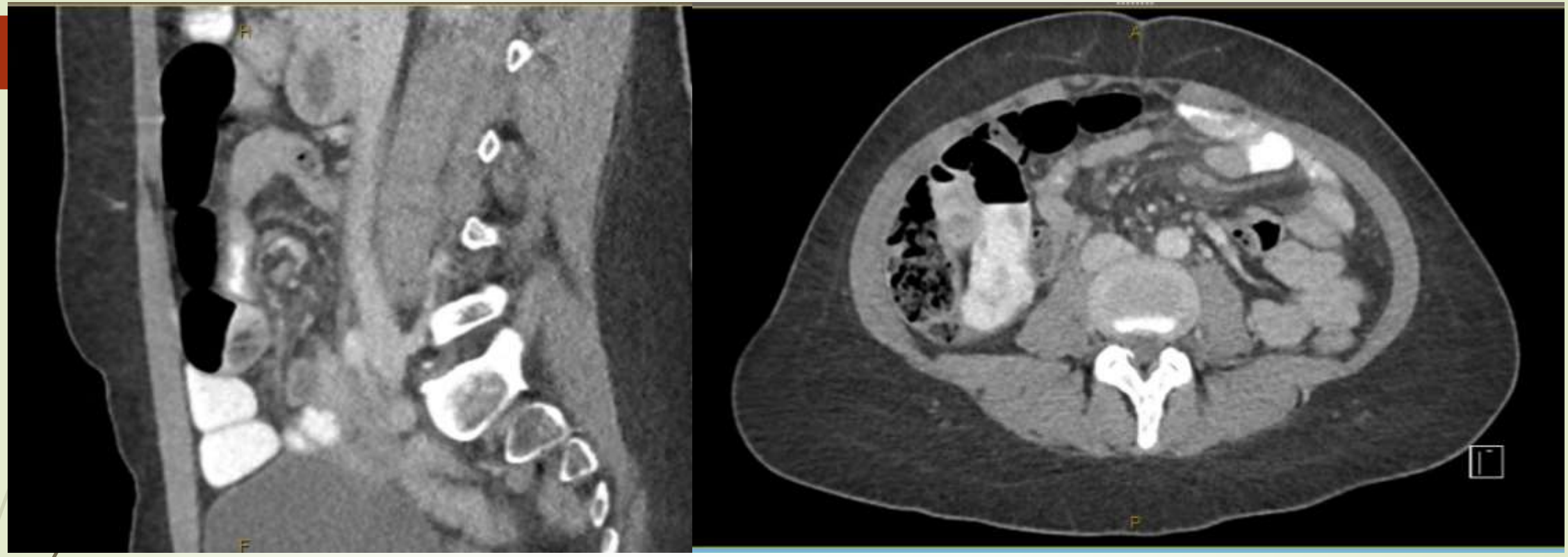

- Report; Sub acute SBO, mild dilation of the proximal opacified small bowel, with relatively decompressed small bowel loops, if necessary repeat CT in 4-6 hours

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- Five months after that she was admitted again with severe central abdominal pain and vomiting for two days, CT showed subacute SBO, discussed with the radiologist, the final diagnosis was internal hernia with possible bowel ischaemia.
- Emergency laparotomy + reduction of viable bowel followed by closure of the Petersen defect with a continuous Ethibond suture.

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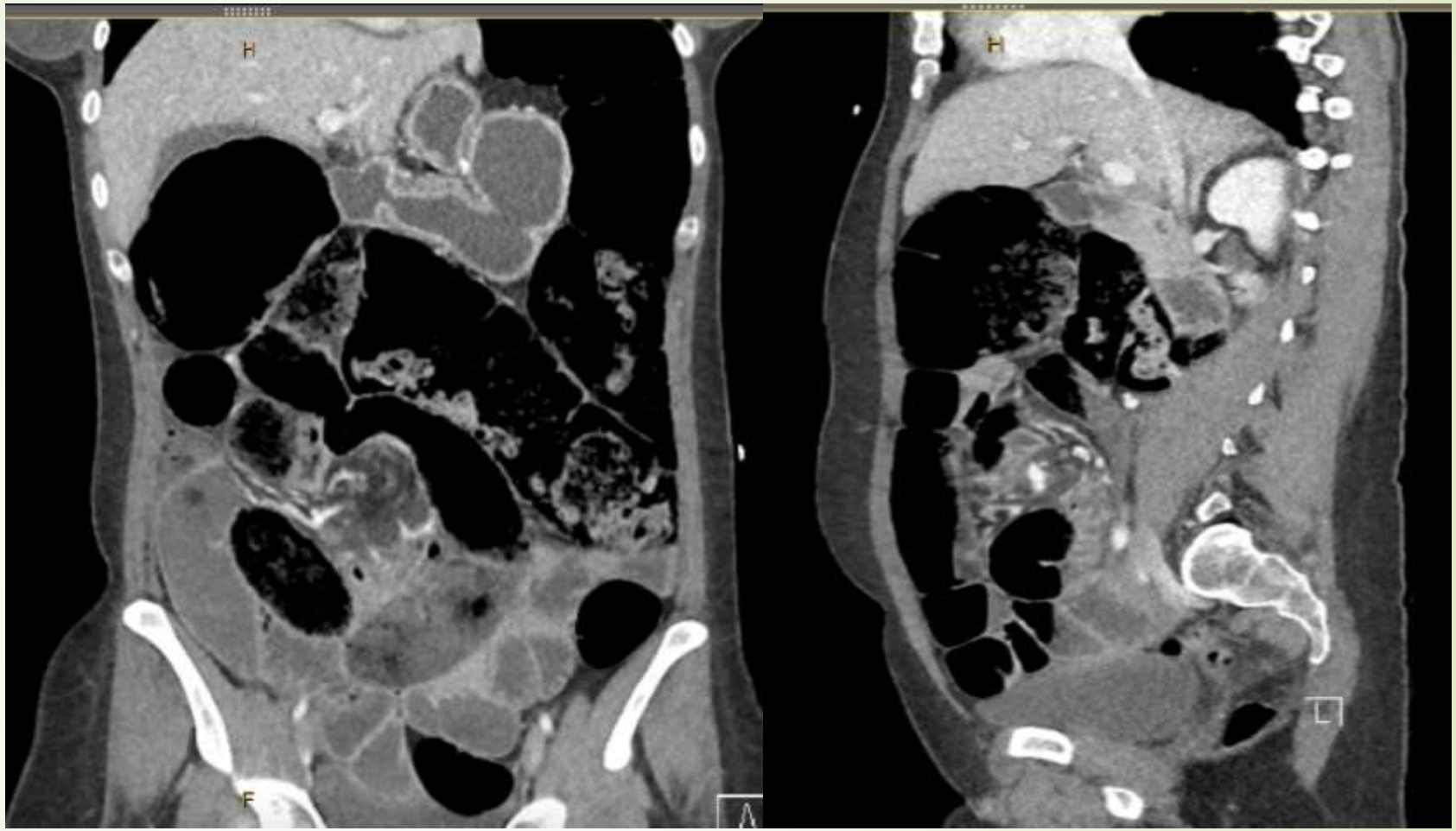
Report: Internal hernia causing compression of the SMA and SMV with ischaemic changes and dilatation of the distal small bowel.



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Follow up, few months later she presented with abdominal pain, gastroscopy showed anastomosis ulcer, responded well to PPI

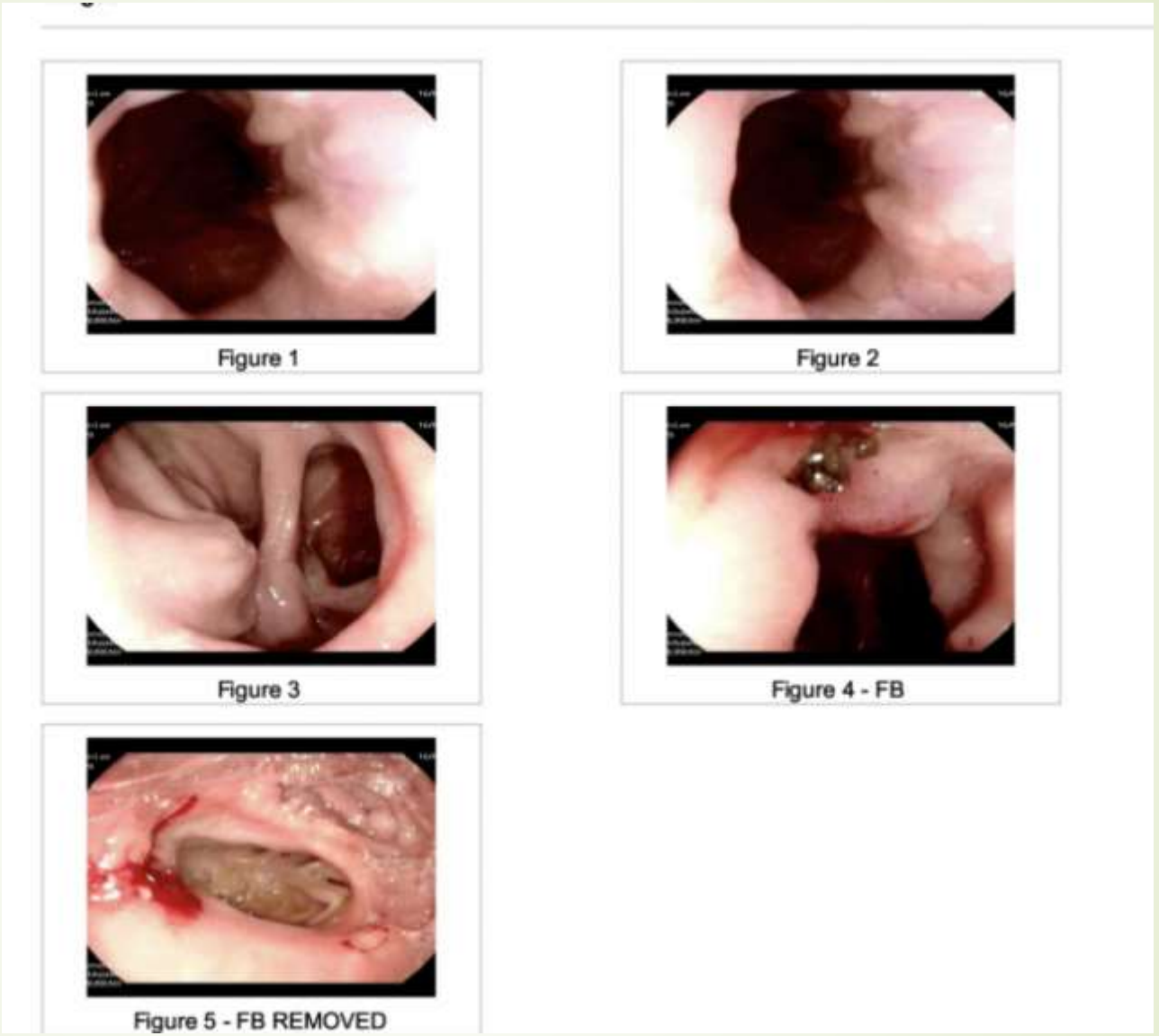

Figure 1

Figure 2

Figure 3

Figure 4 - FB

Figure 5 - FB REMOVED

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CASE 3

- **MB**, 71 yrs old female, MGBP in Aug 2021, early after surgery she was not feeling well, abdominal pain progressed within five days post operatively into severe abdominal pain and distention, CT confirmed SBO with very distended bowel, overnight delay in taking her back to theatre resulted in resection of significant segment of her bowel due to ischaemia,
  - In this patient, the surgeon reported that he close the Petersen defect,
  - The Petersen's defect was either not closed completely or part of the repair failed, resulted in conversion of a low risk wide Peterson defect into smaller high risk defect.

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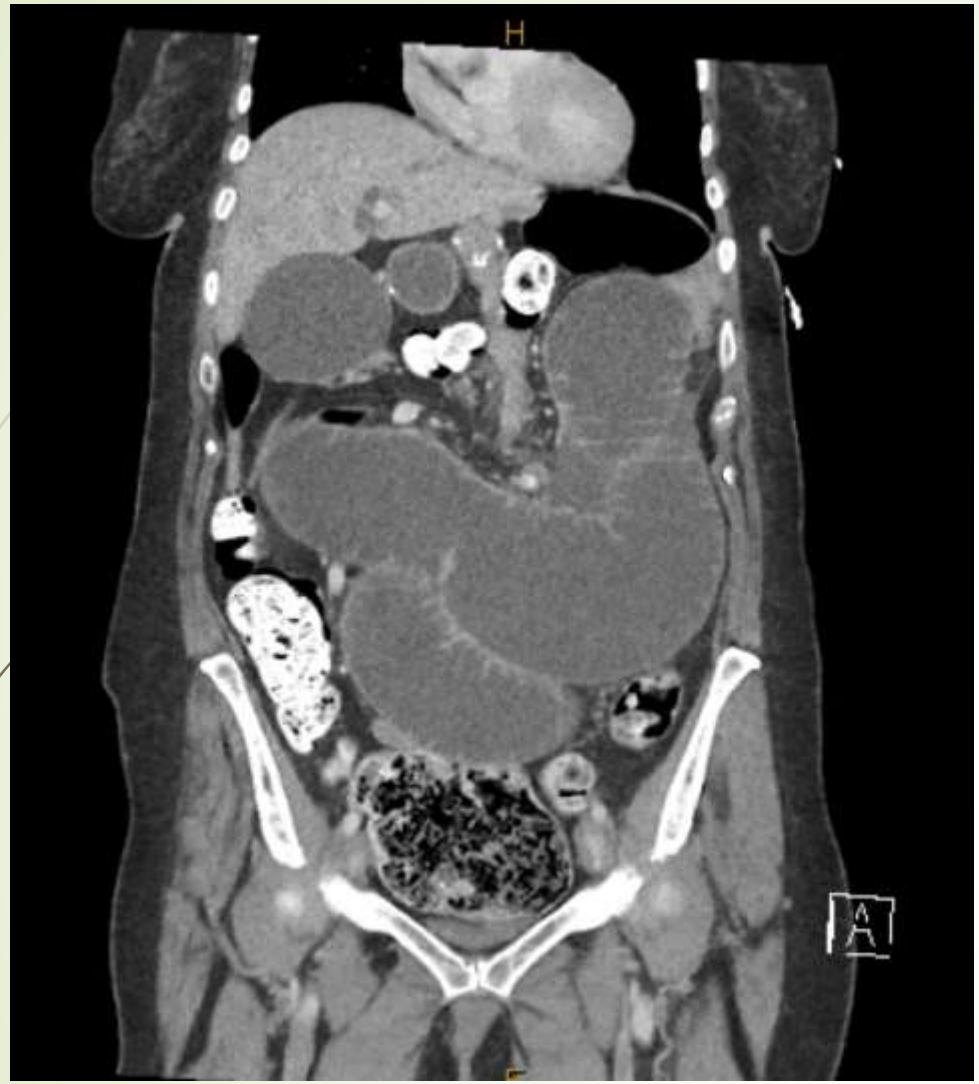

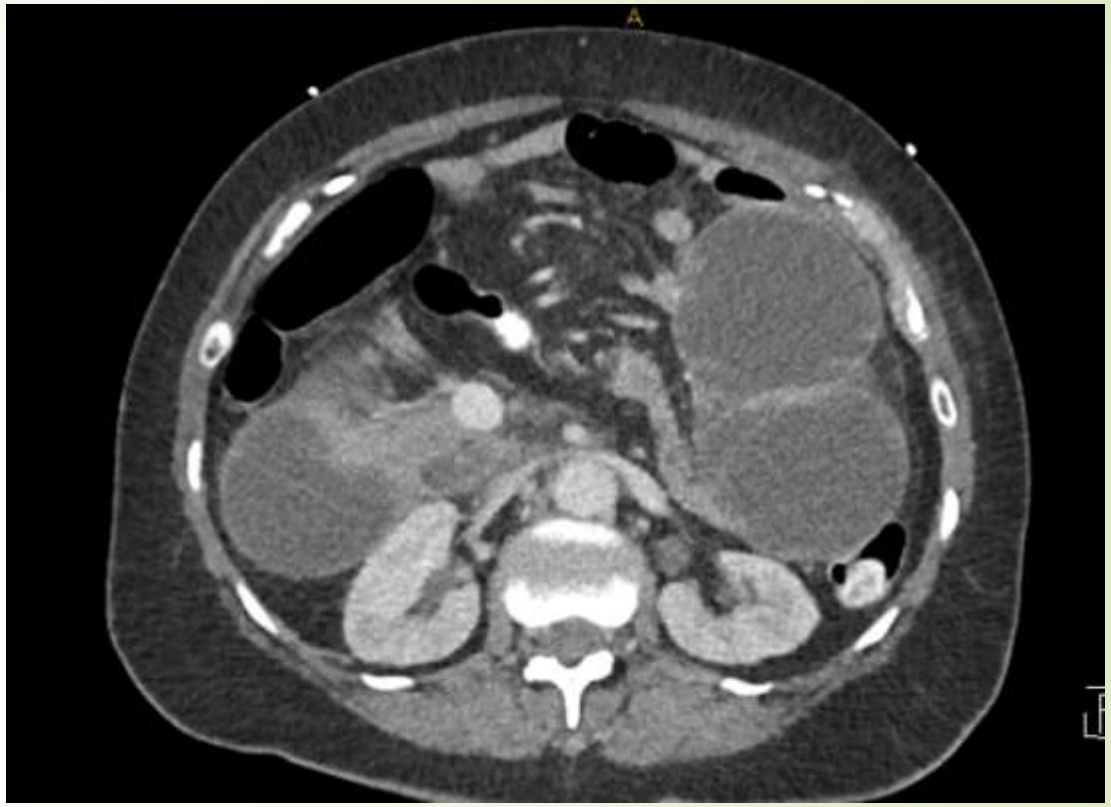

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Discussion:

- It is important for surgeons and radiologists to keep in mind that post MGBP symptoms possibly related to the formation of IH even though this is an uncommon after MGBP.
- Symptoms are usually vague and not specific, gradually progress into complete obstruction, diagnosis is usually delayed until acute SBO or closed loop ischemic bowel developed.
- Abdominal CT scan should be obtained in all post MGBP patients complaining of vague abdominal pain +/- nausea and discomfort.
- Maintaining low threshold for diagnostic laparoscopy/ laparotomy in post MGBP patients with symptoms suggestive of IH.

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- Closing Petersen’s defect in MGBP is up to the individual surgeon.
- Although we feel that there is no enough evidence to recommend a definite attitude for routine closure of the Petersen’s defect in MGBP we believe that patients with an increased risk of internal hernia such as women planning to have pregnancy or simply fertile age after bariatric surgery should be carefully advised on the potential risk of internal hernia.
- Partial closure of the Petersen’s defect may convert the defect into more serious condition.

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