Liver Decompensation

A Preventable Complication of Bariatric Surgery

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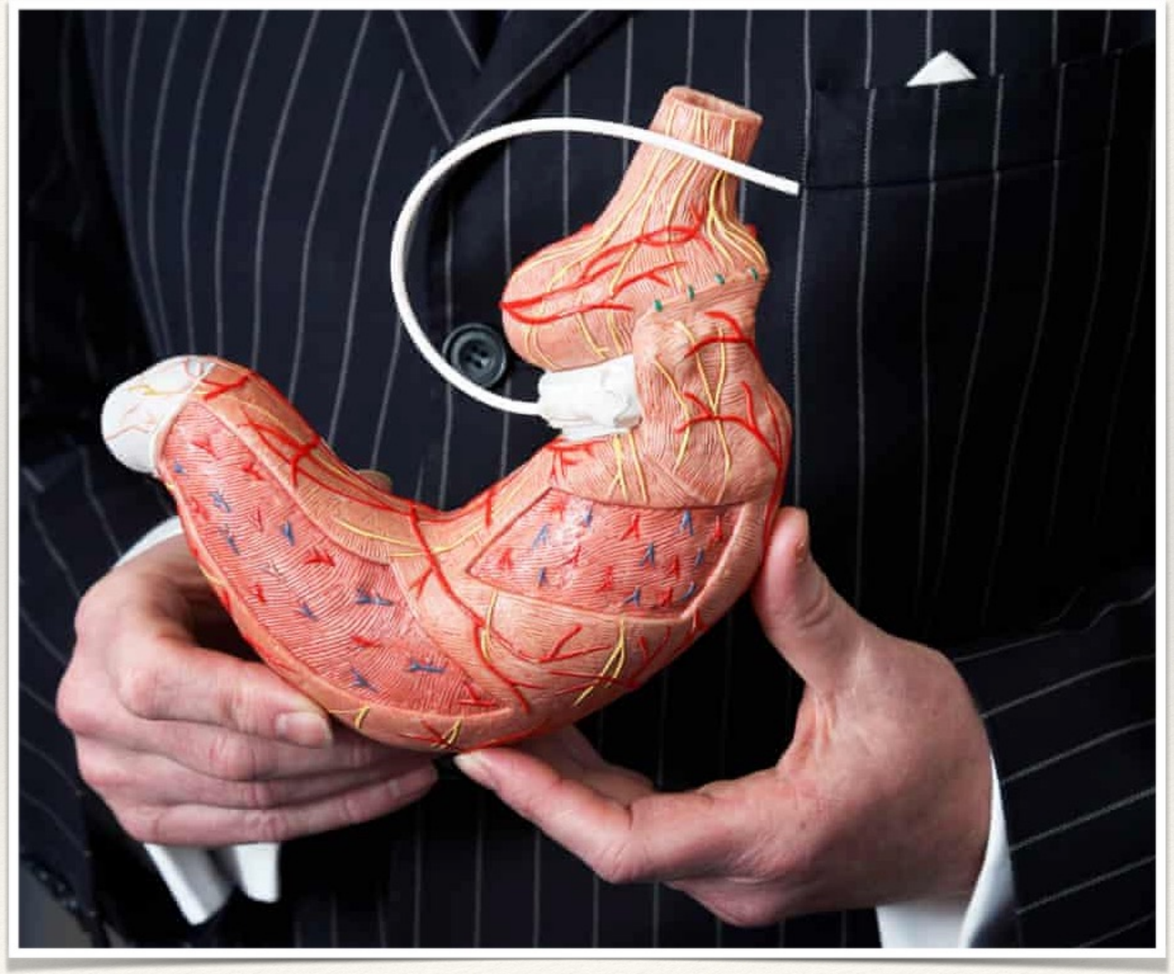
Introduction

- Bariatric surgery (BS) currently remains as one of the most effective treatment option of obesity and its complications , as it can offer sustained weight loss with a rapid improvement of biological markers, diabetes, hypertension, and obstructive sleep apnea . But every surgery has it’s own complications the bad ones and the good ones.



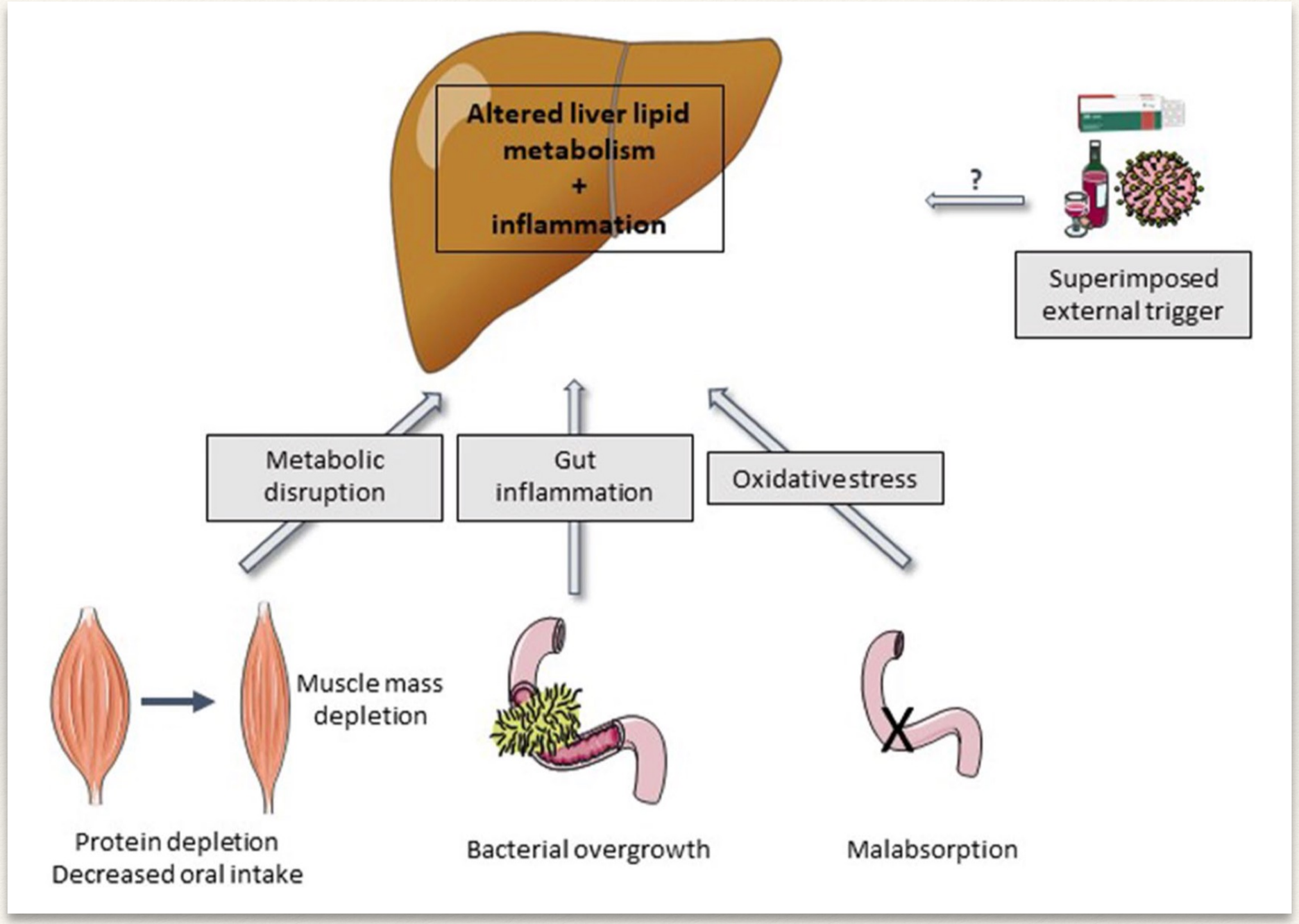
Introduction

Steatosis (Fatty Liver)

- Up to 85% of obese patients presenting for BS have different stages of steatosis, Preoperative liver disease, which is not always screened for, and especially if already present at the stage of decompensated cirrhosis or with portal hypertension, represents a considerable risk factor for poor outcome after BS, but there is some limited data that liver decompenation can occur as complication of BS in non-steatoic patient before the surgery .

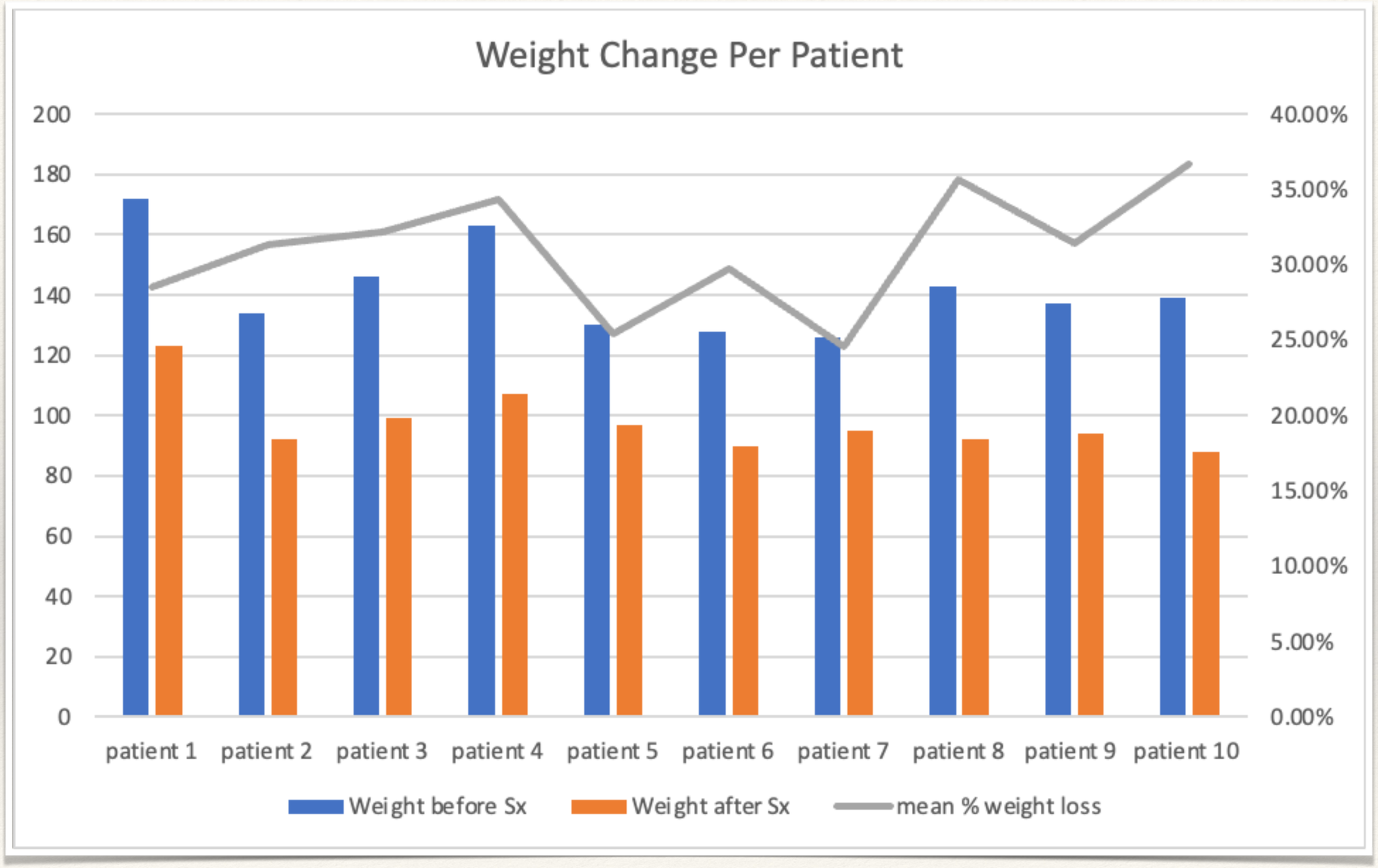
Liver Decompensation after BS

- The pathophysiology of liver injury, based on literature, biological and histological aspects, seems thus to be multifactorial. First, protein depletion and malnutrition (with a consequence of muscle mass depletion) can still exist after malabsorptive BS and can be associated with liver decompensation
- Secondarily, bacterial overgrowth in the blind loop also seems to play a role as it can provoke inflammation of the mucosa and alteration of its permeability. Increased permeability can favor bacterial endotoxins passing into the portal circulation and subsequently cause liver damage.
- Third, chronic malabsorption of micro and macronutrients and amino acids but also vitamins and trace elements might lead to an increase in oxidative stress as well as a decreased anti-oxidative capacity via free fatty acid accumulation and peroxidation .


Altered liver lipid metabolism + inflammation
?
Superimposed external trigger
Metabolic disruption
Gut inflammation
Oxidative stress
Muscle mass depletion
Protein depletion
Decreased oral intake
Bacterial overgrowth
Malabsorption

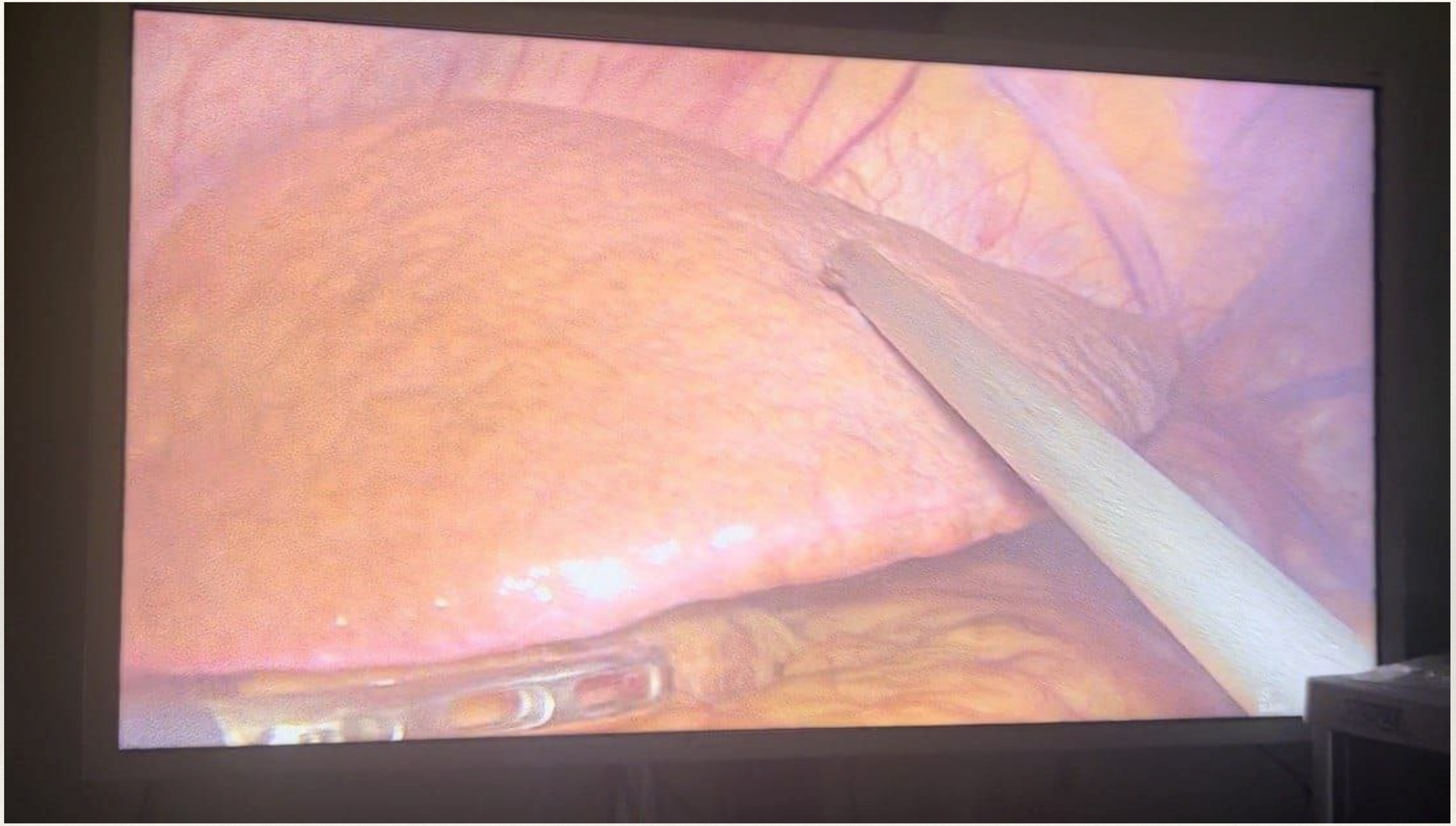
Case Series

- We analyze the clinical characteristics, and management of many patients without cirrhosis who developed hepatic decompensation after bariatric surgery, 10 of those patients present with a clinical picture of liver decompensation after bariatric surgery who need surgical intervention after conservative treatment with Parenteral nutrition, albumin.. Etc.. Which failed to resolve the symptoms. The mean age at diagnosis was 37.7 years. The time between bariatric surgery and the onset of symptoms varied widely (min.4 months, max. 8 months). The mean % of weight loss was high at 30% in short time. The clinical presentation was as follows: fatigue and jaundice (7/10), leg edema (2/10), and ascites (6/10). The blood test showed increased transaminases (mean ALT 238.4 IU/L, mean AST 198.7 IU/L), bilirubin (mean 3.4 mg/dL), and INR (mean 1.46) with a low albumin level (mean 2.77 g/dL). U/S revealed Fatty liver change and alternation in the liver size with bile duct alterations. The clinical course was favorable with surgical intervention


Weight Change Per Patient
200
180
160
140
120
100
80
60
40
20
0
40.00%
35.00%
30.00%
25.00%
20.00%
15.00%
10.00%
5.00%
0.00%
patient 1
patient 2
patient 3
patient 4
patient 5
patient 6
patient 7
patient 8
patient 9
patient 10
Weight before Sx
Weight after Sx
mean % weight loss

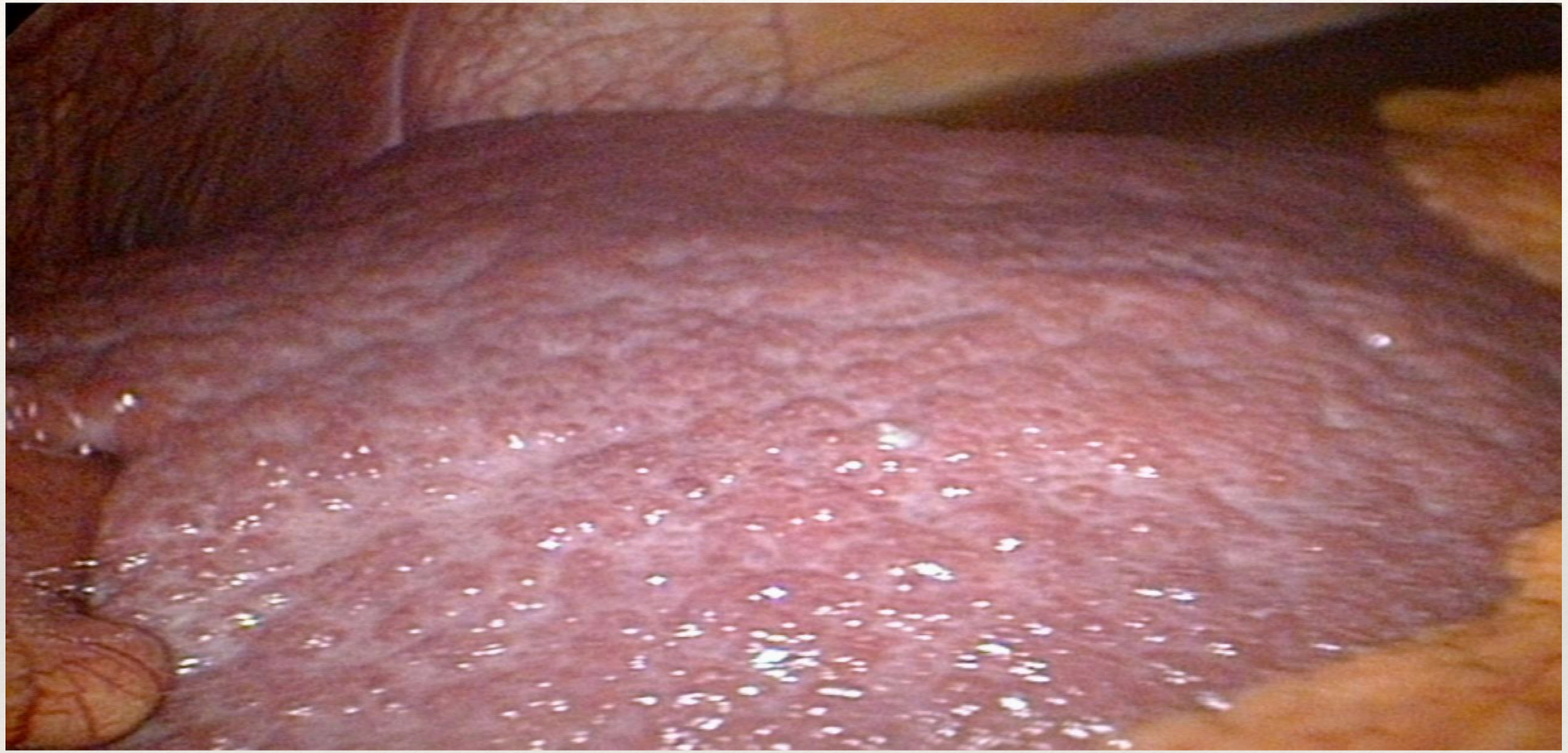
Case Series : Case 1

- Middle age female 47 years old underwent Single Anastomosis Sleeve-Jejunal Bypass for her obesity with BMI = 61 and lost 28.49% of EBW (excess body weight).
- After an 8-month follow-up, the patient complained of general weakness, frequent episodes of vomiting, and yellowing of the skin. The initial investigation revealed increased levels of the transaminases AST (143 IU/L), ALT (178 IU/L), and ALP (192 IU/L) together with low serum albumin (2.8 g/dl) and elevated total serum bilirubin (4.1 mg/dl)
- Abdominal U/S: shows mild ascites
- Conservative management with IV fluid and albumin failed to resolve the symptoms which necessitate a surgical intervention in the form of reversal of the jejunal bypass.
- After surgery and in-hospital close monitoring, the symptoms starts to resolve and the patient was discharged healthy and wealthy.



Case Series : Case 2

- Middle age female 39 years old underwent Single Anastomosis Sleeve-Jejunal Bypass for her obesity with BMI = 49.3 and lost 31.34% of EBW (excess body weight).
- After a 6-month follow-up, the patient complained of general weakness, frequent episodes of vomiting, and abdominal distension. The initial investigation revealed increased levels of the transaminases AST (163 IU/L), ALT (187 IU/L), and ALP (199 IU/L) together with low serum albumin (2.6 g/dl) and elevated total serum bilirubin (3.8 mg/dl)
- Abdominal U/S: shows mild ascites + fatty liver change
- Conservative management with IV fluid, albumin, and T.P.N failed to resolve the symptoms, necessitating surgical intervention by reversing the jejunal bypass.
- After surgery and in-hospital close monitoring, the symptoms starts to resolve and the patient was discharged healthy and wealthy

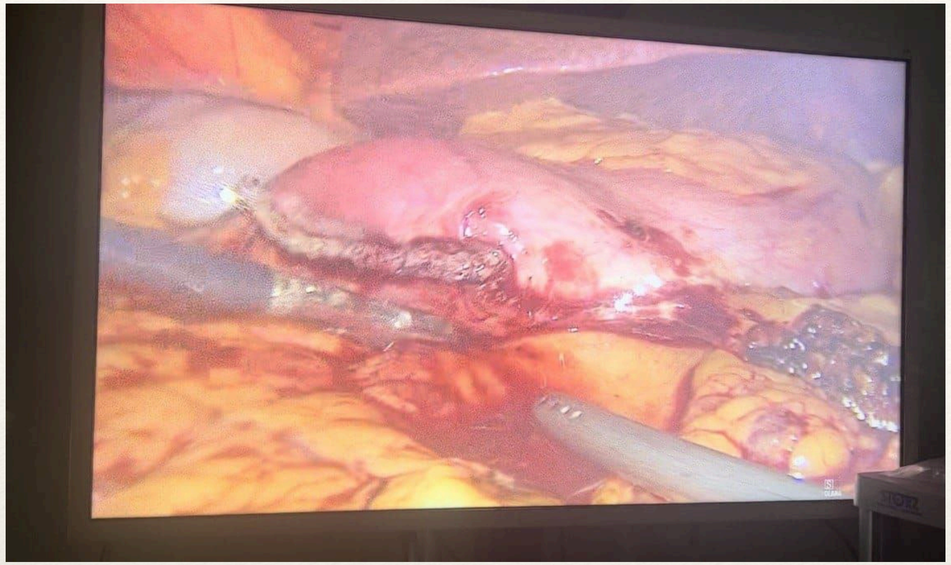


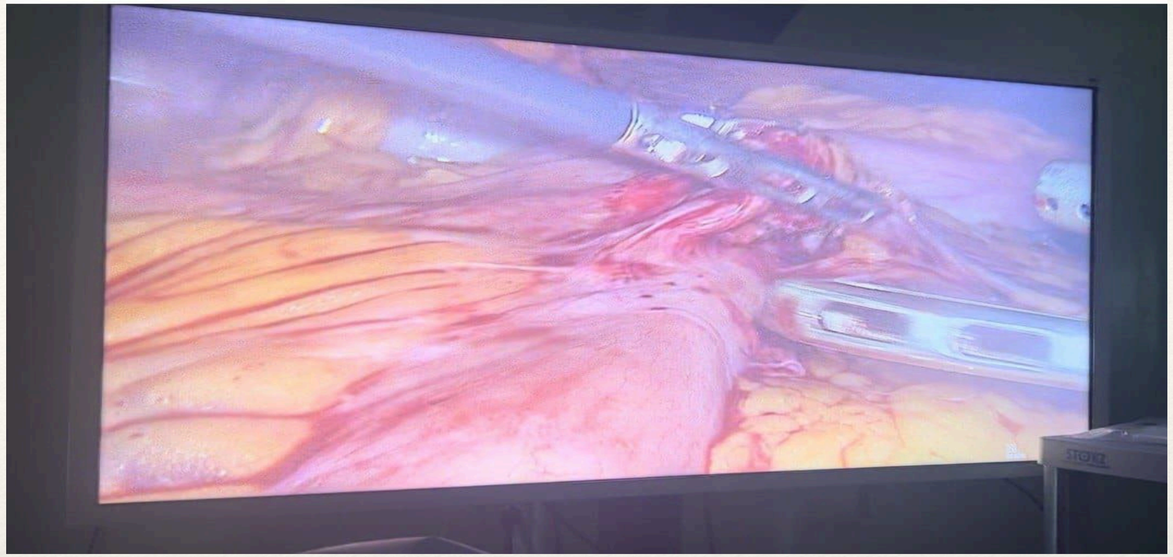
Case Series: Case 3

- A young age female (32) years old underwent Single Anastomosis Sleeve-Jejunal Bypass for her obesity with BMI = 51.7 and lost 32.19% of EBW (excess body weight).
- After a 5-month follow-up, the patient complained of lower limb edema, loss of appetite, nausea, and abdominal pain in RUQ. The initial investigation revealed increased levels of the transaminases AST (174 IU/L), ALT (238 IU/L), and ALP (216 IU/L) together with low serum albumin (2.8 g/dl) and elevated total serum bilirubin (2 mg/dl)
- Abdominal U/S: shows fatty liver changes
- Conservative management with IV fluid, albumin, and painkillers failed to resolve the symptoms, necessitating surgical intervention by reversing the jejunal bypass.
- After surgery and in-hospital close monitoring, the symptoms starts to resolve and the patient was discharged home.

Case Series: Case 4

- A Middle age heavy smoker male (37) years old underwent Single Anastomosis Sleeve-Jejunal Bypass for his obesity with BMI = 52.7 and lost 34.36% of EBW (excess body weight).
- After a 7-month follow-up, the patient complained of Fever, abdominal pain in RUQ, loss of appetite, nausea, and vomiting. The initial investigation revealed increased levels of the transaminases AST (209 IU/L), ALT (266 IU/L), and ALP (227 IU/L) together with low serum albumin (2.7 g/dl) and elevated total serum bilirubin (4 mg/dl)
- Abdominal U/S: mild ascites, increase in gallbladder wall thickness with multiple gallstones.
- Conservative treatment with IV antibiotics and fluid resuscitation for 5 days followed by surgical intervention was done by reversing the jejunal bypass with cholecystectomy laparoscopically.
- After surgery and in-hospital close monitoring, the symptoms starts to resolve and the patient was discharged well.





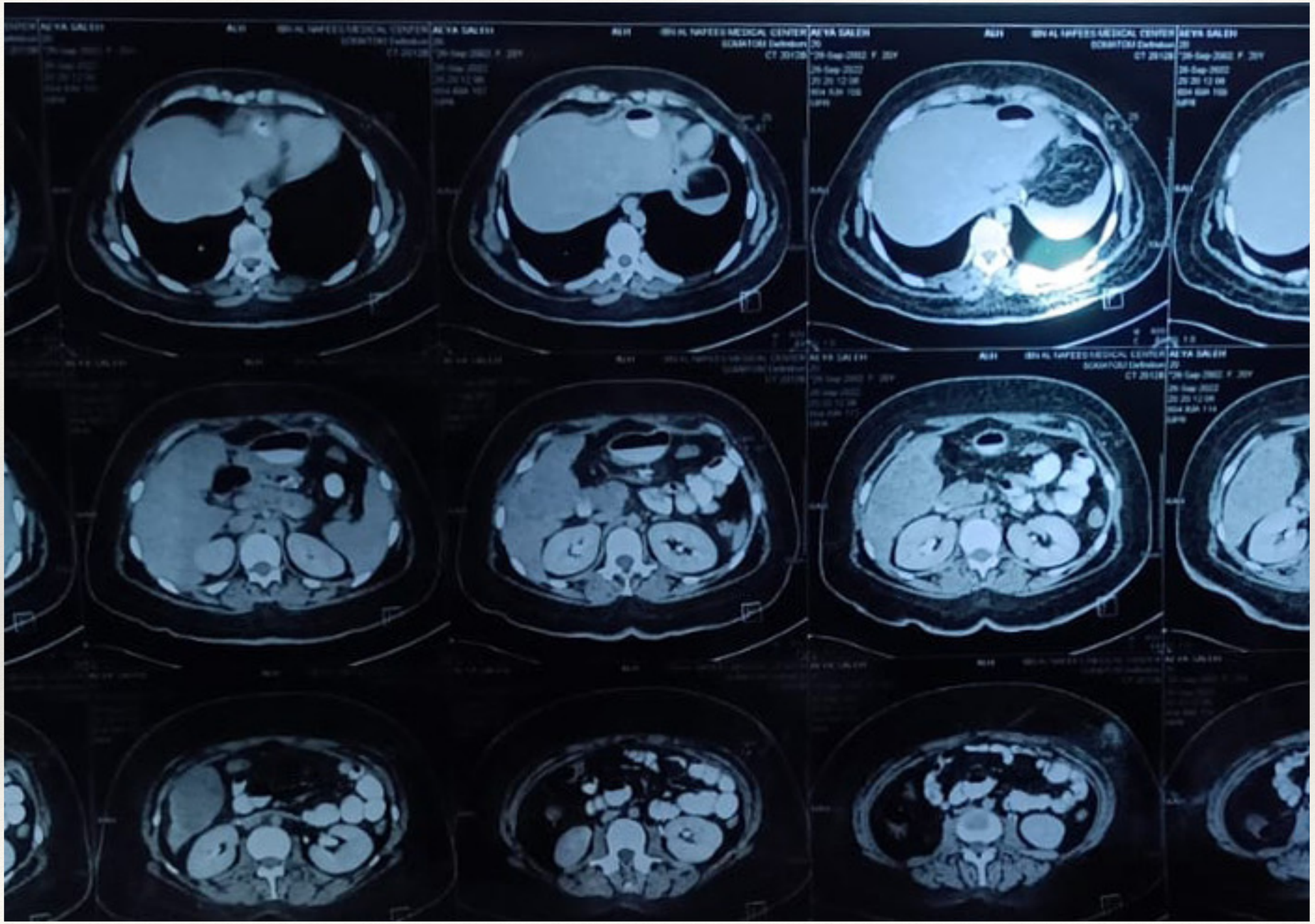
Case Series: Case 5

- A young age female (31) years old underwent Single Anastomosis Sleeve-Jejunal Bypass for her obesity with BMI = 50.7 and lost 25.38% of EBW (excess body weight).
- After a 5 -month follow-up, the patient complained of Fever, abdominal pain in RUQ, loss of appetite, nausea, and vomiting. The initial investigation revealed increased levels of the transaminases AST (246 IU/L), ALT (283 IU/L), and ALP (216 IU/L) together with low serum albumin (2.6 g/dl) and elevated total serum bilirubin (4.4 mg/dl)
- Abdominal U/S: mild ascites, increase in gallbladder wall thickness with multiple gallstones.
- Conservative treatment with IV antibiotics and fluid resuscitation for 5 days followed by surgical intervention was done by reversing the jejunal bypass with cholecystectomy laparoscopically.
- After surgery and in-hospital close monitoring, the symptoms starts to resolve and the patient was discharged after 6 days.


STORZ
LED
HD

Case Series: Case 6

- A young age female (30) years old underwent Single Anastomosis Sleeve-Jejunal Bypass for her obesity with BMI = 50 and lost 29.69% of EBW (excess body weight).
- After 3months patient developed recurrent vomiting , epigastric pain and mild elevation in liver enzyme. OGD and barium meal done and we're normal . A trial of conservative treatment was commenced with high dose PPI , antiemetic with IV fluid , then after one month the patient returned back with dehydration , repeated vomiting , right hypochondrial pain and liver enzymes (242IU/L AST. 262IU/L ALT, ALP 218IU/L .TSB 3. serum albumin 2.7g/dl.
- U/S show tinny gallstones
- So decision for laparoscopic cholecystectomy where during surgery, an incidentally liver mass was found , so reversal of gastrojejunostomy and cholecystectomy were done laproscopically .
- After two weeks CT scan of abdomen was performed which showed a 13cm liver mass , mostly consistent with F.N.H .
- Surgery done (liver resection) and the histopathology result was Focal nodular hyperplasia .
- Patient is well at time being .



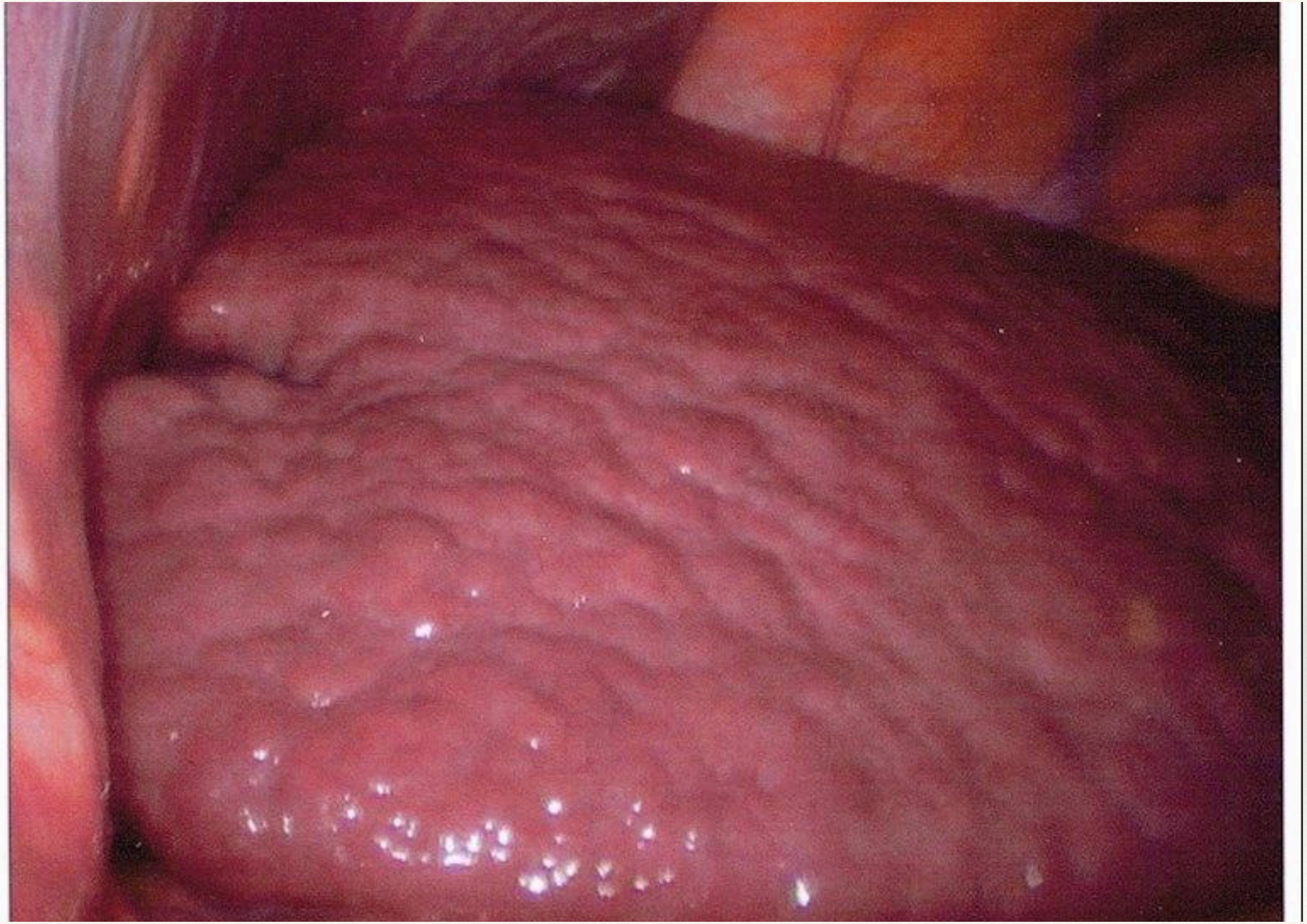

STORZ
Intensity 100 %

Case Series : Case 7

- Middle age female 39 years old underwent Single Anastomosis Sleeve-Jejunal Bypass for her obesity with BMI = 50.6 and lost 24.6% of EBW (excess body weight).
- After a 5-month follow-up, the patient complained of general weakness, lower limb edema, loss of appetite, nausea, and abdominal pain in RUQ. The initial investigation revealed increased levels of the transaminases AST (216 IU/L), ALT (234 IU/L), and ALP (184 IU/L) together with low serum albumin (3 g/dl) and elevated total serum bilirubin (2.8 mg/dl)
- Abdominal U/S: fatty liver change
- Conservative management with IV fluid, albumin, and painkillers failed to resolve the symptoms, necessitating surgical intervention by reversing the jejunal bypass.
- After surgery and in-hospital close monitoring, the symptoms starts to resolve and the patient was discharged well.

Case Series : Case 8

- Middle age male 39 years old underwent Mini Gastric Bypass for his obesity with BMI = 47.8 and lost 35.66% of EBW (excess body weight).
- After a 6-month follow-up, the patient complained of general weakness, lower limb edema, loss of appetite, nausea, and abdominal pain in RUQ. The initial investigation revealed increased levels of the transaminases AST (216 IU/L), ALT (234 IU/L), and ALP (184 IU/L) together with low serum albumin (3 g/dl) and elevated total serum bilirubin (3.5 mg/dl)
- Abdominal U/S: Reduced liver size + mild ascites
- Conservative management with IV fluid, albumin, and painkillers failed to resolve the symptoms, necessitating surgical intervention by reversing the mini gastric bypass with the insertion of feeding jejunostomy for 1 month
- After surgery and in-hospital close monitoring, the symptoms starts to resolve and the patient was discharged well.



Case Series : Case 9

- Middle age female 37 years old underwent Roux-en-Y gastric bypass for her obesity with BMI = 61 and lost 40% of EBW (excess body weight).
- After a 7-month follow-up, the patient complained of general weakness, lower limb edema, loss of appetite, nausea, and yellowing of the skin. The initial investigation revealed increased levels of the transaminases AST (143 IU/L), ALT (178 IU/L), and ALP (220 IU/L) together with low serum albumin (3 g/dl) and elevated total serum bilirubin (3.9 mg/dl).
- Abdominal U/S: Fatty liver changes
- Conservative management with IV fluid, albumin, and T.P.N failed to resolve the symptoms, necessitating surgical intervention by reversing the Roux-en-Y gastric bypass with the insertion of feeding jejunostomy and put on Total parental nutrition for 1 month
- After surgery and in-hospital close monitoring, the symptoms starts to resolve and the patient started to gain weight after 4 months.

Case Series: Case 10

- Middle age male 51 years old underwent Roux-en-Y gastric bypass for his obesity with BMI = 62 and lost 40% EBW(excess body weight).
- After a 6-month follow-up, the patient complained of general weakness, lower limb edema, loss of appetite, nausea, and abdominal pain in RUQ. The initial investigation revealed increased levels of the transaminases AST (198 IU/L), ALT (242 IU/L), and ALP (211 IU/L) together with low serum albumin (3 g/dl) and elevated total serum bilirubin (3.1 mg/dl)
- Abdominal U/S: fatty liver change+ mild ascites + inflammation of the gallbladder
- Conservative management with IV fluid, albumin, and painkillers failed to resolve the symptoms, necessitating surgical intervention by reversing the Roux-en-Y gastric bypass with the insertion of feeding jejunostomy and put on Total parental nutrition for 1 month
- After surgery and in-hospital close monitoring, the symptoms start to resolve and the patient is discharged well.

Conclusion

- In conclusion, liver decompensation in the absence of cirrhosis is possible after BS with a highly variable delay. We must therefore be vigilant in the face of significant weight loss, sarcopenia, hypoalbuminemia, and the appearance of a disturbance in liver enzymology (relatively typical in our cases and characterized by cholestasis and an elevation of AST above ALT). Hepatic injury is characterized histologically by a unique feature of steatohepatitis with bile duct alterations and neutrophil infiltration. The precise mechanism remains unknown. Severe protein malnutrition combined with bacterial overgrowth is a possible candidate. Substantial clinical improvement with nutritional support including parenteral nutrition, intravenous albumin, and diuretics seems to be effective. It has been well accepted that liver function follow-up is important in high-risk groups after BS, such as patients with cirrhosis, those undergoing extended limb/ distal RYGB, patients with new illnesses, those abusing alcohol, those on hepatotoxic drugs, and those presenting with a surgical complication , Our data clearly indicate that even in the absence of cirrhosis, liver complications can occur, but are reversible (and could probably be prevented) with appropriate nutritional management.

Recommendation

- Liver complications after Bariatric surgery are mostly reversible, However, these complications can be serious and lead to hepatic failure and its complications, unfortunately even death If early diagnosis and appropriate treatment are not accomplished.
- L. F. T should be performed for all patients pre and post operatively as a routine.
- we need strict, Close, and long-term follow-up for all patients at high risk of liver decompensation preoperatively (fatty-liver, alcoholic, combined restrictive and malabsorptive procedure, etc,..) and postoperative (rapid weight reduction, gradual increase liver enzyme, severe malnutrition, etc,..).
- The restrictive bariatric procedure is better than the malabsorptive, and the latter is better than the combined procedure as a first-line procedure, because of low postoperative complications and similarity to normal anatomy.
- LFT should perform monthly to all high-risk group patients, if possible, combined with Abdominal U/S and if available liver fibroscan with early revision of all reversible bariatric procedures associated with good outcomes and low complication.
- We need more studies and good long-term follow-up with good cooperation between all members of bariatric team like physicians and nutritionist etc... to achieve good and safe surgery

Thank You