

Too much of a good thing might be bad: Liver failure after too long BPL: Diagnosis and treatment

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Past President IFSO LAC, 2018-2019



OSWALDO CRUZ
CENTRO ESPECIALIZADO EM OBESIDADE E DIABETES

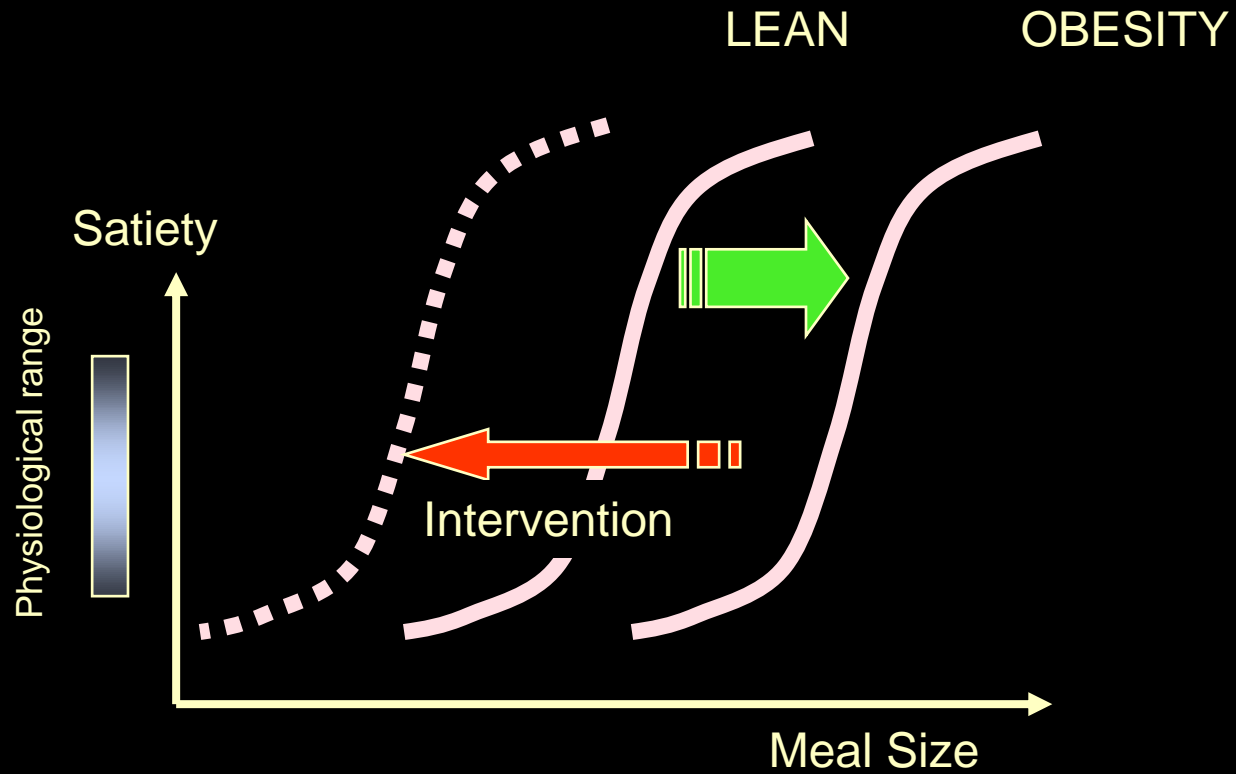
Disclosures

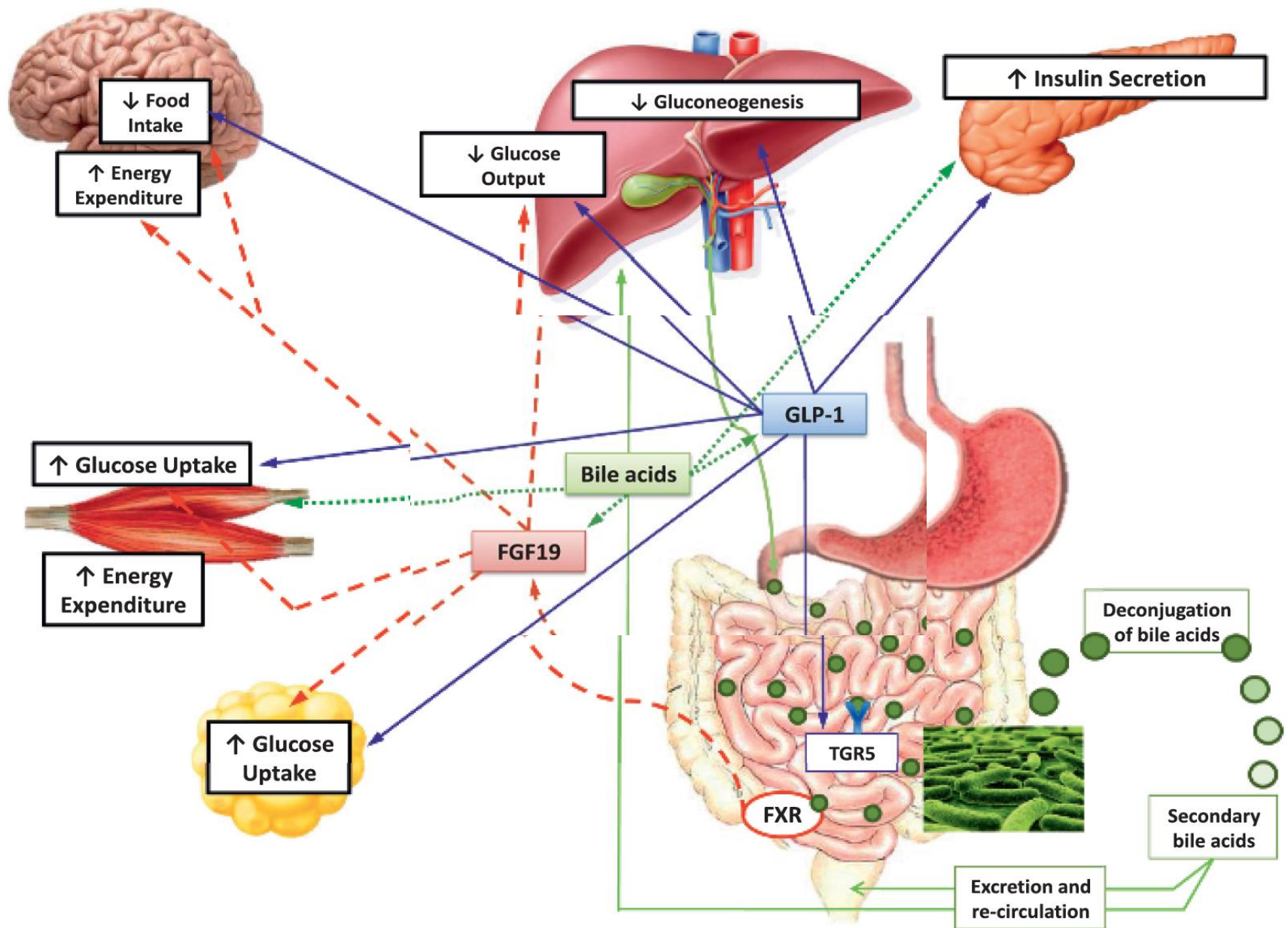
- Research Grant, J&J Medtech, Brasil
- Research Grant, Medtronic
- Research Grant, GI Dynamics
- Research Grant, Hospital Oswaldo Cruz Bioscience Institute
- SAB: Morphic Medical, JJ Medical, NovoNordisk, Medtronic
- Speaker: J&J Medtech, Medtronic, NovoNordisk

**Is malabsorption beneficial or even a
mechanism of action behind MBS?**

WHY?

Satiety dose response curve

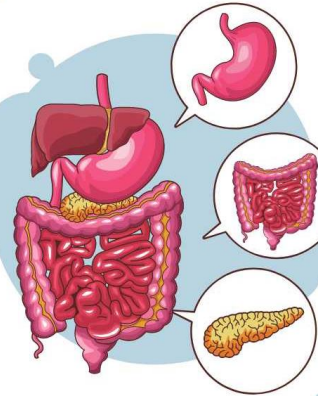




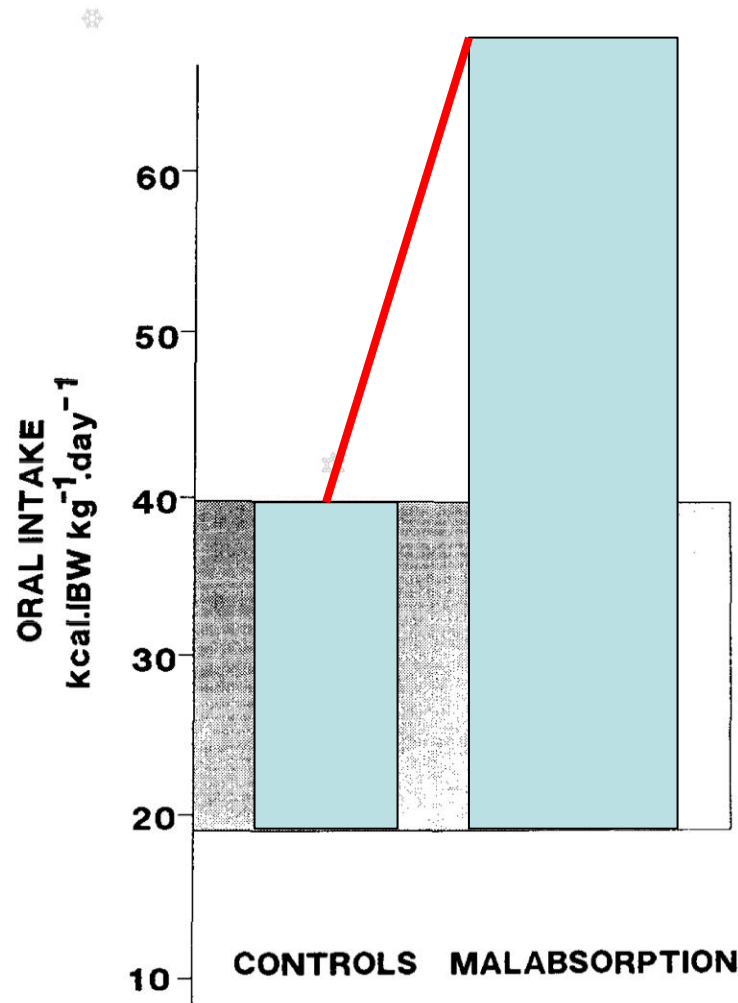


MALABSORPTION SYNDROME

SYMPTOMS, CAUSES AND TREATMENT



Malabsorption after major bowel resection is associated to hyperphagia

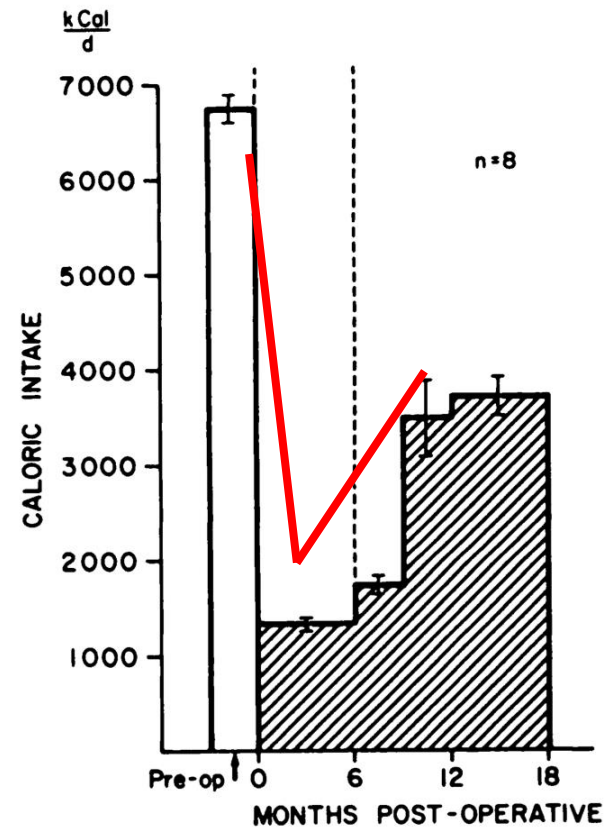


Intestinal bypass surgery for obesity decreases food intake and taste preferences¹

George A. Bray,^{2, 3} M.D., Ralph E. Barry,⁴ M.D., John R. Benfield,⁵ M.D.,
Pietro Castelnovo-Tedesco,⁶ M.D., and Judith Rodin,⁷ Ph.D.

Intl J Obes, 1976

- ✓ JI bypass is a truly malabsorptive procedure
- ✓ Food intake **decreases, different from major bowel resection**

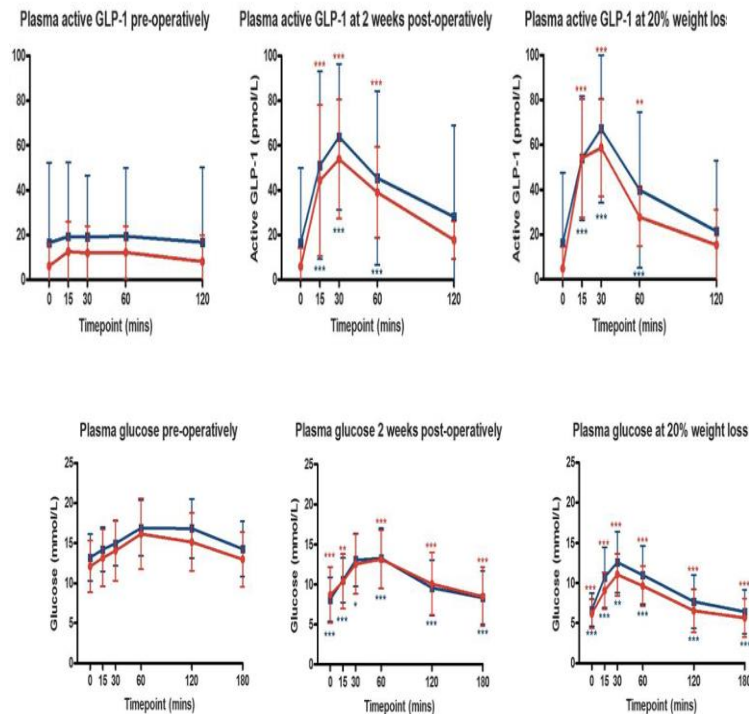
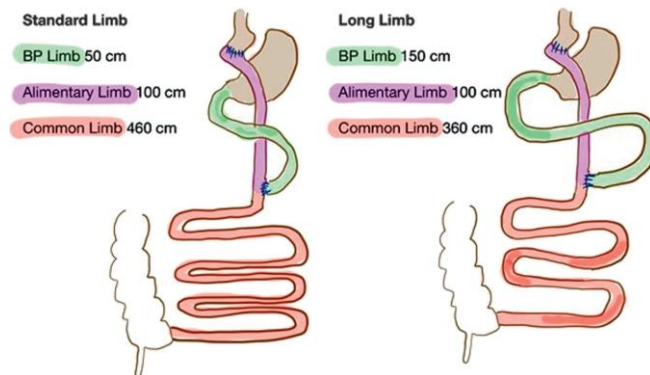


The Effect of Standard Versus Longer Intestinal Bypass on GLP-1 Regulation and Glucose Metabolism in Patients With Type 2 Diabetes Undergoing Roux-en-Y Gastric Bypass: The Long-Limb Study

Diabetes Care 2021;44:1082–1090 | <https://doi.org/10.2337/dc20-0762>

Alexander Dimitri Miras,¹
 Anna Kamocka,¹ Belén Pérez-Pevida,¹
 Sanjay Purkayastha,² Krishna Moorthy,²
 Ameet Patel,³ Harvinder Chahal,¹
 Gary Frost,¹ Paul Bassett,⁴
 Lidia Castagnetto-Gissey,³ Lucy Coppin,⁵
 Nicola Jackson,⁵ Anne Margot Umpleby,⁵
 Stephen Robert Bloom,¹ Tricia Tan,¹
 Ahmed Rashid Ahmed,¹ and
 Francesco Rubino³

**Longer BP limb and shorter common limb would trigger ileal stimulation and GLP1 secretion-
 "ileal brake"**



Adding malabsorption

Review article

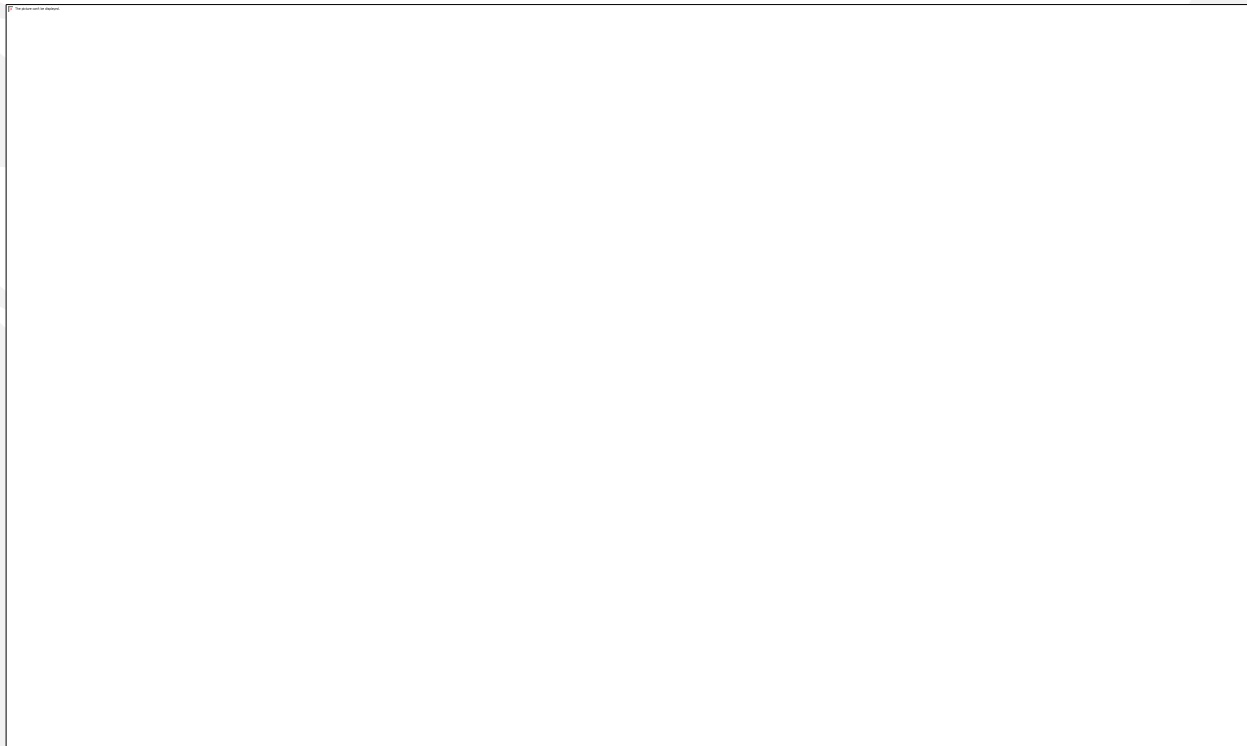
American Society for Metabolic and Bariatric Surgery literature review
on the effect of Roux-en-Y gastric bypass limb lengths on outcomes

Essa M. Aleassa, M.D.^{a,*}, Pavlos Papasavas, M.D.^b, Toms Augustin, M.D.^c,
Zhamak Khorgami, M.D.^d, Sue Benson-Davies, Ph.D.^e, Saber Ghiassi, M.D.^f,
Jonathan Carter, M.D.^g, Abdelrahman Nimeri, M.D.^h, Clinical Issues Committee of the
American Society for Metabolic and Bariatric Surgery

May eventually improve WL, **WITH EXPONENTIAL RISKS OF
MALNUTRITION**

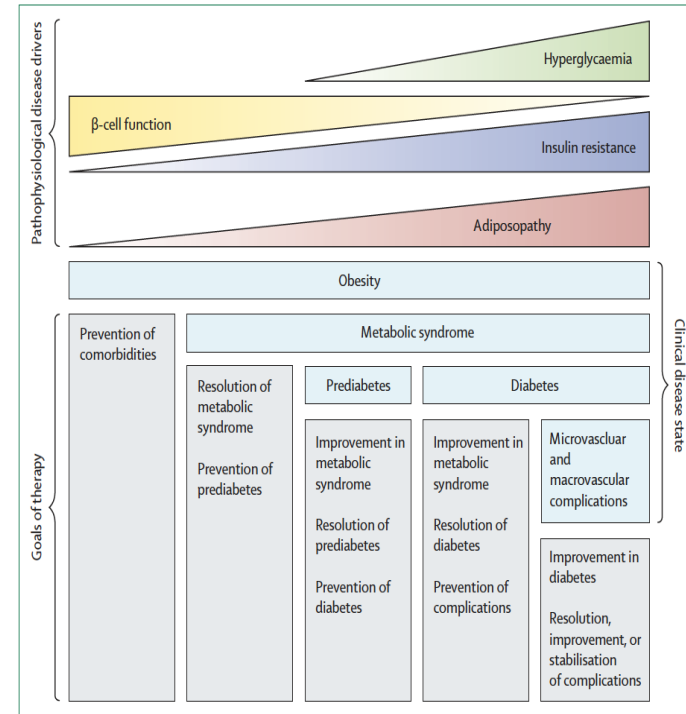
But...

**HOW MUCH WEIGHT DO WE NEED
to improve health?**



Important Endpoints

- ✓ Sustained WL > 15%
- ✓ Lipid control
- ✓ BP control
- ✓ Glycemic control
- ✓ MASH outcomes
- ✓ Microvascular complications control/resolution
- ✓ Prevention of fatal and non-fatal CV events
- ✓ Safety



Lingway I ... CohenRV, Lancet 2022

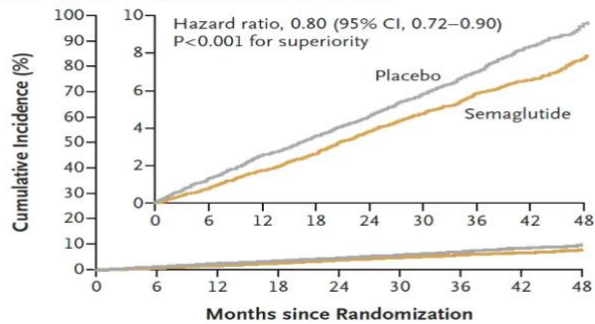
Semaglutide and Cardiovascular Outcomes in Obesity without Diabetes

Select RCT

A. Michael Lincoff, M.D., Kirstine Brown-Frandsen, M.D., Helen M. Colhoun, M.D., John Deanfield, M.D., Scott S. Emerson, M.D., Ph.D., Sille Esbjerg, M.Sc., Søren Hardt-Lindberg, M.D., Ph.D., G. Kees Hovingh, M.D., Ph.D., Steven E. Kahn, M.B., Ch.B., Robert F. Kushner, M.D., Ildiko Lingvay, M.D., M.P.H., Tugce K. Oral, M.D., Marie M. Michelsen, M.D., Ph.D., Jorge Plutzky, M.D., Christoffer W. Tornøe, Ph.D., and Donna H. Ryan, M.D., for the SELECT Trial Investigators*

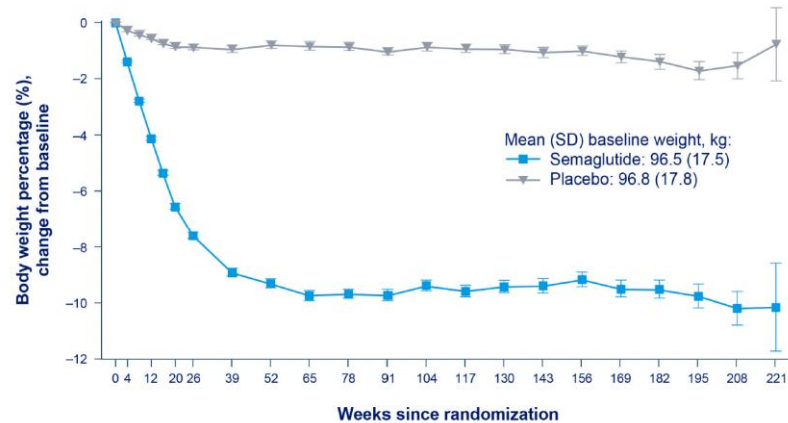
NEJM, Nov 2023

A Primary Cardiovascular Composite End Point



No. at Risk

Placebo	8801	8652	8487	8326	8164	7101	5660	4015	1672
Semaglutide	8803	8695	8561	8427	8254	7229	5777	4126	1734



Semaglutide, N 8,803 7,647 7,493 6,690 7,290 6,447 7,282 6,460 7,474 5,991 5,898 4,686 5,085 3,650 2,954 1,737 921 157
 Placebo, N 8,801 7,715 7,516 6,704 7,269 6,340 7,272 6,392 7,378 5,871 5,879 4,583 5,014 3,560 2,890 1,698 898 152

20% CV events

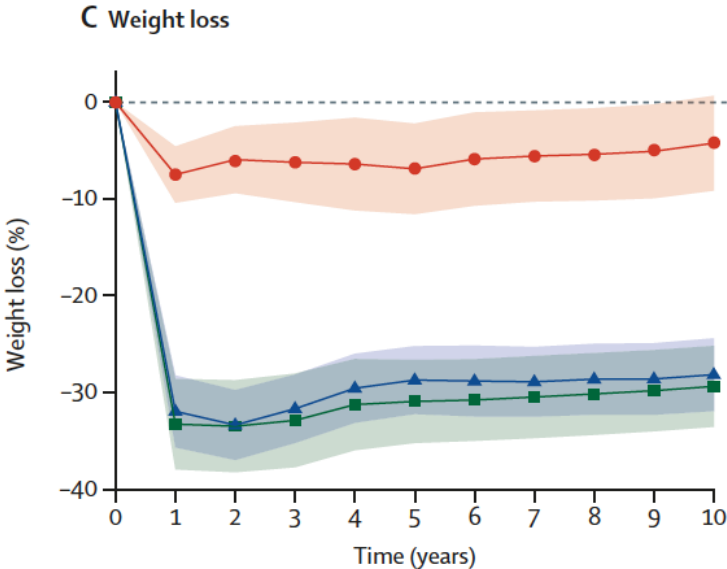
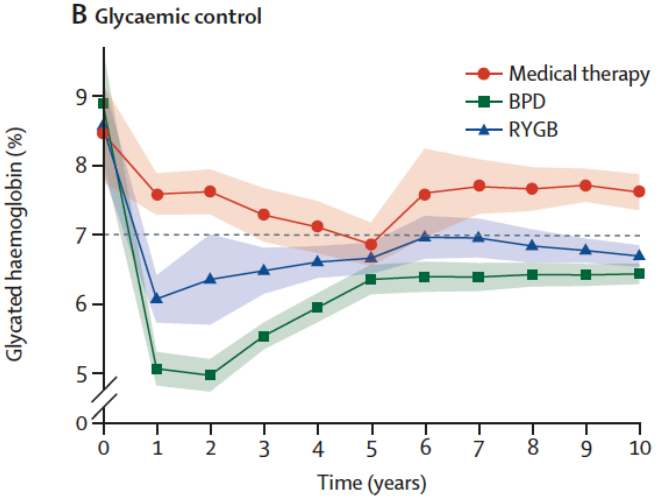
~9.8%TBWL



Metabolic surgery versus conventional medical therapy in patients with type 2 diabetes: 10-year follow-up of an open-label, single-centre, randomised controlled trial



Geltrude Mingrone, Simona Panunzi, Andrea De Gaetano, Caterina Guidone, Amerigo Iaconelli, Esmeralda Capristo, Ghassan Chamseddine, Stefan R Bornstein, Francesco Rubino



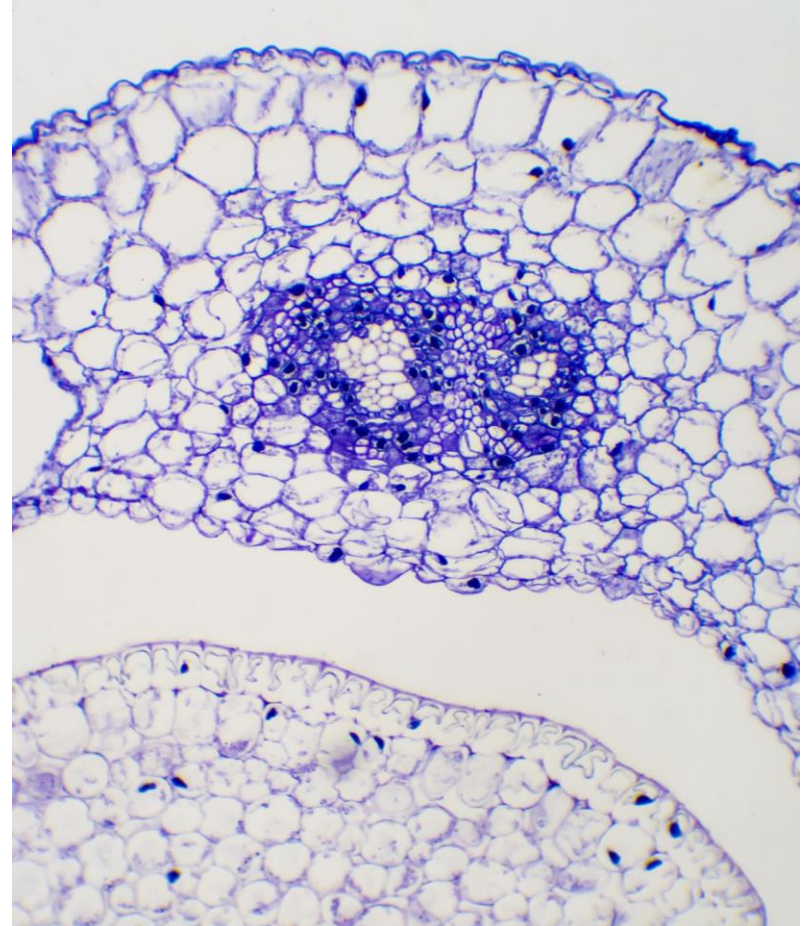
BPD carries significant nutrition problems without significantly better outcomes

	BPD group				RYGB group			
	0-2 years	2-5 years	5-10 years	10-year total	0-2 years	2-5 years	5-10 years	10-year total
Major 30-day postoperative complications								
Deep vein thrombosis or pulmonary embolism	1	0	0	1	1	0	0	1
Atrial fibrillation episode	1	0	0	1	0	0	0	0
Late surgical complications								
Intestinal occlusion	0	0	0	0	1	0	0	1
Incisional hernia	1	0	0	1	0	0	0	0
<u>Recurrent or chronic diarrhoea</u>	12	10	8	30	0	0	0	0
Nutritional or metabolic complications								
<u>Iron-deficiency anaemia</u>	0	5	3	8	0	3	2	5
<u>Hypoalbuminaemia, plasma albumin <3.5 mg/dL</u>	0	3	2	5	0	0	0	0
<u>Osteopenia*</u>	0	3	3	6	0	1	1	2
<u>Osteoporosis†</u>	0	1	2	3	0	0	0	0
<u>Transient nyctalopia</u>	0	1	2	3	0	0	0	0
Renal calculus	0	2	1	3	0	0	0	0
Symptomatic hypoglycaemia‡	0	0	0	0	0	2§	0	2

20% of hypoalbuminemia @10y

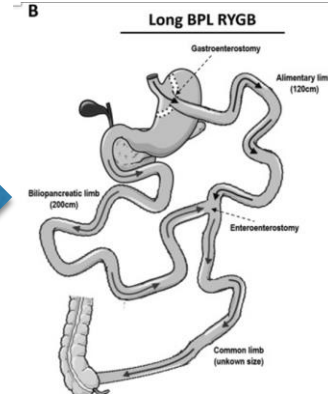
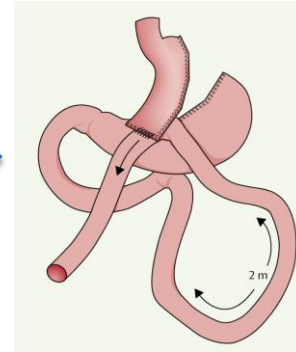
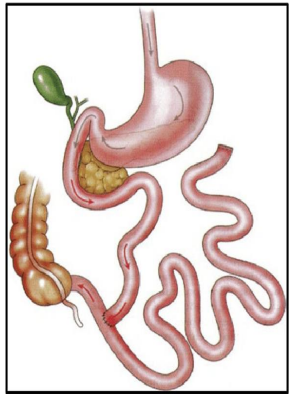
Liver failure after MBS

- Scant literature
- Case reports
- Small series
- Under reported(??)



Liver failure after MBS

20 months to > 20 years



All with BPlimb > 150 cm

SASI, TBP, SADI-S

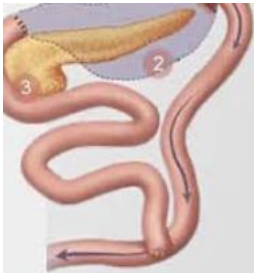


Not enough FU time
or published literature

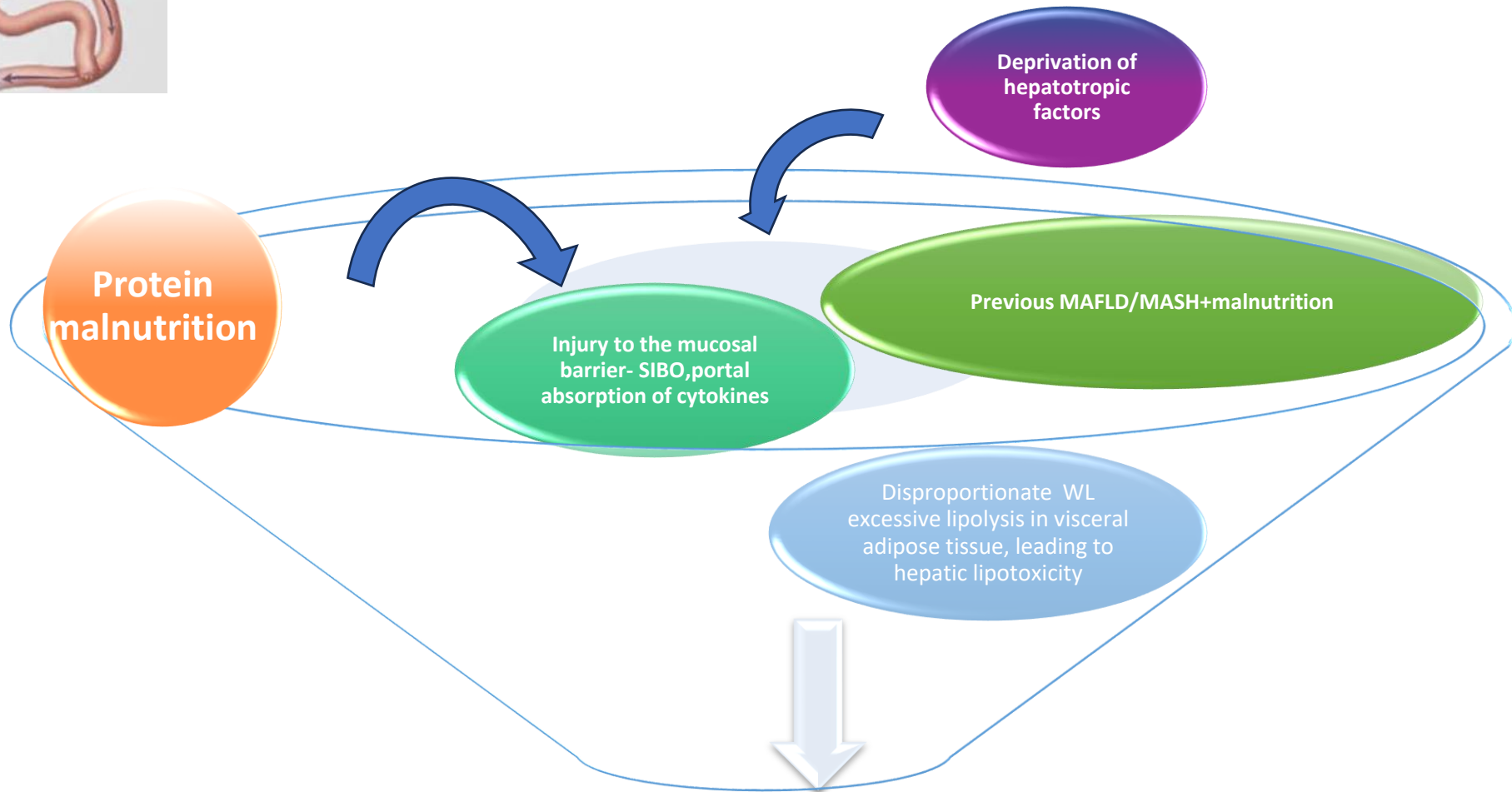
Mechanisms

**POORLY
UNDERSTOOD**



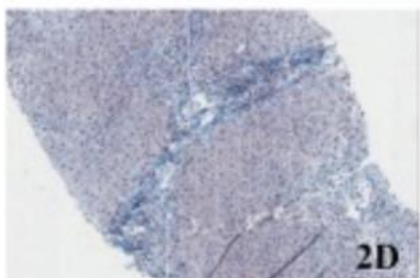
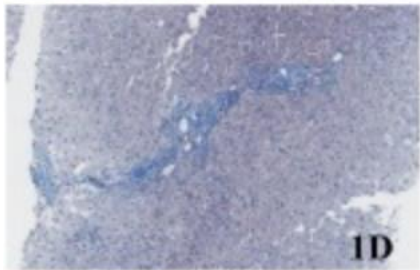
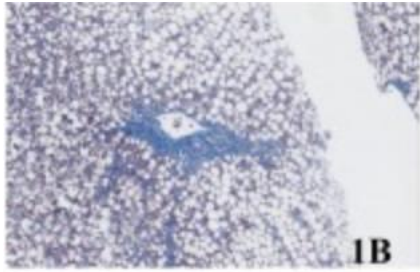


Bypassed intestine




Acute liver failure

Liver dysfunction characteristics after MBS



- Moderate increase in liver enzymes (70%)
- Hepatosplenomegaly (80%)
- Thrombocytopenia (70%)
- Impaired coagulation parameters (80%)
- Hypoalbuminemia (100%)
- Sarcopenia (60%).
- **At later stages:**
- Ascites (70%)
- Pleural effusions (30%)
- Hepatic encephalopathy (30%),
- Hepatorenal syndrome (10%),
- Upper gastrointestinal bleeding (20%).

MANAGEMENT

- ✓ Intensive nutritional support
- ✓ Increasing the length of the common channel -  major SAEs
- ✓ Reversal to normal anatomy
- ✓ Liver transplantation + increasing the length of the common channel

Review article

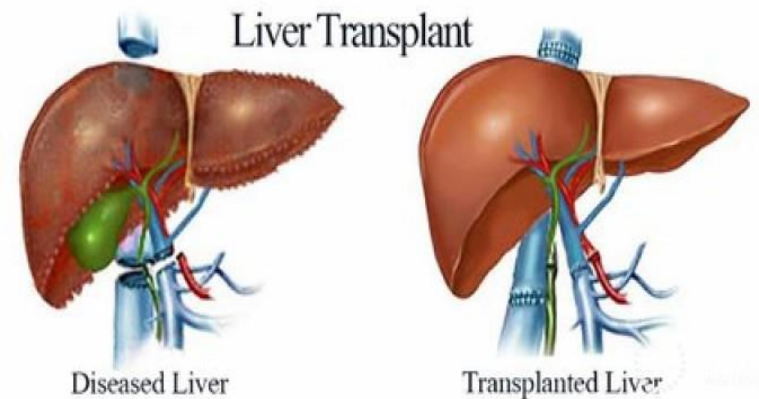
Liver transplantation for bariatric surgery-related liver failure: a systematic review of a rare condition

Pietro Addeo, M.D.^{a,*}, Manuela Cesaretti, M.D., Ph.D.^b, Rodolphe Anty, M.D., Ph.D.^{c,d},
Antonio Iannelli, M.D., Ph.D.^{b,c}

✓ 14 studies, 36 listed for LT, **32**
underwent the procedure
and **4 died in the waiting list**

✓ **12% Mortality rate**

✓ **25% Severe adverse events**



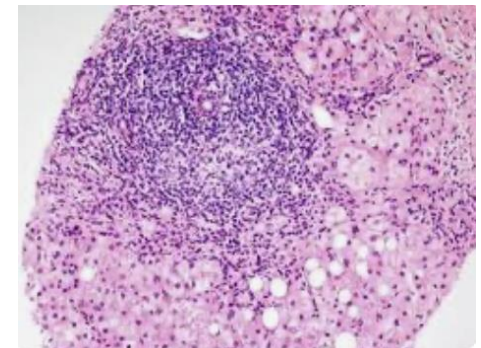
Review article

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Antonio Iannelli, M.D., Ph.D.^{b,c}

Key histological findings of the explanted liver

- ✓ Severe steatosis
- ✓ Portal inflammation
- ✓ Bile duct damage





BJS, 2024, znae073

<https://doi.org/10.1093/bjs/znae073>

Editorial

Back to the future: malabsorption is the Achilles' heel of hypoabsorptive metabolic/bariatric procedures

Ricardo V. Cohen^{1,*} , Paulina Salminen^{2,3} , Philip R. Schauer⁴ and Francesco Rubino⁵

¹Centre for Obesity and Diabetes, Oswaldo Cruz German Hospital, Sao Paulo, Brazil

²Division of Digestive Surgery and Urology, Turku University Hospital, Turku, Finland

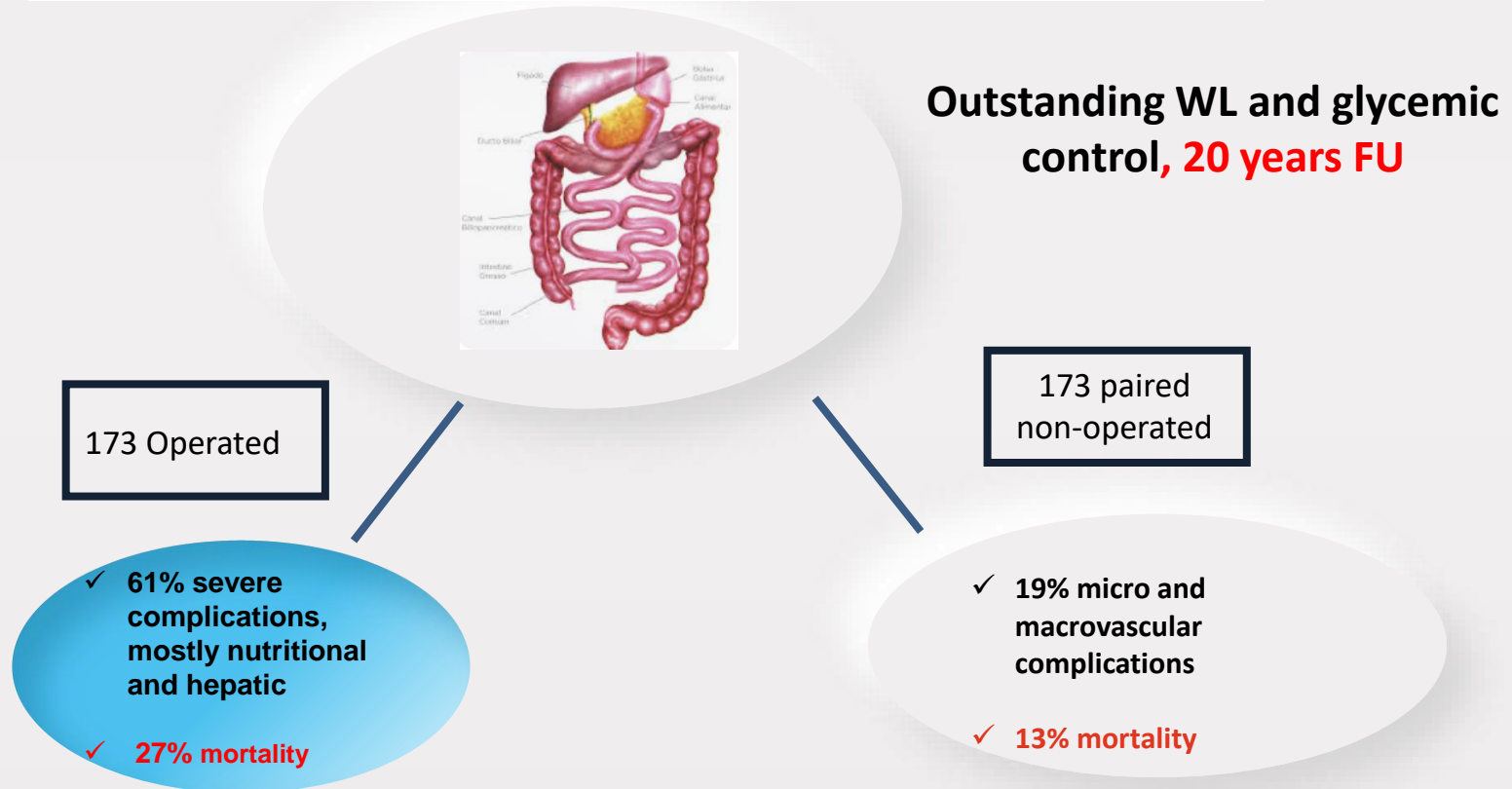
³Department of Surgery, University of Turku, Turku, Finland

⁴Metamor Institute, Pennington Biomedical Research Center, Baton Rouge, LA, USA

⁵Bariatric and Metabolic Surgery, King's College Hospital, London, UK

Pyrrhic victory? Long-term results of biliopancreatic diversion on patients with type 2 diabetes and severe obesity

Francesco Papadia ¹, Flavia Carlini ¹, Gaia Longo ¹, Alice Rubartelli ¹, Micaela Battistini ², Beatrice Drago ¹, Gian Franco Adami ³, Giuseppe Marinari ⁴, Giovanni Camerini ¹



At the long-term is safer to avoid surgery

An aerial photograph of a dense urban area, likely a city center. In the foreground, there is a large, modern white building complex with multiple wings and a central courtyard area with greenery. The surrounding area is filled with various other buildings, including taller skyscrapers in the background. The sky is clear and blue.

THANK YOU

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