Easy-to-use AI Calculator Predicting 5y Weight Trajectories After Bariatric Surgery: A SOPHIA Study

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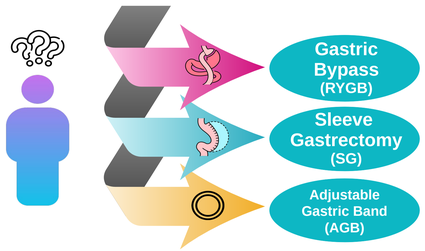
Goal: predict the outcome of surgery



From preop.

Up to 5y.

Outcome
- Weight (kg),
- BMI (kg/m^2),
- TWL/EWL (%).

Machine learning model

LASSO
- Extract most predictive features
- Validated by clinicians

Regression Tree
- Stratification of patients
- Interpretable

Development

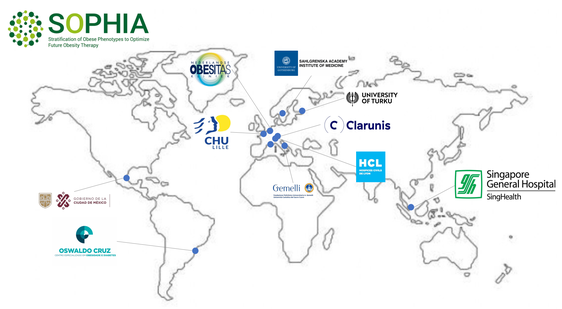
ABOS — BAREVAL

- 1500 patients.
- > 500 attributes.

Feature extraction → Calibration

An international study

Validation: 8 cohorts + 2 RCT studies
10,000 patients, 3 continents



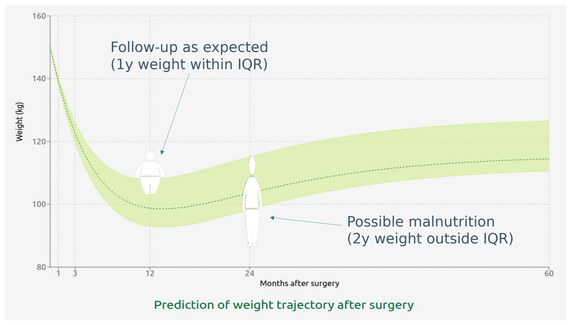
Results

7 (simple) attributes are predictive of post-surgery weight loss:

- Weight (preop),
- Height,
- Age,
- Type of intervention,
- Type II diabetes (T2D),
- Duration of T2D,
- Smoking.

Lower weight loss with
- Age,
- SG (after 1y),
- T2D,
- Longer (more severe) T2D.

A companion tool for patients and care providers



Prediction of weight trajectory after surgery

Bariatric Weight Trajectory Prediction

https://bwtp.univ-lille.fr

Individualized trajectory (dotted line),
"Green zone": where the majority of patients are (IQR),
Preop: visualize expected weight loss,
Postop: flag complications (patient out of green zone).

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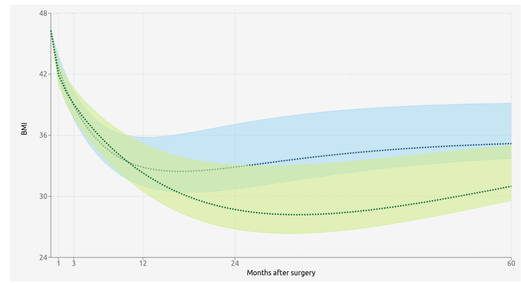
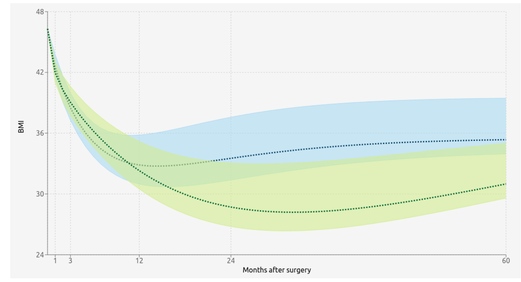
Impact of RYGB vs SG



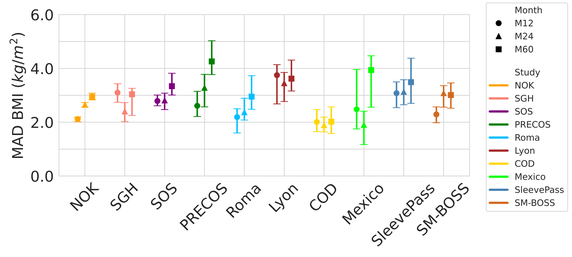
RYGB vs SG
synthetic replication of RCT SleevePass+SM-BOSS.

Impact of T2D



No T2D vs 10y T2D

Validation



MAD: accuracy in BMI points for a standard patient.