Long Term Outcomes of Metabolic Surgery

Is it good, bad, or indifferent?

Jeanne Lubbe
University of Stellenbosch and Tygerberg Hospital

“In a world deluged by irrelevant information, clarity is power”
Yuval Noah Harari
Long Term Outcomes of Metabolic Surgery

- Weight
- T2D
- AMI & TIA/CVA
- Cancers
- Mortality
- GERD & AdenoCa
- Deficiencies & hernias
- Suicide

> 5yrs – Long term

> 6m – Recent
> 6m - 1yr – Very short
> 1yr-3yrs – Short
> 3yrs - 5yrs – Medium
> > 5yrs – Long term
Weight as outcome is a problem

\[ \%TWL = \frac{[\text{Initial Weight}] - [\text{Postoperative Weight}]}{[\text{Initial Weight}]} \times 100 \]

\[ \Delta\text{BMI} = [\text{initial BMI}] - [\text{postoperative BMI}] \]

\[ \%\text{EBMIL} = \frac{\Delta\text{BMI}}{[\text{Initial BMI} - 25]} \times 100 \]

HEALTHY OBESE
Bariatric surgery versus non-surgical treatment for obesity: a systematic review and meta-analysis of randomised controlled trials

Viktoria L Gloy junior researcher¹, Matthias Briel assistant professor¹ ², Deepak L Bhatt professor³, Sangeeta R Kashyap associate professor of medicine⁴, Philip R Schauer medical director, professor of surgery⁵, Geltrude Mingrone professor⁶, Heiner C Bucher director¹, Alain J Nordmann associate professor¹

Lifestyle modification – 1% - 10%
2 – 5 years
Metabolic Surgery - 35% - 40%

Bariatric Surgery for Weight Loss and Glycemic Control in Nonmorbidly Obese Adults With Diabetes
A Systematic Review

Melinda Maggard-Gibbons, MD, MSHS

Cochrane Library
Cochrane Database of Systematic Reviews
Surgery for weight loss in adults (Review)
Colquitt JL, Pickett K, Loveman E, Frampton GK
Swedish obesity study (SOS)
Long-term (11+ years) outcomes in weight, patient satisfaction, comorbidities, and gastroesophageal reflux treatment after laparoscopic sleeve gastrectomy

Gustavo A. Arman, M.D.\textsuperscript{a,b,*}, Jacques Himpens, M.D., Ph.D.\textsuperscript{a,b}, Jeroen Dhaenens, M.D.\textsuperscript{a}, Thierry Ballet, M.D.\textsuperscript{b}, Ramon Vilallonga, M.D., Ph.D.\textsuperscript{a}, Guido Leman, M.D.\textsuperscript{a}

\textsuperscript{a}Division of Bariatric Surgery, AZ St-Blasius, Dendermonde, Belgium
\textsuperscript{b}Cavell Obesity Center, CHIREC, Brussels, Belgium

Received November 25, 2015; accepted January 13, 2016

110 SG - 11 years – 62.5% EWL
¼ patients had additional weight loss procedure
There is no consensus definition of inadequate weight loss & recidivism

< 50% excess weight loss
(Halverson and Koehler et al.)

20% gain weight back after 15-20 years
Good weight loss

Sustained limited loss

Regain

20%
Mean reduction in HbA1c level
2% surgery vs. 0.5% medical

Less medications

Increased remission
(ods ratio of 22.1)
72% Remission

36% remained Diabetes free
After 15 years still 6 times more likely to be in remission if operated

Survival benefit remained
STAMPEDE – Surgical Treatment and Medication Potentially Eradicate Diabetes Efficiently

![Graph showing glycated hemoglobin levels over months for medical therapy, sleeve gastrectomy, and gastric bypass with respective mean values.](image)

### Mean (median) Value at Visit

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Month 0</th>
<th>Month 3</th>
<th>Month 6</th>
<th>Month 12</th>
<th>Month 24</th>
<th>Month 36</th>
<th>Month 48</th>
<th>Month 60</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical therapy</td>
<td>8.8 (8.6)</td>
<td>7.3 (6.8)</td>
<td>7.5 (7.2)</td>
<td>8.4 (7.7)</td>
<td>8.6 (8.2)</td>
<td>8.5 (8.0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gastric bypass</td>
<td>9.3 (9.4)</td>
<td>6.4 (6.2)</td>
<td>6.5 (6.4)</td>
<td>6.8 (6.6)</td>
<td>6.8 (6.8)</td>
<td>7.3 (6.9)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sleeve gastrectomy</td>
<td>9.5 (8.9)</td>
<td>6.7 (6.4)</td>
<td>6.8 (6.8)</td>
<td>7.0 (6.7)</td>
<td>7.1 (6.6)</td>
<td>7.4 (7.2)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Cardiovascular disease and cancers

29% reduced risk of death

Unadjusted HR = 0.76 (95% CI: 0.59 – 0.99)
P = 0.04

Adjusted HR = 0.71 (95% CI: 0.54 – 0.92)
P = 0.01

13 years after surgery
Total number of deaths by cause, World

Source: IHME, Global Burden of Disease

OurWorldInData.org/causes-of-death/ • CC BY-SA
Annual number of deaths by cause, World, 2016

- Cardiovascular diseases: 17.65 million
- Cancers: 32.26%
- Respiratory disease: 3.54 million
- Diabetes, blood and endocrine disease: 3.19 million
- Dementia: 2.38 million
- Lower respiratory infections: 2.38 million
- Neonatal deaths: 1.73 million
- Diarrheal diseases: 1.66 million
- Road incidents: 1.34 million
- Liver disease: 1.26 million
- Tuberculosis: 1.21 million
- Kidney disease: 1.19 million
- Digestive disease: 1.09 million
- HIV/AIDS: 1.03 million
- Suicide: 817,148
- Malaria: 719,551
- Homicide: 390,794
- Nutritional deficiencies: 368,107
- Meningitis: 318,400
- Protein-energy malnutrition: 308,394
- Drowning: 302,932
- Maternal deaths: 230,615
- Parkinson’s disease: 211,296
- Alcohol disorder: 173,893
- Intestinal infectious diseases: 155,449
- Drug disorder: 143,775
- Hepatitis: 134,045
- Fire: 132,084
- Conflict: 115,782
- Heat-related deaths (hot or cold exposure): 55,596
- Terrorism: 34,676
- Natural disasters: 7,059
2013 Global Burden of Disease Study SA:
- 7 in 10 women (69.3%) BMI>25
- 4 in 10 men (38.8%) BMI>25
- 30% aged 30-59 years BMI>30
- 9.6% girls and 7% boys BMI>30

STATS SA 2017:
- T2D leading natural cause of death in the Western Cape

Endocrine Society of South Africa in 2018:
- Number of people living with T2D estimated to increase by 140% by 2040
Long Term Outcomes of Metabolic Surgery

Is it good, bad, or indifferent?

It is the best we’ve got at the moment