Metabolic surgery is now a recommended treatment options for Type 2 diabetes among certain patients also suffering from obesity

- American Diabetes Association-Standards of Care 2017 (1)

How Does Surgery Improve Diabetes
Metabolic surgery changes various mechanisms of GI physiology involved in metabolic regulation (3,4)

Indications for Surgical Treatment
There is now sufficient clinical and mechanistic evidence to support inclusion of metabolic surgery among antidiabetes interventions for people with Type 2 diabetes (T2D) and obesity. DSS-1¹ (2)

• “Metabolic surgery should be a recommended option to treat T2D in appropriate surgical candidates with class III obesity (BMI ≥ 40 kg/m², regardless of the level of glycemic control or complexity of glucose-lowering regimens, as well as in patients with class II obesity (BMI 35.0-39.9 kg/m²) with inadequately controlled hyperglycemia despite lifestyle and optimal medical therapy.” DSS-II (2)

• “Metabolic surgery should also be considered to be an option to treat T2D in patients with class I obesity (BMI 30.0-39.9 kg/m²) and inadequately controlled hyperglycemia despite optional medical treatment by either oral or injectable medications (including insulin).” DSS-II (2)

• “All BMI thresholds should be reconsidered depending on the ancestry of the patient. For example, patients of Asian descent, the MBI values above should be reduced by 2.5 kg/m².” DSS-II (2)

Algorithm for Patients with Type 2 Diabetes

<table>
<thead>
<tr>
<th>Non-Obese BMI &lt; 30kg/m² or 27.5 for Asians</th>
<th>Obese BMI ≥ 30kg/m² or 27.5 for Asians</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class I Optimal lifestyle &amp; Medical Rx (incl injectable meds &amp; insulin)</td>
<td>Class II Optimal lifestyle &amp; Medical Rx</td>
</tr>
<tr>
<td>Good Glycemia Control</td>
<td>Poor Glycemia Control</td>
</tr>
<tr>
<td>Class III Expedited Assessment for Metabolic Surgery</td>
<td></td>
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<tr>
<td>Nonsurgical Treatment</td>
<td>Consider Metabolic Surgery</td>
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<tr>
<td>Recommend Metabolic Surgery</td>
<td></td>
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</tbody>
</table>

Class I BMI ≥ 30-34.9 kg/m² or 27.5-32.4 for Asians
Class II BMI ≥ 35-39.9 kg/m² or 32.5-37.4 for Asians
Class III BMI ≥ 40 kg/m² or 37.4 for Asians
Clinical Evidence (2,5)

Observations that Type 2 diabetes (T2D) can be improved or even resolved by surgical operation have been reported for almost a century. Since the 2000s, experimental evidence that changes in GI anatomy can directly influence glucose homeostasis provided a mechanistic rationale for the use of surgery as an intentional treatment of diabetes. DSS-I and DSS-II assessed clinical evidence, including numerous Randomized Clinical Trials (RCTs) performed over the last decade, leading to current guidelines. Eleven randomized trials (RCTs – Level 1 evidence) as well as large, long-term case controlled studies (Level 2 evidence) comparing surgery in overweight/obese people with Type 2 diabetes show that metabolic surgery results in:

- Greater improvement of glycemic control (Level 1 evidence)
- Reduction of medication usage (Level 1 evidence)
- Reduction of cardiovascular disease (CVD) risk (Level 1 evidence)
- Reduction of heat attacks, strokes, cancer and overall mortality (Level 2 evidence)
- Greater weight loss (Level 1 evidence)
- Better quality of life (Level 1 evidence)

Chance of Disease Remission: A substantial proportion of patients (between 30% and 60%, depending on the procedure) experience durable (≥5 year) normalization of blood sugar levels without the need for ongoing pharmacologic treatment (disease remission)

Cost Effectiveness: Economic analyses have also shown that surgical treatment for diabetes is cost-effective. Cost per quality adjusted life-year (QALY) is approximately $3,200-$6,500, well below $50,000/QALY (which is deemed appropriate for coverage).

References
(1) ADA Standards of Medical Care in Diabetes 2017 Diabetes Care; Jan. 2017; vol. 40 Issue Suppl. 1
(3) Rubine F. Nature 2016; 533(7604)459-61