



Long-Term Cure of Type 2 Diabetes in Children and Adolescents with Severe Obesity who Undergo Sleeve Gastrectomy

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Objective

To document resolution of type 2 diabetes (T2DM) after sleeve gastrectomy (LSG) in diabetic, severely obese children and adolescents

Research Design and Methods

We queried our pediatric bariatric outcomes database for data of severely obese patients aged 5-21 years who had T2DM at the time of LSG. Outcomes up to 10 years after surgery were analyzed relying on standardized, validated methods to measure T2DM resolution and adiposity change.

Results

Of 2,019 patients who underwent LSG, 206 (10.2%) had T2DM. Fasting plasma glucose, age and body mass index (BMI) were 8.8 ± 2.5 mmol/L, 12.9 ± 3.2 years and 45.2 ± 9.0 kg/m², respectively. At baseline, 114 (55.3%) were on oral medications (O), 54 (26.2%) were on oral medications + insulin (OI), and 38 (18.4%) were on insulin only (I). At 1-3 year-follow-up (N=206), 184 (89.3%) experienced complete remission (CR) and 22 (10.7%) experienced partial remission or improvement (PRI). At 3-5 year-follow-up (N=135), 108 (80%) had CR, 25 (18.5%) had PRI, and two (1.5%) had recurrence. At 5-7 year-follow-up (N=58), 44 (75.9%) had CR, 12 (20.7%) had PRI, and two (3.4%) had recurrence. At 7-10 year-follow-up, 10 (66.7%) had CR, 4 (26.7%) had PRI, and one (6.7%) had recurrence. All patients with recurrence of T2DM were on insulin \pm oral medications before surgery.

Discussion

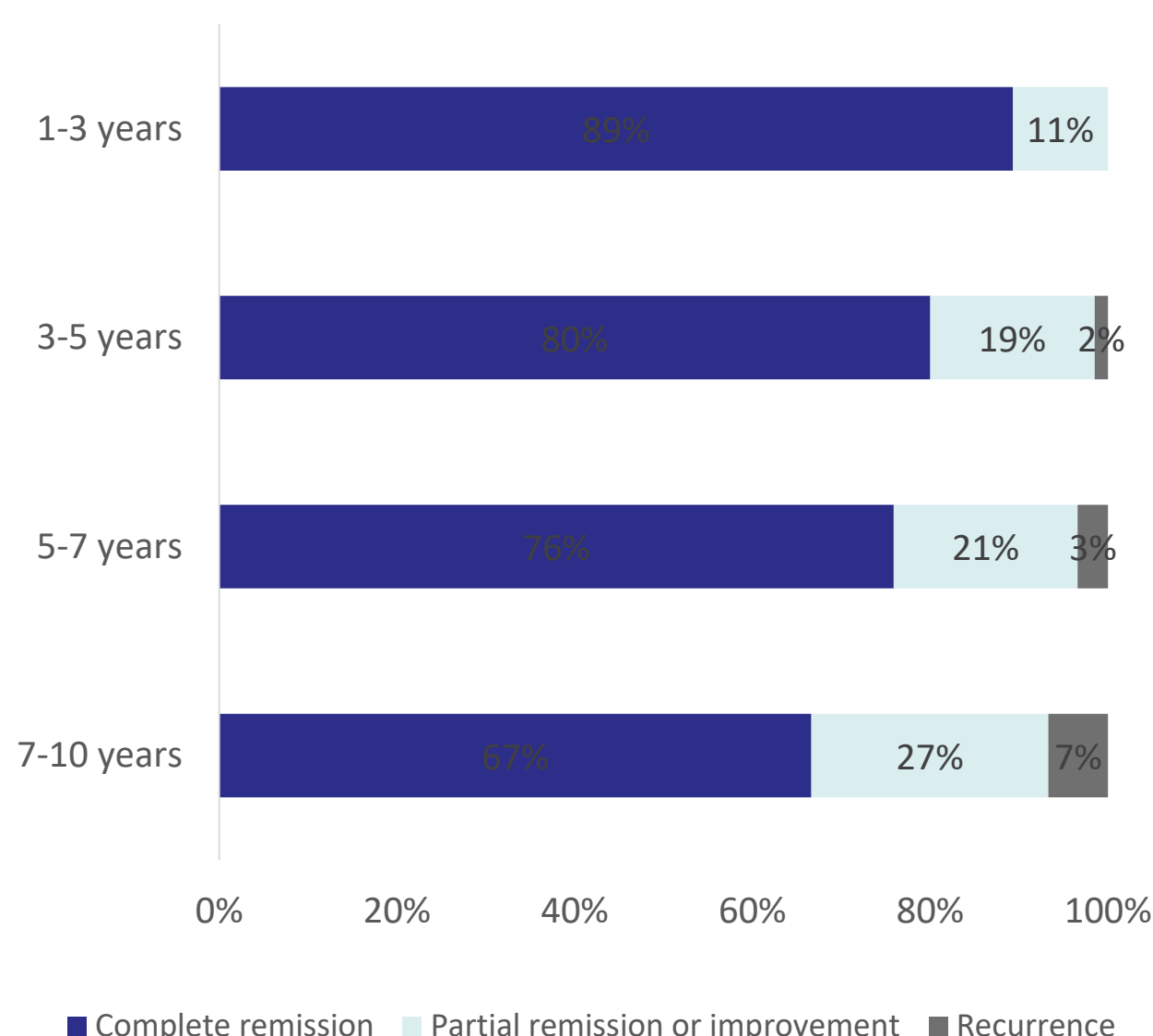
Two-thirds of severely obese children and adolescents who have type 2 diabetes experience lasting cure. More than 90% of patients experience resolution.

The earliest studies that reported remission of diabetes mellitus after bariatric surgery in adults were published in 1984 (1). Thirty years later, bariatric surgery was officially adopted as a treatment for type 2 diabetes in patients with obesity. A shift in attention from BMI-based to co-morbidity-based recommendations is slowly being endorsed. However, bariatric surgery has still not been adopted as a treatment for type 2 diabetes in children and adolescents yet. Unevidenced concerns and lack of previous evidence were cited as reasons for not recommending bariatric surgery to children and adolescents, although the role of bariatric surgery in children and adolescents has been extensively studied (2-6).

We hope that this study paves the way for endorsement of bariatric surgery as an effective treatment for type 2 diabetes in children and adolescents with severe obesity.

Conclusions

The majority of diabetic, severely obese children and adolescents experience lasting cure of T2DM after LSG.



	T2DM	No T2DM	p-value
n, %	206 (10.2%)	1,813 (89.8%)	
Age, years	12.9 ± 3.2	14.8 ± 3.8	0.02
Range	5-21	5-21	-
BMI, kg/m²	45.2 ± 9.0	49.0 ± 11.2	<0.001
Range	30.1-78.0	34.4-70.0	-
FBS, mmol/L	8.8 ± 2.5	4.9 ± 0.6	<0.001
Range	7-19.2	3.0-6.9	-
HbA_{1c}, %	7.4 ± 2.1	5.7 ± 0.4	<0.001
Range	6.5-11.5	4.7-6.9	-
Fasting Insulin	45.8 ± 22.5	30.3 ± 18.5	<0.001
Range	4.8-101.7	3.8-109.2	-
M:F Ratio	0.9:1	1:1	-

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