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Metabolic surgery in uncontrolled and poorly controlled type 2 diabetes mellitus

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Every bariatric surgical procedure currently being practised globally, also has metabolic advantages to varying extents according to the procedure, and generally depends on the extent of malabsorption induced by the procedure. Thus, BPD-DS procedure has shown the best remission and resolution rate among all the bariatric procedures. But the nutritional and other complications have prevented it from becoming a gold-standard procedure. The June 2016 issue of diabetes care has listed a set of 32 recommendations related to the use of metabolic surgery for treatment of type 2 diabetes. These are supported by high quality evidence, including RCTs and systematic reviews/meta-analyses that show dramatic and durable improvement in T2DM. The biologic rationale is based on the recognition of an important role of the gut in metabolic regulation and directly on glucose homeostasis. Thus, bariatric procedures are effective in diabetes and have changed the landscape of diabetes care. Strong evidence now demonstrates that procedures designed to be essentially metabolic like the ileal transposition which have minimal bariatric effects and do not cause any significant malabsorption, are showing great promise in the long-term resolution and remission of type 2 diabetes in patients with a BMI <35 kg/m². There is now level 1A evidence that surgery is superior for T2DM remission, glycemic control and HbA1C lowering, for selected patients with a BMI <35 kg/m².

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Metabolic surgery for low BMI type 2 diabetes

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Asians develop type-2 diabetes at a lower BMI because of their genetic propensity to have more visceral fat for their BMI range. It is no longer believed now that the reversal of diabetes after metabolic surgery is due primarily to weight loss and there is now much data showing that diabetes reverses quite quickly after surgery before much weight loss has occurred. Clearly hormonal mechanisms are at play, some of which have been worked out and others remain to be discovered. It is also no longer in doubt that bypass operations have a stronger anti-diabetic effect although a sleeve resection does an adequate job in the obese and overweight patient. In this small series of 60 patients, we document the results of an unselected group of low BMI patients operated mainly with the goal of improving or reversing their type-2 diabetes. We define full reversal as those who get off all medications including insulin and are able to document HbA1C result of 6.5% or below. We collected 60 patients of average age 50.3 years (Range 33-64 years). There were 34 males and 26 females. Duration of diabetes averaged 8.3 years. 22 were on insulin and 38 were only on oral medication. Average blood sugar before surgery was 9.5mmole/l. Average weight of patients before surgery was 78.59 Kg (Range 51.5 Kg to 126.7 Kg). BMI before surgery was 28.99 Kg/square meter. (Range (18.7 to 37.66)). 18 patients had BMI 27 or under and only 4 patients had BMI more than 35 Kg/square meter. Pre-operative C-peptide level was 2.4 UG/L (Range 0.75 to 4.5). All patients who were obese with BMI around 27 or above had a laparoscopic gastric sleeve resection. Those under BMI of 27 had a Roux-en-Y gastric by-pass or Mini-by-pass. The bypass was modified to minimize the weight loss effect of the operation. Average blood sugar before the surgery was 9.57 (mmole/l), this dropped to 6.03mmole/l after this operation. The difference was 3.28 mmole/l. After an average of 18 months follow up, (90%) were off-all medication, 6 patients (10%) were still on oral medication but were off insulin. Patients who were previously only on oral medication were all off diabetic medication. Of the 6 patients who are still on medication 4 are in the below BMI 27 kg/square meter group. This gives a success rate in this very low BMI group of 77%. Success rate in the above BMI 27 group was 95% (40 of 42 patients). Average HbA1C before surgery was 8.02%. All of these were despite medication or insulin. Average HbA1C after surgery was 5.9% (Range 4.9 to 6.8%). The average drop in HbA1c was 2.9%. Average weight of patient after the surgery was 62.27kg (Range 46.7 kg to 91.5kg). Average weight loss was 12.5kg (Range 6.3kg to 22.1kg). No patient became excessively underweight after the surgery. We strongly believe that the effect of metabolic surgery on type-2 diabetes is independent of start weight or weight loss and that BMI should no longer be considered in evaluating patients for metabolic surgery. There should not be any fixed lower BMI for doing this surgery.

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