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# From Bariatric to Metabolic Surgery

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## Editorial

The prevalence of type 2 diabetes mellitus is rapidly increasing worldwide. In 2010, the global prevalence was estimated at 8,3% of the adult population, a proportion that is projected to increase to 9,9% by 2030 [1]. Uncontrolled diabetes leads to macrovascular and microvascular complications, including myocardial infarction, stroke, blindness, neuropathy and renal failure in many patients. Despite improvements in pharmacotherapy, fewer than 50% of patients actually achieve and maintain therapeutic thresholds [2]. In 1998, the results of the UKPDS were welcomed as they showed that intensive treatment was associated with a significant reduction in diabetes-related events [3]. New megatrials were published in the following years. The results of the action to Control Cardiovascular Risk in Diabetes (ACCORD) [4], Action in Diabetes and Vascular Disease(ADVANCE) [5] and Veteran Administration Diabetes Trial(VADT) [6] were published in 2008 and 2009. Almost 25.000 type 2 diabetic patients have been enrolled in these trials. The results showed no reduction of cardiovascular risk. Even worse, the ACCORD trial was prematurely interrupted because of excess mortality among intensively treated patients. In the other hand, observational studies have suggested that bariatric surgery can rapidly improve glycemic control and cardiovascular risk factors in severely obese patients with type 2 diabetes [7,8]. The Swedish Obese Subjects (SOS) study, [9] which provides the best evidence for long-term effects so far, was initiated more than 20 years ago. Many randomized clinical trials has been published demonstrating that bariatric/metabolic surgery achieves superior glycemic control and reduction of cardiovascular risk factors in obese patients with type 2 diabetes compared with various medical and lifestyle interventions [10-14]. Beyond inducing weight loss related metabolic improvements, some operations engage mechanisms that improve glucose homeostasis independent of weight loss, such as changes in gut hormones, bile acid metabolism, microbiota, intestinal glucose metabolism and nutrient sensing [15]. In the last years, the concept of a metabolic surgery has become widely recognized and most major worldwide bariatric surgery societies have included the word "metabolic" in their names.

Candidacy for weight loss surgery is an evolving field. The original 1991 National Institute of Health guidelines recommending surgical intervention in patients with BMI > 40 Kg/m$^2$ or BMI > 35 Kg/m$^2$ plus significant obesity-related comorbidities [16]. The International Diabetes Federation (IDF) was the first to propose new additions to bariatric candidacy in 2011. They support consideration of surgery for patients with type 2 diabetes mellitus (T2DM) and obesity (BMI>30 Kg/m$^2$) who are failing to achieve treatment targets with optimal medical therapy, especially in the presence of additional cardiovascular risk factors [17]. In the UK a national registry of over 3000 patients with diabetes operated on between 2011 and 2013 shows that 65% had acceptable glycaemic control without medications after surgery [18]. An economic analysis for National Institute for Health and Care Excellence (NICE) showed that bariatric surgery is cost effective compared with non--surgical treatment [19]. In patients with diabetes, for example, the cost of surgery will be recouped within three years through reduced prescriptions [20]. It's time to review. Complementary criteria to the sole use of BMI need to be developed to achieve a better patient selection algorithm for metabolic surgery. From September 28$^{th}$ to 30$^{th}$ the Diabetes Surgery Summit II(DSS-II) was held in London. It was an international consensus conference convened in collaboration with leading diabetes organizations to develop global guidelines to inform clinicians and policymakers about benefits and limitations of metabolic surgery for type 2 diabetes. The conclusions were published at Diabetes Care a few months later [21]. Forty-five world medical and scientific societies endorsed the DSS-II guidelines. There is sufficient clinical and mechanistic evidence to support inclusion of metabolic surgery among ant diabetes intervention for people with type 2 diabetes and obesity and health care regulators should introduce appropriate reimbursement policies.

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