

## Development of de novo diabetes in long-term follow-up after bariatric surgery

### ABSTRACT

**Introduction:** While bariatric surgery leads to significant prevention and improvement of type 2 diabetes, patients may rarely develop diabetes after bariatric surgery. The aim of this study was to determine the incidence and the characteristic of new-onset diabetes after bariatric surgery over a 17-year period at our institution. **Methods:** Non-diabetic patients who underwent bariatric surgery at a single academic center (1997–2013) and had a postoperative glycated hemoglobin (HbA1c)  $\geq 6.5\%$ , fasting blood glucose (FBG)  $\geq 126$  mg/dl, or positive glucose tolerance test were identified and studied. **Results:** Out of 2263 non-diabetic patients at the time of bariatric surgery, 11 patients had new-onset diabetes in the median follow-up time of 9 years (interquartile range [IQR], 4–12). Bariatric procedures performed were Roux-en-Y gastric bypass ( $n = 7$ ), adjustable gastric banding ( $n = 3$ ), and sleeve gastrectomy ( $n = 1$ ). The median interval between surgery and diagnosis of diabetes was 6 years (IQR, 2–9). At the last follow-up, the median HbA1c and FBG values were 6.3% (IQR, 6.1–6.5) and 95 mg/dl (IQR, 85–122), respectively. Possible etiologic factors leading to diabetes were weight regain to baseline ( $n = 6$ , 55%), steroid-induced after renal transplantation ( $n = 1$ ), pancreatic insufficiency after pancreatitis ( $n = 1$ ), and unknown ( $n = 3$ ). **Conclusion:** De novo diabetes after bariatric surgery is rare with an incidence of 0.4% based on our cohort. Weight regain was common ( $> 50\%$ ) in patients who developed new-onset diabetes suggesting recurrent severe obesity as a potential etiologic factor. All patients had good glycemic control (HbA1c  $\leq 7\%$ ) in the long-term postoperative follow-up.

**Keyword:** Bariatric surgery; Obesity; Glucose; Glycated haemoglobin; Type 2 diabetes; Gastric bypass; Sleeve gastrectomy