Obesity

Keeping an eye on bariatric surgery – Impact on diabetic retinopathy

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Bariatric surgery has been shown to be procedurally safe with a comparable safety profile to common operations such as cholecystectomy. Its beneficial effects on diabetes and other obesity-associated comorbidities, as well as mortality, have driven the increasing provision of bariatric surgery worldwide (Leong and Taheri, 2012). These data, however, have been mainly derived from short-term clinical trials and observational studies. With respect to the latter, the Swedish Obese Subjects (SOS) study has been the single study informing on potential long-term outcomes of bariatric surgery (Carlsson et al, 2012; Sjöström et al, 2014; Sjöholm et al, 2015). Most participants in the SOS study underwent the vertical banded gastroplasty (now defunct) or the gastric band, while current approaches are relying on the gastric bypass and, increasingly, on the sleeve gastrectomy. The SOS study reported an improvement in diabetes in 72% of people with diabetes after bariatric surgery compared to 16% in the non-surgical group at 2 years (Sjöström et al, 2014). However, after 15 years the proportion of those in remission after surgery had diminished to 30% (Sjöholm et al, 2015). The SOS recently reported that diabetes improvement occurred to a great extent for those who achieved greater weight loss (Sjöholm et al, 2015). Furthermore, in the SOS study, the cumulative incidence of diabetes microvascular complications was lower in those who underwent bariatric surgery compared to the non-surgical group in long-term follow-up (41.8 per 1000 person-years versus 20.6 per 1000 person-years; hazard ratio, 0.44 [95% confidence interval, 0.34–0.56]; Sjöström et al, 2014). The SOS study, however, occurred many years ago when fewer and less effective medical treatments and approaches for weight management, diabetes, hypertension and dyslipidaemia were available.

Cheung and colleagues recently conducted a systematic review and meta-analysis to examine the impact of bariatric surgery on diabetic retinopathy (summarised alongside). From four studies that met their inclusion criteria (comprising 148 patients in total), of those without diabetic retinopathy, 7.5% progressed to diabetic retinopathy while the majority remained retinopathy free after surgery. In those with established retinopathy, about 57% had no change, 19% improved and 24% progressed. While the studies included had small numbers of patients and had other methodological weaknesses, this meta-analysis raises the importance of careful monitoring of individuals with diabetic retinopathy after bariatric surgery. The possibility of retinopathy progression needs to be discussed with people who have established diabetic retinal disease. More careful, detailed studies from a larger number of patients are needed to examine the full impact of bariatric surgery on diabetic retinal disease.

While bariatric surgery is increasingly implemented, there is a need to also pay close attention to its complications and side effects (Taheri et al, 2009), particularly at a time where there is a greater drive to provide bariatric surgery in those with lower levels of obesity and diabetes (Reis et al, 2012). In non-responders to surgery, weight loss may be disappointing and may not achieve the desired outcome. Nutritional deficiencies and attendant complications may occur in many patients, particularly in a group that may not receive careful long-term follow-up. As obesity is increasingly occurring in younger age groups, a greater number of women who have had bariatric surgery need to be managed through pregnancy. Patients who may need abdominal contouring operations may not have access to this procedure with attendant physical and psychological complications. Furthermore, the psychosocial impact of bariatric surgery has not been systematically studied.

In people with diabetes, there is a need to assess complications, such as retinopathy, before surgery and carefully monitor them after surgery. Also, individualised recommendations regarding glycaemic control, blood pressure regulation and dyslipidaemia management should be provided. With an expansion in the use of bariatric surgery, it is likely that a greater number of complications and side effects will be identified. Thus, lifelong follow-up of people undergoing bariatric surgery procedures is of utmost importance. ■

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Obes Surg

Impact of bariatric surgery on diabetic retinopathy

Readability	✓✓✓✓
Applicability to practice	✓✓✓✓
WOW! Factor	✓✓✓

1 While bariatric surgery is an effective treatment that often results in a rapid and dramatic return of glycaemic control in people with T2D, there have been reports of unexpected progression of diabetic retinopathy (DR) in some of these people.

2 Therefore, these authors performed a systematic review of the literature to elucidate the effects of surgery on DR.

3 A total of four studies, all case series, that matched the authors' criteria were identified, with a total of 148 participants, of whom 68 had DR prior to surgery and 80 did not. Follow-up ranged from 6 months to 18 months postoperatively.

4 Among the participants with no prior DR, 7.5% developed the condition. Among those with prior DR, the condition progressed in 23.5% and resolved in 19.2%.

5 The risk of any DR progression was significantly higher among people who had the condition prior to surgery (odds ratio, 2.77).

6 Suggested mechanisms for this worsening of DR include a "point of no return", after which a return to euglycaemia no longer affects DR progression, or reduced nutrient delivery to the retina once euglycaemia is restored post-surgery.

7 The authors conclude that, as the likelihood of DR progression was similar to that of DR resolution, it remains impossible to definitively recommend whether people with DR pursue or avoid bariatric surgery; however, those without prior DR have a minimal risk.

Cheung D, Switzer NJ, Ehmann D et al (2014) The impact of bariatric surgery on diabetic retinopathy: a systematic review and meta-analysis. *Obes Surg* 17 Dec [Epub ahead of print]

Diabet Med

Ethnicity-specific obesity cut-off points for T2D risk

Readability	✓✓✓
Applicability to practice	✓✓✓
WOW! Factor	✓✓✓

1 This group followed 2500 people from European (n=1356), South Asian (n=842) and African–Caribbean (n=335) backgrounds for nearly two decades to identify any differences in obesity cut-off points (BMI and waist circumference [WC]), as predictors of T2D risk.

2 Participants underwent anthropometry, fasting and post-load glucose blood tests at baseline, and the incidence of T2D was identified from primary care records, participant recall or follow-up biochemistry.

3 Diabetes incidence rates (per 1000 person-years) at a median follow-up of 19 years were 7.4 and 7.2 in European men and women, respectively; 20.8 and 12.0 in South Asian men and women; and 16.5 and 17.5 in African–Caribbean men and women.

4 For diabetes incidence rates equivalent to those of European men and women with a BMI of 30 kg/m^2, the age- and sex-adjusted cut-off points were 25.2 kg/m^2 in South Asians and 27.2 kg/m^2 in African–Caribbeans.

5 Compared with a WC of 102 cm and 88 cm in European men and women, respectively, the equivalent WC cut-off points were 90.4 cm and 84.0 cm for South Asian men and women, and 90.6 cm and 81.2 cm for African–Caribbean men and women.

6 It is imperative to remember that British South Asians and African–Caribbeans have equivalent diabetes incidence rates at substantially lower obesity levels than the conventional European cut-off points.

Tillin T, Sattar N, Godsland IF et al (2015) Ethnicity-specific obesity cut-points in the development of type 2 diabetes. *Diabet Med* **32**: 226–34

Obes Surg

Long-term impact of bariatric surgery weight loss and T2D

Readability	✓✓✓
Applicability to practice	✓✓✓✓
WOW! Factor	✓✓✓

1 Several systematic reviews have shown that bariatric surgery is effective in treating obesity and T2D in the short term. With a number of studies with longer follow-up now being published, these authors performed a systematic review and meta-analysis of the long-term (>2 years) effects of surgery.

2 Overall, 26 studies with a total of 7883 participants with T2D were analysed. Of these, two studies were randomised controlled trials and 24 were cohort studies.

3 In the pooled data, bariatric surgery reduced mean BMI by 13.4 kg/m^2, fasting blood glucose levels by 59.7 mg/dL (3.3 mmol/L) and HbA_{1c} by 18 mmol/mol (1.8%).

4 Diabetes improved in 89.2% of participants, including 64.7% who achieved remission. Among those who achieved remission, diabetes recurred in 21.5%.

5 The rates of weight loss and diabetes remission were highest in people who underwent biliopancreatic diversion/duodenal switch, followed by gastric bypass, sleeve gastrectomy and adjustable gastric banding.

6 Overall, there were 182 deaths, including four perioperative deaths, over follow-up ranging from 2.6 years to 10 years.

7 The authors caution that many of the reviewed studies had methodological limitations and that large randomised controlled trials should be conducted; nonetheless, they conclude that bariatric surgery has positive effects on T2D that persist in the long term.

Yu J, Zhou X, Li L et al (2015) The long-term effects of bariatric surgery for type 2 diabetes: systematic review and meta-analysis of randomized and non-randomized evidence. *Obes Surg* **25**: 143–58.

Diabetes Care

Optimum BMI cut-offs for screening T2D in Asian Americans

Readability	✓✓✓
Applicability to practice	✓✓✓
WOW! Factor	✓✓✓

1 Current American Diabetes Association (ADA) guidelines recommend screening for T2D in all people over the age of 45 years, as well as in those with a BMI of ≥25 kg/m^2 plus one or more known risk factors for the condition.

2 People of Asian ethnicity have an increased risk of developing T2D at a lower BMI than white people; therefore, the current authors sought to evaluate whether a lower BMI was an appropriate cut-off point to recommend screening in this population.

3 Cross-sectional data were reviewed from 1663 Asian Americans aged ≥45 years and without a prior T2D diagnosis.

4 T2D was diagnosed according to ADA criteria, and sensitivity values were calculated for each 1 kg/m^2 increase in BMI between 22.0 and 27.5 kg/m^2.

5 In this cohort (mean age, 58 years; mean BMI, 25.4 kg/m^2), the prevalence of T2D was 16.9%.

6 At a BMI cut-off of 25 kg/m^2, both sensitivity (63.7%) and specificity (52.8%) were low, and limiting screening to people about this cut-off was predicted to miss the diagnosis in 36% of Asian Americans with T2D.

7 Reducing the cut-off to ≥23 kg/m^2 increased the sensitivity to 84.7%, missing only 15% of diagnoses, although it also reduced the specificity to 28.8%.

8 The authors conclude that a BMI of ≥23 kg/m^2 is grounds for T2D screening in Asian Americans.

Araneta MR, Kanaya AM, Hsu WC et al (2015) Optimum BMI cut points to screen Asian Americans for type 2 diabetes. *Diabetes Care* **38**: 814–20

"It is imperative to remember that British South Asians and African–Caribbeans have equivalent diabetes incidence rates at substantially lower obesity levels than the conventional European cut-off points."

References for commentary

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