

Case Study Responses

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Note: Readers are encouraged to visit www.insulinjournal.com to review the details of the Case Study published in the July 2009 issue of *Insulin*.

This is the case of a 45-year-old woman with insulin-requiring, uncontrolled, type 2 diabetes mellitus (DM); well-controlled hypothyroidism; and obesity (body mass index [BMI], 50 kg/m²). The patient is already taking exenatide (10 µg twice daily), which not only helps treat hyperglycemia but also has beneficial properties for weight loss in many patients. Any management decision made for this patient needs to take into account her combined array of medical problems and the medications she is taking.

Question 1. Given this patient's aversion to more injections, which of the following measures will have the greatest impact on her blood glucose levels?

Answer: c. Weight-loss surgery.

Options b and e consist of regimens that merely increase doses of medications already being taken, for example, mildly increasing insulin from an exogenous or endogenous source. Option d, initiation of a jogging program of 90 minutes daily, is a lifestyle change that is recommended in the treatment of type 2 DM; but a 90-minute routine is unrealistic for someone with a BMI of 50 kg/m². Weight-loss surgery, however, has the potential to drastically reduce the patient's requirement for medication and even cure her diabetes, sometimes within days of the surgery,¹ probably due to increases in glucagon-like peptide-1 levels.

Question 2. Which of the following measures is the most promising for this patient's goal of sustained weight loss?

Answer: c. Referral for evaluation for weight-loss surgery.

Adding a thiazolidinedione (which frequently causes weight gain) or switching the patient from glargine to levemir would not substantially reduce her weight. Phentermine, although efficacious in inducing weight loss, is not approved for long-term use. Increasing the patient's thyroxine levels may have a beneficial effect on her weight, but this approach would increase the potential for adverse cardiac and metabolic effects. Weight-loss surgery is the best option for this patient, and the procedure is indicated because she has a BMI >35 kg/m² and comorbid obesity. A recent review² found that patients undergoing weight-loss surgery lost, on average, ~55% of their excess body weight, depending on the type of surgery selected.

Question 3. Which of the following measures will have the greatest demonstrated benefit for the patient's morbidity and mortality?

Answer: b. Referral for evaluation for weight-loss surgery.

None of the other options have been found to decrease mortality rates in this population. Prescribing liothyronine for this patient would subject her to a regimen that has a rather narrow therapeutic window and may, if overdosed, have adverse consequences. Weight-loss surgery, however, has been associated with decreased mortality in large, population-based studies.^{3,4}

Question 4. If the patient were referred for weight-loss surgery, which of the following parameters would affect her outcomes?

Answer: e. All of the above.

Although weight-loss surgery appears to be beneficial in preventing long-term morbidity and mortality, it is associated with rare, short-term complications⁵ and there are barriers to success, such as eating disorders. Patients with poor perioperative glycemic control are at higher risk for surgical complications. Extremely obese patients and those who are unable to ambulate also appear to have

higher mortality rates. Finally, the incidence of perioperative complications increases when surgeons are inexperienced in this type of surgery but levels off to an asymptote as the surgeon performs more procedures. For this reason, patients should generally be referred to a practice that has been designated a “center of excellence,” such as the Mount Sinai Program for Surgical Weight Loss, which works closely with the Mount Sinai Weight Management Program.

In this particular case, the patient was indeed referred to a bariatric surgeon. She had to increase her levemir dose to 35 units twice a day to improve her blood glucose levels sufficiently before surgery. Although she was hyperglycemic and received one 40-unit dose of glargine and several bolus doses of aspart for correction within 24 hours of the surgery, she has remained euglycemic (off all hypoglycemic agents) ever since.

REFERENCES

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Readers are invited to consider a new Case Study (see page 58) and submit responses to www.InsulinJournal.com before the deadline.