

CASE REPORT

Dumping syndrome after bariatric surgery in a pregnant woman: A case report

Kae Ling Cheah, Lili Husniati Yaacob, Razlina Abdul Rahman

Cheah KL, Yaacob LH, Abdul Rahman R. Dumping syndrome after bariatric surgery in a pregnant woman: A case report. *Malays Fam Physician*. 2023;18:24. <https://doi.org/10.51866/cr.257>**Keywords:**Post-bariatric pregnancy,
Dumping syndrome,
Hypoglycaemia**Authors:****Lili Husniati Yaacob**

(Corresponding author)

MBBS (Adelaide), MMed (Family
Med)(USM)Department of Family Medicine,
School of Medical Sciences,
Universiti Sains Malaysia Health
Campus, Kubang Kerian, Kelantan,
Malaysia.

Email: husniati@usm.my

Kae Ling Cheah

MD (UMS)

Department of Family Medicine,
School of Medical Sciences,
Universiti Sains Malaysia Health
Campus, Kubang Kerian, Kelantan,
Malaysia.**Razlina Abdul Rahman**MBBS (Adelaide), MMed (Family
Med)(USM)Department of Family Medicine,
School of Medical Sciences,
Universiti Sains Malaysia Health
Campus, Kubang Kerian, Kelantan,
Malaysia.**Abstract**

Dumping syndrome after bariatric surgery is common. However, it is rarely seen during pregnancy because patients are usually advised to avoid pregnancy immediately after surgery. This case highlights the importance of avoidance of pregnancy after bariatric surgery. We report a case of unplanned pregnancy in a 35-year-old woman with a history of subfertility for 8 years who conceived spontaneously 3 months after gastric bypass surgery. This occurred because there was no contraception offered to her after the procedure. The pregnancy was complicated with recurrent episodes of hypoglycaemia secondary to dumping syndrome. Primary care providers need to be vigilant and have a high index of suspicion for dumping syndrome in pregnant obese women who have undergone bariatric surgery.

Introduction

Dumping syndrome is not a single disease entity but comprises symptoms considered as either early or late. Early dumping syndrome typically manifests as vasomotor and gastrointestinal symptoms within 1 hour after meals, while late dumping syndrome is characterised by post-prandial hypoglycaemia that occurs 1–3 hours after meals.¹ Dumping syndrome is one of the complications of bariatric surgery. Obesity is a global health issue, and the utilisation of bariatric surgery has increased significantly among obese women of reproductive age. Currently, there is no consensus on the ideal timing for conception after bariatric surgery, but a delay of at least 1 year is generally recommended.² In unplanned pregnancy, bariatric surgery is associated with dumping syndrome and nutrient deficiencies among mothers and small for gestational age among their offspring.³ Furthermore, the symptoms of dumping syndrome could be misconceived as early pregnancy symptoms.

Case presentation

The patient was a 35-year-old gravida 3, para 0+2 who conceived shortly after bariatric surgery and developed hypoglycaemic symptoms during pregnancy. She had primary subfertility for 8 years. Her medical histories included polycystic ovarian syndrome, hypertension, type 2 diabetes mellitus and obesity [body mass index (BMI) of 44.3 kg/m²]. Considering failure of intensive lifestyle modification, she

was referred for bariatric surgery. Laparoscopic Roux-en-Y gastric bypass surgery was successfully performed. Her weight dropped by 16 kg within 3 months with remission of hypertension and type 2 diabetes mellitus.

She was advised by the surgeon to delay pregnancy for at least 1 year, but unfortunately, no contraception was offered. She conceived 3 months after surgery and was booked at a health clinic at the 8th week of gestation, weighing 109 kg with a BMI of 38.6 kg/m². Oral glucose tolerance test (OGTT) was ordered owing to her high risk of type 2 diabetes mellitus without knowing her history of type 2 diabetes mellitus. She suddenly experienced giddiness, sweating, nausea and palpitations about 2 hours after ingestion of the 75 g oral glucose load. There was neither flushing nor abdominal symptoms. She did not inform any medical personnel, as the symptoms were perceived as early pregnancy symptoms. OGTT revealed a fasting blood glucose level of 4.9 mmol/L and a 2-hour post-prandial blood glucose level of 3.2 mmol/L. Late dumping syndrome was diagnosed on the basis of her history of bariatric surgery. At the 24th week of gestation, she experienced another episode of sweating, nausea, tremors and palpitations 1 hour after drinking a cup of tea. Further history-taking revealed a recent non-adherence to the post-bariatric surgery diet. Her electrocardiogram, full blood count test and thyroid function test findings were normal.

Open Access: This is an Open Access article licensed under the Creative Commons Attribution (CC BY 4.0) license, which permits others to distribute, remix, adapt and build upon this work, for commercial use, provided the original author(s) and source are properly cited. See: <http://creativecommons.org/licenses/by/4.0/>

The patient was closely followed up in a joint clinic by a team comprising family medicine specialists, obstetricians, foetomaternal physicians, bariatric surgeons and dietitians. She had a few hypoglycaemic attacks at home, which resolved with meals, but her blood glucose level was not measured during the event. Her blood pressure and capillary blood glucose level were otherwise normal at the health clinic. Foetal growth restriction was noted starting at the 30th week of gestation with brain sparing. Considering her previous pregnancy and high resistance on umbilical artery Doppler, elective caesarean section was performed at the 34th week of gestation. A baby girl weighing 1.99 kg was born with a good Apgar score. However, the newborn required 18 hours of assisted ventilation due to respiratory distress syndrome but subsequently remained well.

Discussion

This report presents the case of an obese woman who had infertility for 8 years but conceived shortly following bariatric surgery. Bariatric surgery remains the most effective intervention for obesity. Surgery should be considered in adults with a BMI of ≥ 40.0 kg/m² or those with a BMI of 35.0–39.9 kg/m² with comorbidities such as metabolic disorders, severe joint diseases and obesity-related psychological problems.⁴ Pregnancy after bariatric surgery should be carefully planned. This is because rapid weight loss can occur in the first 12 months after the procedure, and the body's nutritional state can take months to stabilise.^{2,5} Generally, it is suggested to delay pregnancy for at least 1 year not only to allow women to attain the full therapeutic benefit of bariatric surgery but also to optimise the nutritional status before conception.^{3,6}

Current guidelines have recommended contraception prescription after surgery, but there is inadequate emphasis on the importance of counselling before the procedure. If the patient agrees, it may be reasonable to start contraception prior to surgery and continue after surgery. Currently, there is no consensus on the best contraception method. The method should be based on the age, comorbidity and preference of the mother. Notably, the efficacy of oral contraception may reduce after bariatric surgery owing to altered absorption.⁵ If pregnancy occurs within 1 year after bariatric surgery, primary care providers should be

aware of the possible complications, including dumping syndrome. Patients develop either early or late dumping syndrome. Early dumping syndrome develops due to the rapid transit of hyperosmolar chyme directly into the small intestine, which causes a fluid shift from the extracellular spaces to the intestinal lumen and triggers the release of gastrointestinal hormones. This event leads to vasomotor and gastrointestinal symptoms within 1 hour after meals, including palpitation, dizziness, cold sweats, abdominal pain and diarrhoea.^{1,7} Late dumping syndrome is caused by an exaggerated insulin response following rapid glucose transit into the small intestine. This results in reactive hypoglycaemia characterised by post-prandial hypoglycaemia occurring 1–3 hours after meals.¹

Various tests have been proposed for confirming the diagnosis of dumping syndrome in non-pregnant adults, but OGTT using 50 or 75 g glucose solutions is preferred.⁸ An increase in the pulse rate of >10 beats/min or haematocrit count of $>3\%$ at 30 min after glucose load ingestion is diagnostic for early dumping syndrome, while hypoglycaemia at 60–180 min after glucose load ingestion is diagnostic for late dumping syndrome.^{1,8} Most studies consider a plasma glucose level of <3.3 mmol/L (60 mg/dL) after OGTT a reasonable threshold for defining hypoglycaemia, while some recommend a stricter threshold of <2.8 mmol/L (50 mg/dL).⁸ However, hypoglycaemia after OGTT, the main finding that physicians look for to diagnose late dumping syndrome, is also an unwanted major adverse effect.⁹ During pregnancy, even a single episode of hypoglycaemia with a plasma glucose level of ≤ 3.9 mmol/L (70 mg/dL) is associated with lower birth weight, small head circumference and short body length in newborns.¹⁰ Hence, it is inappropriate to order OGTT to diagnose dumping syndrome in pregnant women.⁵ However, recommendation on the diagnostic test for dumping syndrome in pregnant women is lacking.

Herein, OGTT was intended to screen for type 2 diabetes mellitus based on the patient's advanced maternal age and high BMI, not knowing that she had a history of type 2 diabetes mellitus in remission. This led to the unwanted first episode of post-prandial hypoglycaemia and indirectly confirmed the diagnosis of late dumping syndrome. OGTT

has been considered the gold standard method for screening gestational diabetes mellitus (GDM) and pre-existing type 2 diabetes mellitus.¹¹ However, OGTT is frequently not tolerated by women who have undergone gastric bypass surgery. Thus, guidelines have suggested the measurement of the glycated haemoglobin level in the first trimester to screen for pre-existing type 2 diabetes mellitus and the use of capillary blood glucose monitoring before and after meals over 1 week or continuous glucose monitoring for 2–3 days at around the 24–28th week of gestation to screen for GDM.^{2,5,12} Throughout pregnancy, daily self-monitoring of fasting and post-prandial blood glucose levels with additional checks when symptoms occur is preferred for monitoring glycaemic control in pregnant women with type 2 diabetes mellitus.¹³

The risk of small for gestational age among fetuses has been shown to be higher after bariatric surgery in mothers, with an additional risk in patients who have undergone procedures that induce malabsorption such as Roux-en-Y gastric bypass surgery.¹⁴ Consensus suggests that it may be reasonable to perform monthly ultrasound starting from the first trimester among pregnant women who have undergone bariatric surgery, especially those with additional risks such as smokers or teenagers.¹⁵ Herein, vigilant foetal growth scanning was performed every 4–6 weeks starting from the second trimester considering the short interval between conception after bariatric surgery and occurrence of dumping

syndrome. No adverse foetal outcome was noted, although the baby was born preterm at the 34th week of gestation.

Conclusion

It is important to assist women with plans of pregnancy after bariatric surgery with the use of contraception. However, if unplanned pregnancy occurs, it is crucial for primary care providers to recognise and manage complications after bariatric surgery, including dumping syndrome. Thorough history-taking should be performed for all pregnant obese women at booking, and OGTT should be avoided in women who have undergone bariatric surgery. Random capillary blood glucose or continuous glucose monitoring is preferred for screening GDM. For monitoring of glycaemic control, daily fasting and post-prandial self-blood glucose monitoring throughout pregnancy is recommended. Serial foetal growth assessment throughout pregnancy may be useful to detect foetal growth restriction earlier, especially in those at risk. A multidisciplinary approach is essential to achieve good pregnancy outcomes.

Acknowledgements

Nil.

Conflicts of interest

All authors declare no potential conflicts of interest relevant to this article.

Patient's consent for the content for publication

Written consent was obtained.

What is new in this case report compared to the previous literature?

- Primary care providers should perform adequate surgical history-taking, including the history of bariatric surgery in any pregnant obese women.
- OGTT should be replaced by glycated haemoglobin level assessment and capillary blood glucose monitoring during the first trimester to exclude GDM in pregnant obese women who have undergone bariatric surgery.

What is the implication to patients?

- The importance of effective contraception after bariatric surgery should be emphasised among women of child-bearing age.
- Pregnant women who have undergone bariatric surgery should be educated on all possible complications, including dumping syndrome, which could be mistaken as an early pregnancy manifestation.

References

1. van Beek AP, Emous M, Laville M et al. Dumping syndrome after esophageal, gastric or bariatric surgery: pathophysiology, diagnosis, and management. *Obes Rev.* 2017;18(1):68–85. doi: 10.1111/obr.12467
2. Narayanan RP, Syed AA. Pregnancy following bariatric surgery-medical complications and management. *Obes Surg.* 2016;26(10):2523–2529. doi: 10.1007/s11695-016-2294-x
3. Falcone V, Stopp T, Feichtinger M et al. Pregnancy after bariatric surgery: a narrative literature review and discussion of impact on pregnancy management and outcome. *BMC Pregnancy and Childbirth.* 2018;18(1):507. doi: 10.1186/s12884-018-2124-3
4. Yumuk V, Tsigos C, Fried M et al. European Guidelines for obesity management in adults. *Obes Facts.* 2015;8(6):402–424. doi: 10.1159/000442721
5. Cheah S, Gao Y, Mo S et al. Fertility, pregnancy and post partum management after bariatric surgery: a narrative review. *Med J Aust.* 2022;216(2):96–102. doi: 10.5694/mja2.51373
6. Busetto L, Dicker D, Azran C et al. Obesity Management Task Force of the European Association for the Study of Obesity released "Practical Recommendations for the Post-Bariatric Surgery Medical Management". *Obes Surg.* 2018;28(7):2117–2121. doi: 10.1007/s11695-018-3283-z
7. Berg P, McCallum R. Dumping syndrome: a review of the current concepts of pathophysiology, diagnosis, and treatment. *Dig Dis Sci.* 2016;61(1):11–18. doi: 10.1007/s10620-015-3839-x
8. Scarpellini E, Arts J, Karamanolis G et al. International consensus on the diagnosis and management of dumping syndrome. *Nat Rev Endocrinol.* 2020;16(8):448–466. doi: 10.1038/s41574-020-0357-5
9. Andrade HF, Pedrosa W, Diniz Mde F et al. Adverse effects during the oral glucose tolerance test in post-bariatric surgery patients. *Arch Endocrinol Metab.* 2016;60(4):307–313. doi: 10.1590/2359-3997000000149
10. Bayraktar B, Balıkoğlu M, Kanmaz AG. Pregnancy outcomes of women with hypoglycemia in the oral glucose tolerance test. *J Gynecol Obstet Hum Reprod.* 2020;49(4):101703. doi: 10.1016/j.jogoh.2020.101703
11. Nurain M, Marmuji L, Mastura I et al. Management of diabetes in pregnancy in primary care. *Malays Fam Physician.* 2019;14(3):55–59.
12. Adam S, Ammori B, Soran H et al. Pregnancy after bariatric surgery: screening for gestational diabetes. *BMJ.* 2017;356:j533. doi: 10.1136/bmj.j533
13. Clinical Practice Guidelines: management of diabetes in pregnancy. Malaysia: Malaysia Health Technology Assessment Section (MaHTAS); 2017.
14. Galazis N, Docheva N, Simillis C et al. Maternal and neonatal outcomes in women undergoing bariatric surgery: a systematic review and meta-analysis. *Eur J Obstet Gynecol Reprod Biol.* 2014;181:45–53. doi: 10.1016/j.ejogrb.2014.07.015
15. Shawe J, Ceulemans D, Akhter Z et al. Pregnancy after bariatric surgery: consensus recommendations for periconception, antenatal and postnatal care. *Obes Rev.* 2019;20(11):1507–1522. doi: 10.1111/obr.12927