



## Case report

## Successful pregnancy in morbidly obese lady with polycystic ovary syndrome after bariatric surgery: A case report

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## ARTICLE INFO

## Keywords:

Morbid obesity  
Infertility  
Bariatric surgery  
Polycystic ovarian syndrome

## ABSTRACT

**Introduction:** Obesity has been proven to have adverse effects on fertility and is one of the predisposing factors for delay in pregnancy even with the use of assisted reproductive technique. There are many pathways in which obesity can affect fertility such as anovulation, poor implantation and low-quality oocyte.

**Case presentation:** We report a case of a 40-year-old lady with primary infertility for six years with underlying polycystic ovary syndrome (PCOS) and BMI 45.7 whom was successfully conceived twice following bariatric surgery procedure in which reduction of 70% of her BMI prior to bariatric surgery lead to her spontaneous conception without fertility intervention and successful live birth.

**Clinical discussion:** Obese PCOS needs multidisciplinary approaches which include weight loss program such as dietary advice, exercise intervention as part of preliminary treatment prior to ovulation induction and counselling.

**Conclusion:** Bariatric surgery has been a mainstay treatment in patients with morbid obesity and those with BMI more than 35 associated with obesity related problems such as joint pain, hypertension or diabetes mellitus. Bariatric surgery such as laparoscopic sleeve gastrectomy should be considered more often in contrast to lifestyle modification for morbidly obese lady with PCOS and infertility prior to the use of standard ovulation induction regime for treating infertility.

### 1. Introduction

PCOS affects 3–10% of women of reproductive age [1]. Insulin resistance appears to be important in the pathogenesis of PCOS and subsequent metabolic syndrome which includes central obesity, hypertension, insulin resistance and atherogenic dyslipidaemia. Various factors influence ovarian function and fertility, the most important being obesity. Obesity perpetuates PCOS and has a major impact on the efficacy of the management of all aspects of the syndrome, in particular infertility. It influences not only the chance of conception but also the response to fertility treatment and increases the risk of miscarriage, congenital anomalies and pregnancy complications [2]. Obesity most likely results from the combined effect of genetic predisposition, poor diet and a sedentary lifestyle, thus compounding pre-existing metabolic

derangements. Hyperandrogenaemia increases the predilection for central adiposity and worsens dyslipidaemia [3]. The common association of PCOS and obesity has a synergistic deleterious impact on glucose homeostasis and can worsen both hyperandrogenism and anovulation [4]. We report a 40-year-old lady with primary infertility for six years with underlying PCOS and BMI 45.7 who was successfully conceived twice following bariatric surgery procedure and we discuss her treatment approaches. This case report has been reported in line with the SCARE 2020 criteria. [5].

### 2. Case presentation

A 40-year-old woman married for the past six years came for evaluation of infertility with a history of oligomenorrhea. She did not smoke,

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<https://doi.org/10.1016/j.ijscr.2021.106235>

Received 18 June 2021; Received in revised form 20 July 2021; Accepted 21 July 2021

Available online 24 July 2021

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consume alcohol or take any recreational drug. She has no any history of allergies. She did not take any medication or having any known genetic problem.

Clinically, she was morbidly obese with BMI 45.7 (Fig. 1) and her blood pressure was normal without evidence of clinical hyperandrogenemia. Transvagina ultrasound done by obstetrician showed bilateral polycystic ovaries and normal sized anteverted uterus. Between years of 2015–2017 her infertility problem was managed with ovulation induction and at the same time she was advised on weight reduction and exercise on her own effort but there was no improvement in her ovulatory status. She had undergone twice intrauterine insemination using clomiphene citrate and gonadotrophin injection but unfortunately no satisfactory follicle development could be seen on scan.

She was referred to bariatric surgery unit and a laparoscopic sleeve gastrectomy was performed. At six-month post-surgery her BMI became 35 (Fig. 2) and she complained of nausea and vomiting with delayed menses. A transvaginal scan was performed by obstetrician and it shown that she had missed abortion at 9 week. She underwent a suction curettage procedure and it was uneventful. Following the procedure, she was advised not to get pregnant again until at least 18 months to 24 months after the procedure.

During that time, her menstrual cycle became normal again and she practiced barrier contraception and also taking folic acid 5 mg OD as preparation to get pregnant. At 20 month post-surgery she spontaneously conceived again without any fertility intervention and subsequently was followed up in our hospital. Ultrasound showed intrauterine pregnancy (Figs. 3, 4). Throughout her antenatal care she did not experience any complication. She delivered at 39 week via elective lower segment caesarean section (LSCS) with a birth weight of 3.9 kg. There was no major complication during her LSCS and her newborn appear to be normal.



Fig. 1. The above picture showed the patient prior to bariatric surgery with BMI 45.7.

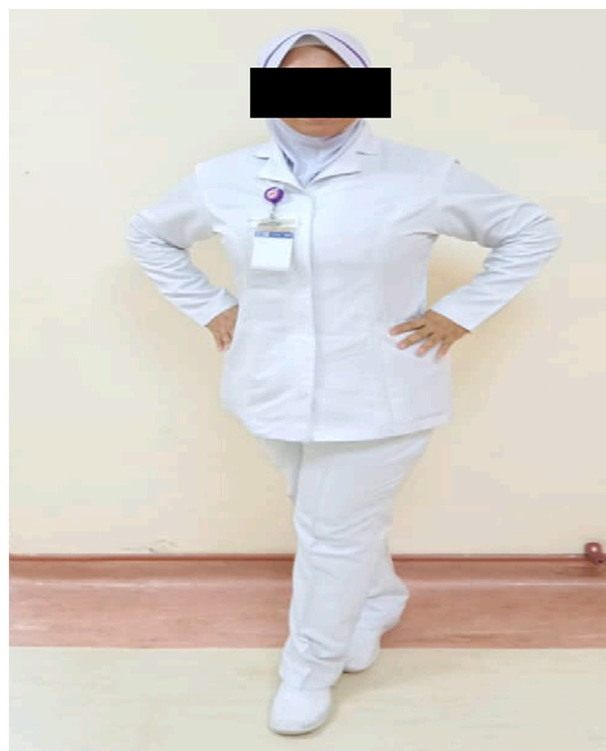


Fig. 2. After bariatric surgery as her BMI became 35 kg/m<sup>2</sup>.



Fig. 3. Ultrasonography showed the viable intrauterine pregnancy.

### 3. Discussion

In PCOS, a 10% reduction of body weight may equate with a 30% reduction in visceral fat. The British Fertility Society guidance suggests a weight reduction to a BMI of less than 30 kg/m<sup>2</sup> is preferable. Even a moderate weight loss of 5–10% of body weight can be sufficient to restore fertility and improve metabolic parameters [6].

Bariatric surgery has been increasingly performed via minimally invasive method for the last decade. Because of the global epidemic of obesity it certainly has a role in the management of obese women with PCOS. Although the exact mechanism on how bariatric surgery improves PCOS is unknown, meta-analysis by Skubleny et al. in the impact of bariatric surgery on PCOS showed significant improvement in menstrual irregularities by 40% and reduction in hirsutism by 30% [7].

For a patient with BMI  $\geq 35$  kg/m<sup>2</sup>, it is indicated for bariatric surgery, even in those with profound metabolic disturbance [8]. This patient had undergone Laparoscopic sleeve gastrectomy instead of another

Name	[REDACTED]			Exam. Date	10-07-2019
ID	[REDACTED]			Gender	Female
Institution	HOSPITAL WANITA DA...				

(a) Avg., (m) Min, (M) Max, (L) Last

[ OB ]

LMP	13-03-2019	EDD(LMP)	18-12-2019
GA(LMP)	17w0d	AUA	17w0d
EDD(AUA)	18-12-2019	EFW	175g
EFW Author	Hadlock4(BPD,HC,AC,...	GA(EFW)	16w6d

Fetal Biometry	Last	1	2	3	GA
BPD	3.63	3.63			cm 17w1d±8d Hadlock
HC	13.90	13.90			cm 17w2d±8d Hadlock
AC	11.03	11.03			cm 16w6d±... Hadlock
FL	2.30	2.30			cm 16w6d±... Hadlock

	Last	1	2	3		Last	1	2	3	
Q1	4.68	4.68			cm AFI	4.68	4.68			cm

Ratio	Value	Normal Range
CONTRAST :	0	BRIGHT : +11
GAMMA :	2	SHARPNESS : 2

Fig. 4. The ultrasound report of fetal measurements at 17 week gestation.

method as it was recommended in view of her BMI is 45 and her non-diabetic status. Many articles have discussed that there will be significant improvement of quality of life due to reduction of BMI. This includes obstructive sleep apnea, joint pain, hypertension, gastro-oesophageal reflux disease symptoms [9]. It was reported the mean Expected Weight Loss (EWL) for patient who undergone sleeve gastrectomy was 40.7% and 52.8% at 3 and 6 months respectively. Patients with lower BMI (<50 kg/m<sup>2</sup>) had better %EWL at 3 months (40% vs 36%), but at 6 months the super-obese patients (BMI > 50 kg/m<sup>2</sup>) achieved a better %EWL (60%vs 50%). Mean BMI decreased to 34 and 32 kg/m<sup>2</sup> at 3 and 6 months respectively [10].

In addition to the well-documented medical and quality-of-life benefits of bariatric surgery, there is also clear improvement in patients sexual function, both physical and psychosexual. In females, the FSFI index rose significantly from 24 to 30 (p = 0.006), indicating increased sexual performance and satisfaction [11]. It was also observed that sexual desire, sexual arousal, lubrication, orgasm and sexual satisfaction increased after bariatric surgery [12].

**4. Conclusion**

Managing obese PCOS patient with infertility needs multidisciplinary approach. This includes weight loss program such as dietary advice, exercise intervention. Bariatric surgery should be considered in patient with morbid obesity (BMI more than 35 kg/m<sup>2</sup>) with PCOS and infertility. It has clear advantage to alleviate many problems such as joint pain, hypertension or diabetes mellitus which cause non-compliance to dietary and exercise intervention. It also improves patient's sexual function, both physical and psychosexual. Bariatric surgery such as laparoscopic sleeve gastrectomy should be considered more often in contrast to just lifestyle modification alone prior to the use of standard ovulation induction regime in treating morbidly obese patient with PCOS and infertility.

**Ethical approval**

Ethical approval obtained from local institution.

**Sources of funding**

None.

**CRedit authorship contribution statement**

Dg Marshitah Pg Baharuddin initiated the case report. Nik Amin Sahid Nik Lah, Nang Kham Oo Leik and Dg Marshitah Pg Baharuddin did the writing of the manuscript. Nik Amin Sahid supervised, reviewed and edited the manuscript. Firdaus Hayati, Edwin See, Mohd Nazri Mohd Daud Siti Zubaidah Sharif involved in the write up and provide the clinical data.

**Guarantor**

Dg Marshitah Pg Baharuddin

**Research registration (for case reports detailing a new surgical technique or new equipment/technology)**

N/a

**Consent**

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

**Provenance and peer review**

Not commissioned, externally peer-reviewed

**Declaration of competing interest**

The authors declare that there are no conflicts of interest.

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