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LETTER TO THE EDITOR

Fertility outcomes following bariatric surgery

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Abstract

Obesity impacts human health in more than one way. The influence of obesity on human reproduction and fertility has been extensively examined. Bariatric surgery (BS) has been used as an effective tool to achieve long-term weight loss in both sexes. BS improves hormonal profiling, increasing the odds of spontaneous pregnancy and success rates following assisted reproductive techniques in infertile females. For obese males, BS does improve sexual function and hormonal profile; however, conflicting reports discuss reduced sperm parameters following BS. Although the benefits of BS in the fertility field are acknowledged, many areas call for further research, like choosing the safest surgical techniques, determining the optimal timing to get pregnant, and resolving the uncertainty of sperm parameters.

Key Words: Bariatric surgery; Male fertility; Female fertility; Assisted reproduction technique; Seminal fluid

Core Tip: One of the main strengths of bariatric surgery (BS) is achieving long-term weight reduction; many of the medical and dietary interventions have transient and sometimes ineffective results. Infertility is linked with obesity in many ways, including reducing the quality of produced gametes, disturbing the hormonal profile, and increasing oxidative stress, which in turn inversely affects many steps of human reproduction. BS can improve the fertility odds for both genders with assisted reproductive technique; additionally, it improves the odds of natural pregnancy.

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TO THE EDITOR

With interest, we read Kheirvari's study published in *World J Exp Med* 2022 about how obesity implicates organ transplants and the predictors of negative outcomes after bariatric surgery (BS)[1]. BS is an underused tool, serving about 1% to 2% of the populace. A misunderstanding about BS sometimes overshadows efforts to educate the general public on its advantages[1,2].

While the obesity epidemic endangers lives by escalating cardiovascular, metabolic, and malignant diseases, one of obesity's important associations is infertility[3].

Obesity is linked to gonadal dysfunction, resulting in female and male infertility at rates of 36% and 64%, respectively. Hyperandrogenism manifests in women as polycystic ovarian syndrome (PCOS). In contrast, hypoandrogenemia promotes male obesity-related secondary hypogonadism[4-6].

The capacity of BS to accomplish significant and long-lasting weight loss and the development of safer techniques are important factors that contribute to the fast growth of BS in fertility, which was not addressed in the study by Kheirvari *et al*[1].

A growing body of evidence confirms that reducing weight through BS may correct menstrual irregularity and ovulatory dysfunction, and increase spontaneous conception, especially among females with PCOS. Infertile obese women could conceive in 69% of the cases within two and a half years of follow-up[7-9]. The body mass index and the weight lost are independent predictors of pregnancy odds. Additionally, bariatric surgery increases live birth rates through assisted reproductive techniques[10].

Poor quality of life (QOL) hinders pregnancy odds and inversely impacts pregnancy outcomes. Furthermore, QOL is essential for evaluating nursing standards among infertile couples[11]. Obese couples have higher anxiety and depression caused by patients' external appearance added to the obesity-related pathology[11,12]. BS can improve patients' perspectives and help to restore the deranged hormonal profile[7-9]. Therefore, as part of their multidisciplinary approach, including the QOL score is recommended for follow-up of BS cases[13,14].

Although the current evidence supports the advantage of BS in female fertility, certain concerns have been raised about its safety. To begin with, the ideal surgical procedure for improving reproductive outcomes at a young age has yet to be established because BS involves numerous techniques. Furthermore, there is no strong consensus on the optimal time to conceive following BS. The problem of the decreased ovarian reservoir in older women continues to be debated[9,15].

Some but not all obese men have fertility issues; there are conflicting reports regarding the unfavorable impact on sperm parameters (SP), while others suffer erectile dysfunction. A state of hypogonadism was reported in obese men due to reduced sex hormone-binding globulin triggered by hyperinsulinemia[16]. BS in obese men may improve sexual activity and restore the hormonal profile, yet the effect on SP is conflicting, which calls for longitudinal study in that area[17]. Some reports declare reduced SP and assisted reproductive technique success rates following BS owing to nutritional deficiency after the surgery. However, others reported no change in SF up to one year following BS[18]. The concerns of worsening SF have resulted in raised sperm cryopreservation needs for selected cases [19].

In conclusion, BS appears to be an effective long-term weight-loss solution that can improve human well-being and QOL. The role of BS in infertility has been established; however, safety concerns, the surgical technique used, and the long-term effect on neonates and childhood are yet to be established. As for males, the inconsistency regarding regression in semen parameters necessitates a longitudinal study type to be resolved.

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FOOTNOTES

Author contributions: Nori W and Akram W designed the research and analyzed the data; Nori W wrote the letter; Akram W and Ali EA revised the letter; all authors have read and agreed on the final version of the manuscript.

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