



Case report

Bariatric surgery after failed conservative management in a morbidly obese patient with endometrial cancer

Lauren Montemorano^a, Stacy A. Smrz^a, Anahita D. Jalilvand^b, Sabrena F. Noria^b, Ritu Salani^{a,*}

^a Department of Obstetrics and Gynecology, The Ohio State University College of Medicine, Columbus, OH 43210, United States

^b Department of Surgery, Division of General and Gastrointestinal Surgery, Department of Surgery, The Ohio State University Wexner Medical Center, Columbus, OH 43210, United States

ARTICLE INFO

Keywords:

Obesity
Endometrial cancer
Bariatric surgery

1. Introduction

Endometrial cancer is the most common gynecologic malignancy in the United States representing 7% of all new cancer diagnoses in women annually (Siegel et al., 2018). The incidence of endometrial cancer has steadily increased over the last several decades with an estimated 63,230 new cases and 11,350 deaths from the disease projected for 2018 (Siegel et al., 2018). The rise in incidence correlates directly with the prevalence of obesity, which is a known risk factor for endometrial cancer (Fader et al., 2009).

Most endometrial cancers are well differentiated, endometrioid histology and diagnosed at an early stage with a favorable prognosis with surgery as the cornerstone of treatment (Siegel et al., 2018; National Comprehensive Cancer Network, 2018). However, there exist two clinical scenarios where an alternative treatment strategy may be considered. First, patients with a strong desire for fertility preservation may be candidates for hormonal therapies (Gunderson et al., 2012). Secondly, patients with significant medical co-morbidities, such as obesity or a poor performance status, may not be candidates for surgery. In this scenario hormonal therapy or radiation therapy may be administered (Gressel et al., 2015; Fishman et al., 1996). However, there are limitations to these alternatives that may impact their feasibility or efficacy. For example, hormonal therapy is effective but associated with progression despite compliance and a recurrence risk with the cessation of therapy (Gunderson et al., 2012; Pal et al., 2018). Additionally, there may be contraindications to hormonal manipulation such as venous thromboembolism or breast cancer (National Comprehensive Cancer Network, 2018). Radiation therapy is limited to

localized disease, is not compatible with fertility preservation, and may be difficult to deliver in obese patients (Fishman et al., 1996). In these settings, novel approaches must be considered. This present case is the first to describe the role of bariatric surgery as a means to improve the candidacy for definitive treatment of endometrial cancer in an obese patient who was initially deemed unsuitable for surgery.

2. Case report

A 30-year-old gravida 0 presented for gynecologic care after reporting a several month history of irregular heavy menstrual bleeding. She had a medical history notable for anxiety, depression, and morbid obesity with a BMI of 95 kg/m². She was further evaluated with a dilation and curettage and pathology demonstrated a grade 1 endometrioid endometrial cancer. After additional consultation with gynecologic oncology and anesthesia services, she was not cleared for major abdominal surgery secondary to her weight. Due to her body habitus, though ultrasound imaging was performed, we were unable to assess for myometrial invasion with magnetic resonance imaging (MRI) and did not feel brachytherapy alone was adequate and her weight exceeded the radiation table limit. Therefore, medical management with progestin therapy was discussed and weight loss was encouraged. She declined placement of an intrauterine device and elected to proceed with oral progestin therapy and she was started on megestrol acetate 80 mg twice daily.

Though six month follow up was advised, she underwent repeat endometrial sampling approximately nine months after initiating therapy due to scheduling issues. Pathology revealed persistence of her

* Corresponding author at: Division of Gynecologic Oncology, The Ohio State University Wexner Medical Center, 320 W. 10th Avenue, M210 Starling Loving, Columbus, OH 43210, United States.

E-mail address: ritu.salani@osumc.edu (R. Salani).

<https://doi.org/10.1016/j.gore.2019.01.002>

Received 29 November 2018; Received in revised form 4 January 2019; Accepted 5 January 2019

Available online 16 January 2019

2352-5789/ © 2019 The Authors. Published by Elsevier Inc. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

endometrial cancer. At this time, her weight was unchanged and options were limited. After extensive discussion and given her lack of response to hormonal therapy, a referral for bariatric surgery was recommended as a potential bridge to definitive surgical management for her endometrial cancer. She was initially resistant to bariatric surgery and pursued lifestyle modification. However, after experiencing weight fluctuations, she agreed and was finally seen in the comprehensive weight management and bariatric clinic 17 months following her initial endometrial cancer diagnosis. At this time, it was noted that her BMI was 84.2 kg/m². She underwent routine preoperative work-up to determine her medical fitness for surgery and was enrolled in nutritional and lifestyle classes to optimize her post-surgical weight loss. Given the patient's unique circumstances, a letter of medical necessity was written expedite the insurance approval, and a pre-operative process that would normally take approximately six months was shortened, allowing for bariatric surgery two months after initial consultation in the clinic. The patient underwent a laparoscopic sleeve gastrectomy over a 40F bougie. She recovered well from her procedure. She was maintained on a liquid diet immediately following surgery and advanced in stepwise fashion at 4 and 8 weeks post-operatively. Each follow-up visit was mediated by an interdisciplinary bariatric team that assessed for post-operative complications, nutritional compliance, and weight loss outcomes. Eight months following bariatric surgery, the patient's BMI decreased from 84.2 kg/m² to 67.5 kg/m², representing a 28.2% decrease of her pre-bariatric surgery BMI. She was now felt to be a suitable candidate for her endometrial cancer.

Twenty-six months after her initial diagnosis, she underwent robotic-assisted hysterectomy and bilateral salpingo-oophorectomy. Her final pathology was consistent with T1a grade 1 endometrioid endometrial cancer with low risk features (no lymphovascular space invasion and 13% myometrial invasion) which did not require any adjuvant therapy. Her BMI is currently 61 kg/m² and she is 41 months out from her cancer diagnosis without evidence of disease.

3. Discussion

Obesity is a well-established risk factor for endometrial cancer and is thought to be responsible for as many as 40% of all new cases of disease in the United States (Gressel et al., 2015). The prevalence of overweight and obese adults has been steadily increasing over the past several decades. It is estimated that as many as 41.2% of all women age 20 years and over are obese; those aged 20–34 years contributing most significantly to the overall increasing trend that has been observed in the United States (Gressel et al., 2015). Though younger patients with endometrial cancer tend to present at an earlier stage and have a more favorable prognosis, risk factors such as extreme obesity may impact treatment strategies.

There are alternatives to treatment for patients with endometrial cancer that are poor surgical candidates. Progestin therapy is an option that is frequently used for treatment of endometrial hyperplasia or cancer in those desiring fertility preservation (Pal et al., 2018). Hormone therapy can also be used in patients that are poor surgical candidates with reasonable response rates quoted as high as 67%. However, this method is associated with recurrence rates of 50% with cessation of therapy (Gunderson et al., 2012; Pal et al., 2018; Baker et al., 2017). Radiation therapy is another option for treating women that are poor surgical candidates with localized disease and outcomes are comparable to that having undergone surgery (Fishman et al., 1996). In this case, radiation therapy was not an option as the equipment and table could not accommodate the patient's weight.

Her repeat endometrial sampling failed to demonstrate a response despite reported compliance with hormonal therapy. Bariatric surgery, specifically laparoscopic sleeve gastrectomy, was recommended as it has been associated with 67.3% loss of excess body weight within 1 year (Emile et al., 2017). Refinements in surgical technique and improved perioperative outcomes have contributed to its emerging role as

a bridge to procedures in which obesity may be technically challenging or is a relative contraindication (Monpellier et al., 2018; Lynch & Belgaumkar, 2012). Interestingly, the benefit of bariatric surgery may be best prior to development of malignancy. This is demonstrated by the sustained weight loss associated with bariatric surgery which has been shown to reduce the risk specific malignancies, including endometrial cancer, by nearly 50% (Ward et al., 2014). The cancer protective effects of bariatric surgery are thought not only to be secondary to hormonal changes, but there may also be other beneficial metabolic and molecular alterations that occur after weight loss (Modesitt et al., 2015). Therefore, bariatric surgery may provide risk reduction from particular cancers, improve outcomes from surgical morbidity, and serve as a bridge to provide therapy that was otherwise unavailable (Fader et al., 2009; Secord et al., 2016).

Due to the prevalence, studies have assessed the impact of obesity and bariatric surgery in endometrial cancer. MacKintosh and colleagues recently published a prospective study evaluating molecular changes (pAKT-PTEN) via immunohistochemistry in endometrial samples from asymptomatic, obese women prior to bariatric surgery (MacKintosh et al., 2018). In their study, 10 of 72 (14%) women had endometrial cancer or endometrial atypical hyperplasia at the time of the biopsy. Though some patients proceeded with hysterectomy or medical management, repeat endometrial sampling revealed improvement in molecular changes and resolution of pathology in several cases of endometrial hyperplasia without intervention (MacKintosh et al., 2018). Additional studies may help elucidate the impact of weight loss and bariatric surgery on endometrial diseases. In the interim, as patients with extreme obesity may face limited options for the management of specific conditions, such as endometrial cancer; bariatric surgery may play a role in optimizing candidacy for surgery without detrimental impact on oncologic outcomes in select patients.

4. Conclusion

The causal link between endometrial cancer and obesity is clear and both are increasing in prevalence. Surgical weight loss strategies are feasible and effective and consideration of bariatric surgery should be done in women who are unsuitable for primary surgical management. While this is the first reported case to our knowledge to demonstrate that delay of definitive treatment to allow for surgery-induced weight loss did not affect oncologic outcomes, further research is warranted.

Consent

Written informed consent was obtained from the patient for publication of this case report.

Conflicts of interest

The authors declare there are no conflicts of interest associated with this paper and there is no financial support.

Author contribution

Each author contributed to the review of the case, writing and preparation of the article, and approved the final submission.

References

- Baker, W.D., Pierce, S.R., Mills, A.M., Gehrig, P.A., Duska, L.R., 2017 Jul. Nonoperative management of atypical endometrial hyperplasia and grade 1 endometrial cancer with the levonorgestrel intrauterine device in medically ill post-menopausal women. *Gynecol. Oncol.* 146 (1), 34–38.
- Emile, S.H., Elfeki, H., Elalfy, K., Abdallah, E., 2017. Laparoscopic sleeve gastrectomy then and now: an updated systematic review of the progress and short-term outcomes over the last 5 years. *Surg Laparosc Endosc Percutan Tech* 27 (5), 307–317.
- Fader, A.N., Arriba, L.N., Frasure, H.E., von Gruenigen, V.E., 2009 Jul. Endometrial

- cancer and obesity: Epidemiology, biomarkers, prevention and survivorship. *Gynecol. Oncol.* 114 (1), 121–127.
- Fishman, D.A., Roberts, K.B., Chambers, J.T., Kohorn, E.I., Schwartz, P.E., Chambers, S.K., 1996 May. Radiation therapy as exclusive treatment for medically inoperable patients with stage I and II endometrioid carcinoma of the endometrium. *Gynecol. Oncol.* 61 (2), 189–196.
- Gressel, G.M., Parkash, V., Pal, L., 2015 Sep 5. Management options and fertility-preserving therapy for premenopausal endometrial hyperplasia and early-stage endometrial cancer. *Int. J. Gynaecol. Obstet.* 131 (3), 234–239.
- Gunderson, C.C., Fader, A.N., Carson, K.A., Bristow, R.E., 2012 May. Oncologic and reproductive outcomes with progestin therapy in women with endometrial hyperplasia and grade 1 adenocarcinoma: a systematic review. *Gynecol. Oncol.* 125 (2), 477–482.
- Lynch, J., Belgaumkar, A., 2012. Bariatric Surgery is Effective and Safe in patients over 55; a Systematic Review and Meta-analysis. *Obes. Surg.* 22 (9), 1507–1516.
- MacKintosh, M.L., Derbyshire, A.E., McVey, R.J., et al., 2018 Oct. The impact of obesity and bariatric surgery on circulating and tissue biomarkers of endometrial cancer risk. *Int. J. Cancer.* <https://doi.org/10.1002/ijc.31913>.
- Modesitt, S.C., Hallowell, P.T., Slack-Davis, J.K., Michalek, R.D., Atkins, K.A., Kelley, S.L., et al., 2015 Aug. Women at extreme risk for obesity-related carcinogenesis: Baseline endometrial pathology and impact of bariatric surgery on weight, metabolic profiles and quality of life. *Gynecol. Oncol.* 138 (2), 238–245.
- Monpellier, V.M., Janssen, I.M.C., Antoniou, E.E., Jansen, A.T.M., 2018. Weight change after Rous-en Y Gastric Bypass, physical activity and eating style: is there a relationship? *Obes. Surg.* <https://doi.org/10.1007/s11695-018-3560-x>.
- National Comprehensive Cancer Network, 2018. Clinical Practice Guidelines in Oncology: Uterine Neoplasms. Version 1. https://www.nccn.org/professionals/physician_gls/pdf/uterine_blocks.pdf.
- Pal, N., Broaddus, R.R., Urbauer, D.L., Balakrishnan, N., Milbourne, A., Schmeler, K.M., et al., 2018 Jan. Treatment of low-risk endometrial cancer with complex atypical hyperplasia with the levonorgestrel-releasing intrauterine device. *Obstet. Gynecol.* 131 (1), 109–116.
- Secord, A.A., Hasselblad, V., Von Gruenigen, V.E., Gehrig, P.A., Modesitt, S.C., Bae-Jump, V., et al., 2016 Jan. Body mass index and mortality in endometrial cancer: a systematic review and meta-analysis. *Gynecol. Oncol.* 140 (1), 184–190.
- Siegel, R.L., Miller, K.D., Jemal, A., 2018 Jan 4. Cancer statistics, 2018. *CA Cancer J. Clin.* 68 (1), 7–30.
- Ward, K.K., Roncancio, A.M., Shah, N.R., Davis, M.-A., Saenz, C.C., McHale, M.T., et al., 2014. Bariatric Surgery Decreases the risk of Uterine Malignancy. *Gynecol. Oncol.* 133, 63–66.