VIDEO ARTICLE

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A total endoscopic levonorgestrel-releasing intrauterine system (LNG-IUS) placement: a novel approach for obese patients with early-stage endometrial cancer

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ABSTRACT

Background: Endometrioid adenocarcinoma is a common endometrial cancer, linked to excess oestrogen exposure. Obesity, a major risk factor, can lead to unopposed oestrogen and endometrial cancer. Surgery is the standard treatment for early-stage disease. However, obese patients with a high body mass index (BMI) may be unsuitable due to surgical risks.

Objectives: We present a novel completely endoscopic technique for placing a levonorgestrel-releasing intrauterine system (LNG-IUS) in an obese patient with early-stage endometrioid adenocarcinoma (FIGO 2009 stage IA, grade 1) who was not a surgical candidate due to multiple comorbidities.

Participant: An 82-year-old obese woman (BMI: 48.9 kg/m^2) with abnormal uterine bleeding was referred to our gynaecological department. Endometrial thickening, without spread beyond the uterus, was observed by transvaginal ultrasound and magnetic resonance imaging, and final diagnosis of early stage endometrioid adenocarcinoma was confirmed by hysteroscopic endometrial biopsy. Due to her high-risk status and anatomical challenges, initial management involved oral medication and regular biopsies. After a year of presence of a stable disease, a new technique for LNG-IUS placement was attempted.

Intervention: The LNG-IUS was successfully placed within the uterine cavity using a 5 mm XL Bettocchi hysteroscope and a 5 Fr grasping forceps, without needing vaginal speculum or cervical grasping. The patient tolerated the procedure well. Follow-up at six months was negative, without signs of recurrence.

Conclusions: This case demonstrates the feasibility and safety of a total endoscopic LNG-IUS placement as an alternative for obese patients with early-stage endometrioid adenocarcinoma who are not surgical candidates.

What is New? This is the first description of a total endoscopic technique for LNG-IUS placement performed without speculum or anesthesia.

Keywords: Early-stage endometrial cancer, levonorgestrel-releasing intrauterine system, LNG-IUS, obesity, hysteroscopy

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Introduction

Endometrioid adenocarcinoma is the most prevalent type of endometrial cancer and is directly associated with an oestrogen-related pathway.[1] Obesity is a key risk factor because fat tissue actively produces aromatase, an enzyme that actively converts androgens into oestrogen. When this excess oestrogen goes unopposed by progesterone, it can trigger pre-cancerous changes in the endometrium, ultimately progressing to endometrial cancer.[2] The gold standard treatment for early-stage endometrioid adenocarcinoma is surgery, typically involving total hysterectomy, bilateral salpingo-oophorectomy, with lymph nodes assessment.[3] However, obese patients with a high body mass index (BMI) may be unsuitable for radical surgery due to surgical and anaesthesiologic risks.[4] Therefore, alternative treatment options such as radiotherapy or hormone therapy are often considered for this high-risk patient population.[5] This paper explores a promising alternative management strategy for obese patients diagnosed with early-stage endometrioid adenocarcinoma. It describes a novel, minimally invasive technique for placing levonorgestrel-releasing intrauterine system (LNG-IUS) using 5 mm XL Bettocchi hysteroscope (Karl Storz, Tuttlingen, Germany), with 5 Fr grasping forceps. This innovative approach has the potential to offer a safer and more comfortable treatment option for high-risk patients who are not candidates for surgery and with anatomical challenges which make the standard LNG-IUS insertion technique impractical.

Methods

An 82-year-old woman with morbid obesity (BMI: 48.9 kg/m^2) was referred to our gynaecological department, in Fondazione Policlinico Gemelli IRCCS of Rome (Italy), for abnormal uterine bleeding. She underwent two previous caesarean sections and experienced menopause at 55 years old. The ultrasound evaluation revealed an endometrial thickening. Computed tomography scan and magnetic resonance imaging confirmed the endometrial thickening confined to the uterine cavity, without spread beyond the uterus. The patient underwent an office hysteroscopy with multiple endometrial biopsies obtained using a 5 Fr grasping forceps. Histopathological examination confirmed final diagnosis of early stage endometrioid adenocarcinoma (FIGO 2009 stage IA, grade 1). Due to her comorbidities, the patient underwent a preoperative evaluation by anaesthesiologists who classified her as "high-risk", according to Boyd and Jackson[6] criteria and assigned her an American Society of Anaesthesiologists (ASA) physical status classification of III.[7] Consequently, surgery was not considered the most suitable treatment option due to the potential risks associated with anaesthesia and the procedure itself. Considering the patient's anatomical limitations, including a long and narrow vaginal canal and a small cervix, likely resulting from her two prior caesarean sections, standard LNG-IUS placement within the uterine cavity was not feasible. Initial management included a daily oral dose of 160 mg megestrol acetate and outpatient hysteroscopic endometrial biopsies every three months. However, after one year the disease was stable. We present a step-by-step video demonstration of a novel completely endoscopic technique for placing LNG-IUS performed by an expert surgeon.

Results

The procedure was performed in an outpatient setting at Digital Hysteroscopic Clinic - Class Hysteroscopy in Fondazione Policlinico Gemelli, without anesthesia.[8] A 5 mm XL Bettocchi hysteroscope, 36 cm in length, with a 30° forward oblique lens (Karl Storz, Tuttlingen, Germany), was used. Hysteroscopic examination revealed focal endometrial thickening with atypical vascularization. To avoid using vaginal speculum and cervical grasping, the surgeon removed LNG-IUS from its inserter and introduced 5 Fr grasping forceps into the working channel of the hysteroscope. The surgeon closed the spiral arms and grasped them with 5 Fr grasping forceps. By manoeuvring the hysteroscope and forceps in a coordinated way, the LNG-IUS was then carefully pushed vaginoscopically towards the vagina and cervix. The saline solution distended the vagina creating a clear pathway for placement and the LNG-IUS was correctly positioned at the uterine fundus. The entire procedure was well-tolerated, and the patient was discharged a few minutes later. After six months of LNG-IUS treatment, follow-up transvaginal ultrasound showed no evidence of endometrial thickening and office hysteroscopic endometrial biopsy was negative, confirming the effectiveness of the treatment. Moreover, the patient reported no further abnormal uterine bleeding and overall satisfaction with the minimally invasive procedure.

Discussion

Endometrial cancer is the most common gynaecological malignancy in developed countries with endometrioid

adenocarcinoma being the predominant histological type. While surgery remains the gold standard treatment for early stage endometrioid adenocarcinoma, obese patients with multiple comorbidities present with a significant surgical risk. Therefore, research on conservative treatments of endometrial cancer is considered a global priority.[9] The use of LNG-IUS for endometrial cancer treatment has gained increasing recognition in recent years. LNG-IUS acts primarily by releasing levonorgestrel, a progestin that promotes endometrial atrophy and reduces estrogen levels. This hormonal therapy has shown effectiveness in treating early-stage disease, particularly for patients who wish to preserve fertility or are not suitable surgical candidates.[10] Regarding fertility-sparing treatment, recent guidelines described conservative approach for atypical endometrial hyperplasia (AEH) or grade 1 endometrioid endometrial adenocarcinoma (EAC), without myometrial invasion.[11] For non-surgical candidates, there are only few clinical trials which investigated the efficacy and oncologic safety of LNG-IUS for AEH or EAC in high-risk patients. These studies reported pathological response rates ranging from 37% to 66%.[12-16]

In this video article, we presented a novel technique for total endoscopic LNG-IUS placement in an obese patient with early-stage endometrioid adenocarcinoma who was deemed high-risk for surgery. To our knowledge, this is the first time that this technique has been described. The technique, performed by an expert surgeon, successfully delivered the LNG-IUS into the uterine cavity without the need for vaginal speculum or cervical grasping, allowing for a minimally invasive and patient-friendly procedure, without the need of any kind of anaesthesia. The total endoscopic LNG-IUS placement technique offers several advantages over traditional methods, particularly for obese patients with anatomical challenges like those presented in this case.

By eliminating the need for vaginal speculum and cervical grasping, the procedure minimizes discomfort and potential trauma to the cervix and vagina. Additionally, the use of a hysteroscope allows for direct visualization of the uterine cavity, ensuring accurate placement of the LNG-IUS. This advantage is particularly significant for obese patients, as the hysteroscope overcomes anatomical challenges that might otherwise hinder precise placement.

However, this technique does present some limitations. The use of grasping forceps can partially obscure the endoscopic view, making the visualization of the cervical os and canal challenging. Additionally, the presence of grasping forceps within the working channel reduces the inflow of distension media, potentially compromising visualization. Thus, a preliminary hysteroscopy is essential to map the cervical canal and assess its axis and direction.

Proper alignment of the scope is particularly important, as the grasping forceps, when loaded with the IUS, increase the overall bulk, which may cause resistance when advancing through the cervical canal. Therefore, operators must be cautious not to apply excessive force and should ensure that the hysteroscope remains properly aligned to minimize the risk of perforation.

For these reasons, this technique should not be considered a routine procedure and should be performed only by experienced hysteroscopists, as it requires advanced endoscopic skills.

In the present case, the patient experienced no complications related to the LNG-IUS placement procedure and reported significant improvement in her symptoms of abnormal uterine bleeding. After six months of treatment, follow-up imaging and clinical assessment confirmed stable disease without evidence of recurrence.

Conclusion

The total endoscopic LNG-IUS placement technique presented in this case report offers a promising alternative management strategy for obese patients with early-stage endometrioid adenocarcinoma who are not suitable for conventional surgery. The endoscopic technique provides a minimally invasive, patient-friendly approach that can be performed in an office setting, without any kind of anaesthesia, avoiding major surgery risks. Further research is warranted to evaluate the long-term efficacy and safety of this technique in a larger cohort of patients.

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Video 1. https://youtu.be/2doj6ihaX9U