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Case Report

Laparoendoscopic Single-Site Hysterectomy in a Morbidly Obese Patient with a Large Uterus: Case Report

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Abstract

Laparoendoscopic single-site (LESS) hysterectomy has been documented as a well-established method of hysterectomy, allowing for excellent surgical outcomes. Certain patient factors need to be taken into consideration when deciding the approach for hysterectomy. A high body mass index (BMI) can affect the surgical procedure since the thicker abdominal wall may hinder the movement of instruments. With an enlarged uterus, the surgical field may be obstructed which can cause difficulty in obtaining ideal visualisation. The use of LESS can help to overcome these issues, which we demonstrate in our experience of successfully performing LESS hysterectomy in a patient with BMI of 40.6kg/m^2 with a severely enlarged uterus of 1609g.

Keywords: ***Case Report, Fibroid Uterus, Hysterectomy, Minimally Invasive Surgery, Morbid Obesity.***

Introduction

Laparoendoscopic single-site (LESS) hysterectomy has become a well-established alternative to perform gynaecological surgery in selected patients, with different advantages. However, several patient factors including body mass index (BMI), uterine size as well as pre-existing comorbidities are important considerations prior to opting for LESS hysterectomy.

According to the World Health Organisation (WHO) classification of obesity, a BMI of 40 or more is classified as morbidly obese. Patients who are obese are at an increased risk of developing cardiovascular risk factors, sleep apnoea, multiple cancer types (including endometrial carcinoma) and are at an increased risk of all-cause mortality [1]. This is an important consideration especially when preparing these patients to undergo surgery as there will be anaesthetic concerns due to their lower cardiorespiratory reserve and increased risk of haemodynamic instability. There can also be challenges intraoperatively due to the thicker layer of abdominal fat and altered anatomy which may hinder the surgical procedure.

In patients with a large uterus (defined as >500g) undergoing minimally invasive hysterectomy, there may be issues faced with increased procedural complexity and a higher risk of complications [2]. Previous articles have demonstrated the feasibility of LESS hysterectomy in removing extremely large uteri up to 1960g [3], however none have specifically reported the success of this procedure in a morbidly obese woman. We hope to share our own experience on the technique of performing LESS in a morbidly obese woman with a large uterus.

Case Report

The patient was a 44-year-old para 0 female with a BMI of 40.6kg/m^2. She presented with menorrhagia complicated by syncope secondary to iron deficiency anaemia requiring hospital admission for blood transfusion. Her initial hemoglobin was 5.2 which improved to 8.0 after 2 pints of packed cell transfusion. She denied any abdominal masses or abdominal pain. On physical examination, the uterus was 20 weeks in size and non-tender. Pelvic ultrasound revealed an enlarged uterus with multiple intramural uterine fibroids, with the largest measuring 12 cm. No obvious adnexal mass was visualised. The endometrium measured 7.3mm in thickness. Endometrial sampling showed a secretory endometrium with features suggestive of a benign endometrial polyp. Various options were discussed with the patient regarding the treatment for uterine fibroids, including myomectomy, uterine artery embolisation and hysterectomy. The patient was not keen on conservative treatment and requested for a hysterectomy as a definitive treatment for the fibroids.

The patient underwent LESS hysterectomy with bilateral salpingectomy and conservation of bilateral ovaries. We used a homemade glove port system with the Alexis® wound retractor (Applied Medical, CA, USA) together with conventional laparoscopic instruments. The wound retractor was inserted into the peritoneal cavity through a 2.5cm umbilical incision and the glove was fixed to the outer ring of the wound retractor. Two 5-mm trocars and one 12-mm trocar were inserted through small incisions in the fingertip portions of the glove. On intraoperative inspection of the abdominopelvic cavity, the uterus measured 24 weeks in size and

had several fibroids. There were multiple endometriotic spots over the bladder, peritoneum and uterus. The ovaries, fallopian tubes and Pouch of Douglas appeared grossly normal. The uterus was extracted using scalpel morcellation to retrieve the uterus via the umbilical incision. The technique involved making C-shaped incisions into the specimen to reduce its diameter while pulling and rotating the uterus out from the incision. The vault was sutured vaginally with Monocryl. Histopathology reported a total uterus weight of 1609g. Microscopic analysis showed uterine leiomyomata with no malignancy seen in all specimens.

The patient was monitored in the high dependency unit as there was a concern of obstructive sleep apnoea (OSA) given her risk factors. Her haemoglobin before and after the surgery was 12.2 and 12.0 respectively. The estimated blood loss was minimal at 100ml. She was ambulating well after the operation, and feeding was resumed immediately after the surgery. The patient had a single episode of temperature spike to 37.9˚C on postoperative day (POD) 2, however she recovered well without requiring additional management. She was discharged on POD 4 as requested due to social reasons.

Discussion

Several methods have been established for performing hysterectomy in gynaecological patients. Traditional open laparotomy is still most commonly performed, despite its association with a higher rate of complications including increased postoperative pain, longer hospital stay and slower recovery [4]. Vaginal hysterectomy (VH) is one of the most superior methods, offering a scar-free approach with faster recovery. However, it has been reported that in patients who are morbidly obese with large uteri, total laparoscopic hysterectomy (TLH) is superior to VH. TLH (including both single- and multi-port laparoscopic (MLH) hysterectomy) is associated with lesser odds of blood transfusion and lower length of hospital stay as compared to VH [2]. With MLH, the largest uterus successfully removed weighed 11,000g [5]. There have not been any significant reported benefits of performing LESS as compared to conventional MLH [2].

Robotic single-site (RSS) surgery has also been introduced to perform hysterectomy [6]. It has also shown to result in reduced hospital stay, less estimated blood loss and postoperative pain as compared to conventional LESS [7,8]. The inclusion of robotic assistance may also aid with decreasing the learning curve of conventional LESS since it reduces instrument collisions and improves ergonomics [6]. The largest uterus removed with RSS hysterectomy weighed 1248g as reported by Zhang et al. [9]. However, RSS hysterectomy also has its limitations. The umbilical incision in RSS has to be made longer (3-4 cm) than in conventional LESS (1.5-2 cm) in order to accommodate the larger robotic instruments [6]. Robotic surgery utilizes a high-magnification view which may affect visibility especially when dealing with a large uterus. The instruments used in RSS are more flexible and may not be able to effectively manoeuvre the uterus in the intended direction, and the instruments are single use, which increases the cost of surgery.

In our experience, we find that LESS is advantageous in achieving an optimal view of the entire uterus which helps avoid organ injury, as well as allowing for dissection of both sides of the uterus with the instruments through a single port. For hysterectomy in morbidly obese women with large uteri, LESS can be performed with better ergonomics and reduces the need for excessive force. In LESS, a single incision is made through the umbilicus where there is less visceral fat, and no additional port insertions are required. The elasticity of the homemade port also helps to maintain the triangulation of the trocars and facilitates easier coordination of surgical instruments. We utilize conventional laparoscopic instruments which helps minimise additional costs of surgery.

The main technical challenges for morbidly obese women with large uteri undergoing hysterectomy are the intraabdominal visibility and high pneumoperitoneum. Intraabdominal visibility can be affected due to the large size of the uterus that may obscure the view of the surgical field from the umbilicus. In this situation, high epigastric port placement using conventional laparoscopy has been described to perform this procedure [10], however the visibility can still be affected because the port placement at the site may not effectively retract the uterus from the surgical field. The use of LESS instead of MLH can help overcome this problem. As the ports enter through the center of the abdomen with the working instruments parallel to each other, the uterus can be moved in the intended direction without excessive force. Usage of the intrauterine manipulator also facilitates easier mobility of the uterus. The 30-degree telescope further improves the visibility of the surgical field. Even if the enlarged uterus reaches a level at or above the umbilicus, we are still able to perform the procedure safely and effectively. Laparoscopic hysterectomy for large uteri may also require very high pneumoperitoneum to achieve optimal surgical field exposure, which can further compromise the cardiorespiratory function of patients, particularly in the morbidly obese. However, we were able to successfully perform LESS using low pressure pneumoperitoneum of 12mmHg in our patient with the above-described technique.

Various morcellation techniques have been described, including transumbilical or transvaginal morcellation, power morcellation and electrosurgical resection. In our patient, vaginal morcellation would have been technically challenging as she is nulliparous and obese, making vaginal access difficult and visibility limited. The decision was made for transumbilical morcellation considering the patient's age as well as the ultrasound and endometrial biopsy findings which were suggestive of a benign condition. The umbilicus is the thinnest part of the abdomen and manual morcellation could be performed easily through the same subumbilical incision as the uterus was visible at that region without requiring additional extension of the incision.

Conclusion

This case report demonstrates that LESS hysterectomy is feasible in a morbidly obese patient with an exceptionally large uterus. Patient selection is of utmost importance to decide which patients will benefit from LESS. Prior evaluation of the fibroid with imaging and endometrial biopsy and preoperative optimization of the patient are important factors to achieve good surgical outcome.

Declaration

This manuscript has not been presented or published elsewhere.

Ethical approval

This report is exempt from Institutional Review Board approval.

Author Disclosure Statement

The authors declare that there is no conflict of interest.

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References

[1] Perreault L, Laferrère B. Overweight and obesity in adults: Health consequences. In: Post TW, ed. UpToDate. Waltham, MA: UpToDate Inc. https://www.uptodate.com/contents/overweight-and-obesity-in-adults-health-consequences. Accessed 13 April, 2020.

[2] Kho RM, Abrão MS. In Search for the Best Minimally Invasive Hysterectomy Approach for the Large Uterus: A Review. Clin Obstet Gynecol. 2017;60(2):286-295. doi:10.1097/GRF.0000000000000285

[3] Chang Y, Kay N, Huang MR, Huang SJ, Tsai EM. Laparoendoscopic Single-Site Supracervical Hysterectomy with Manual Morcellation: A Retrospective Study. J Minim Invasive Gynecol. 2018;25(6):1094-1100. doi:10.1016/j.jmig.2018.02.017

[4] Chrysostomou A, Djokovic D, Edridge W, van Herendael BJ. Evidence-based guidelines for vaginal hysterectomy of the International Society for Gynecologic Endoscopy (ISGE). Eur J Obstet Gynecol Reprod Biol. 2018;231:262-267. doi:10.1016/j.ejogrb.2018.10.058

[5] Macciò A, Chiappe G, Kotsonis P, et al. Feasibility and safety of total laparoscopic hysterectomy for uteri weighing from 1.5 kg to 11.000 kg. Arch Gynecol Obstet. 2021;303(1):169-179. doi:10.1007/s00404-020-05799-6

[6] Nam EJ, Kim SW, Lee M, et al. Robotic single-port transumbilical total hysterectomy: a pilot study. J Gynecol Oncol. 2011;22(2):120-126. doi:10.3802/jgo.2011.22.2.120

[7] Lopez S, Mulla ZD, Hernandez L, Garza DM, Payne TN, Farnam RW. A Comparison of Outcomes Between Robotic-Assisted, Single-Site Laparoscopy Versus Laparoendoscopic Single Site for Benign Hysterectomy. J Minim Invasive Gynecol. 2016;23(1):84-88. doi:10.1016/j.jmig.2015.08.883

[8] Paek J, Lee JD, Kong TW, Chang SJ, Ryu HS. Robotic single-site versus laparoendoscopic single-site hysterectomy: a propensity score matching study. Surg Endosc. 2016;30(3):1043-1050. doi:10.1007/s00464-015-4292-9

[9] Zhang Y, Kohn JR, Guan X. Single-Incision Hysterectomy Outcomes With and Without Robotic Assistance. JSLS. 2019;23(4):e2019.00046. doi:10.4293/JSLS.2019.00046

[10] Lee YS. Benefits of high epigastric port placement for removing the very large uterus. J Am Assoc Gynecol Laparosc. 2001;8(3):425-428. doi:10.1016/s1074-3804(05)60343-x