



## Case Report

# A Mini-Laparotomy Hysterectomy for A Large Fibroid Uterus (>2850 Gm) Using A Modified “Paper Roll” Morcellation Technique - A Case Report

Felix Wong<sup>1\*</sup>, Thomas Li<sup>2</sup>, Eric Lee<sup>3</sup>

<sup>1</sup>Department of Obstetrics and Gynaecology, School of Women’s and Children’s Health, The University of New South Wales, Sydney, Australia

<sup>2</sup>Department of Obstetrics and Gynaecology, Queen Mary Hospital, The University of Hong Kong, China

<sup>3</sup>Canossa Hospital, Hong Kong, China

**\*Corresponding author:** Felix Wong, Department of Obstetrics and Gynaecology, School of Women’s and Children’s Health, The University of New South Wales, Sydney, Australia.

**Citation:** Wong F, Li T, Lee E (2021) A Mini-Laparotomy Hysterectomy for A Large Fibroid Uterus (>2850 Gm) Using A Modified “Paper Roll” Morcellation Technique - A Case Report. J Surg 6: 1438 DOI: 10.29011/2575-9760.001438

**Received Date:** 02 October, 2021; **Accepted Date:** 18 October, 2021; **Published Date:** 21 October, 2021

## Abstract

The paper described a minimally invasive “paper roll” morcellation technique of minilaparotomy hysterectomy as a new modality to remove a very large fibroid uterus. The surgical procedure combines the technical benefits of conventional laparotomy together with the advantages of rapid convalescence and cosmetic advantages. When dealing with a very large fibroid uterus, laparoscopic or vaginal hysterectomy is considered difficult or contraindicated. This minilaparotomy approach offers a safe and effective surgical alternative. This surgical approach relies on traditional open techniques and appropriate surgery steps described in this paper to complete the hysterectomy and avoids the need for expensive equipment, demanding laparoscopic skill, and prolonged operating time that are associated with minimally invasive surgery, but without the disadvantages of a standard laparotomy.

**Keywords:** Hysterectomy; Large fibroid; Minilaparotomy; Paper roll morcellation technique

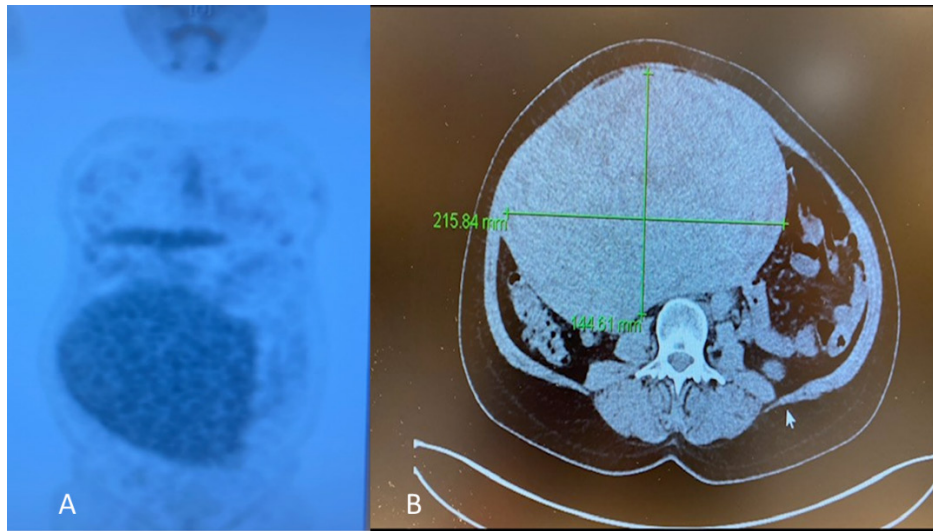
## Introduction

Despite the feasibility and popularity of laparoscopic hysterectomy to remove large fibroid uterus, factors like demanding skill, proficiency in suturing, and frequent need for power morcellation to remove large fibroid specimens remain challenging, and these may render some gynaecologists reconsider the option of laparotomic approach when dealing with a large fibroid uterus. Instead, minilaparotomy offers a safe and effective alternative to laparoscopy and laparotomy to remove large uterine specimens with fibroids; many gynaecological generalists can perform it without difficulty. Based on his experience, the authors

had previously reported a technique in laparoscopic-assisted vaginal hysterectomy to remove large fibroid uterus > 500 gm with a novel “paper roll” vaginal morcellation technique [1]. This technique has now been modified to a mini-laparotomy approach to facilitate removing a very large uterus. Instead of removing a large fibroid uterus from the vagina, especially in cases with difficult access, limited exposure, much-distorted uterus and potential vaginal injury, we now use this technique to safely remove a very large fibroid uterus via a mini-laparotomy wound with speed, ease, and safety. The large uterus can also be removed in one piece, allowing the pathologist to reconstruct the entire uterus to facilitate its overall pathological interpretation. This paper describes our “paper roll” morcellation technique to remove a large fibroid uterus weighing 2853 gm via a minilaparotomy wound of 6 cm.

## Case Report

The patient was a postmenopausal 56-year-old single lady who presented in September 2021 with abdominal distension and discomfort over three months. She had no related medical or surgical history and no family history of cancers. Abdominal examination showed an enlarged uterus of 28 weeks gravid size. There were no ascites detected. Computerised Tomography + Positron emission tomography (CT-PET) scan showed a large fibroid uterus measuring 14.4 x 21.6 x 22.4 cm with multiple fibroids of sizes ranging from 3 to 6 cm, without suspicious malignant features (Figure 1). Blood test CA-125 was 10.4 IU/ml, within the normal range. She was admitted to the hospital for a minilaparotomy hysterectomy and bilateral salpingo-oophorectomy. The operation was performed smoothly with a paper roll uterine morcellation technique to extract the uterine specimen as prescribed below. The operation was completed in 1.5 hours with a blood loss of 400 ml. She recovered well and went home without complications on day 3 following her surgery. The pathology of the specimen confirmed benign uterine leiomyoma, and it weighed 2853 gm.



**Figure 1:** A. PET scan showed no active lesions of the enlarged fibroid uterus. B. On CT scan, the large fibroid uterus measured 21.6 x 14.4 cm showed multiple fibroids.

### The Minilaparotomic Hysterectomy and The Paper Roll Uterine Morcellation Technique

The patient was positioned in a supine position. A Foley catheter was inserted to empty the bladder. A transverse suprapubic incision of 6-7 cm was cut at the level of the pelvic hairline. The peritoneal cavity was entered after the wound was made open. A small sized Alexis O Wound Protector (Applied Medical, Rancho Santa Margarita, CA) was inserted to serve as a self-retaining retractor and to maximise exposure. Bilateral round ligaments were identified, ligated and cut to facilitate lateral rotation of the uterine body. Both ovaries and tubes were removed after they were located. The broad ligaments were opened, and cutting was extended downward to expose the ascending segment of the uterine vessels at the level corresponding to the cervical isthmus. A small myomectomy screw or a pair of single toothed tenaculum forceps was used to slightly elevate the part of the uterus close to the cervix to the level of the abdominal wound to expose both uterine vascular bundles. They were clamped, cut and ligated at the level of the internal cervical os. The enlarged uterus was then cut at

the level of the cervix as in a supracervical hysterectomy. The next step was to remove the large fibroid uterus via the minilaparotomy wound using the “paper roll” morcellation technique described below.

Through the minilaparotomy wound, two Tenaculum Forceps were used to grasp and hold the uterine specimen over the area detached from the cervix. Two small Heaney retractors were placed at the 12- and 8-o’clock positions (related to the surgeon’s position at the patient’s right side) over the Alexis wound protector, which helped retract the wound and protect the abdominal wall. (Figure 2A, B). A No. 10 sharp scalpel blade was used to cut into the enlarged uterus. The initial step was to apply traction to lift the presenting part of the uterine specimen out of the abdominal wound. It started by cutting the uterine specimen at the 12 o’clock position and continued toward the 8 o’clock direction while delivering as much uterine tissue upward during the cut. Traction was applied on the specimen using the left hand in a clockwise oval swinging motion synchronizing with the simultaneous spiral cutting action from 12 o’clock to 8 o’clock using the right hand.

This cut produced a length of a uniformly cylindrical specimen. The action was repeated at 12 o'clock, and every new cut was targeted to remove as much a cylindrical strip of tissue as possible. Each cut should ideally end at the Heaney retractor positioned at 8 o'clock. Alternately a pair of Tenaculum Forceps was applied closer to the specimen at the wound level to provide more efficient traction to extract the forthcoming specimen.

While applying traction on the tubular incised tissue of 2-4 cm width from along the uterine body during the cut, the remaining portion of the uterus within the lower abdomen should simultaneously be rolled forward like unwinding a paper roll (Figure 2A-B). Care is needed to avoid injury to the abdominal wall, which the 2 Heaney retractors should help prevent any accidental cuts. All cuts were made under direct vision. Bleeding was noticeably minimal because both the ovarian and uterine blood supplies had been cut off. Retrograde blood flow from the body of the large fibroid uterus was continuously cleared from the operating field using a fine transparent aspirator. Occasionally, the uterus seemed to be fixed and failed to rotate or advance

beyond the minilaparotomy wound, possibly due to its large size or an unyielding remaining uterus specimen with irregular configuration. In such instances, the remaining large uterine specimen was pushed back into the abdominopelvic cavity and manually rotated either clockwise or anti-clockwise to allow it to be repositioned as a rotating paper roll. This maneuver enabled the remaining uterine specimen to fall into the available space in the abdominopelvic cavity and facilitated its re-presentation for subsequent morcellation under direct vision. The process would speed up when most of the enlarged uterine specimen was pulled out, and it is possible to remove the entire uterus in 1 piece regardless of its size (Figure 2-E). The advantage of this technique is the ability to remove a fairly big trunk of cylindrical uterine tissue in a timely and safe manner. One has to synchronise the direction of the traction on the specimen with the cutting action for every move to achieve maximum efficacy in extracting a large uterus. The subsequent removal of the cervix as in trachelectomy would complete the total hysterectomy. The vaginal vault was then closed, and reperitonealization was performed.



**Figure 2: (A,B):** The fibroid uterus is being morcellated out of the minilaparotomy wound. Note the position of the Heaney retractors at 12 o'clock and 8 o'clock positions during morcellation, and thick uterine tissues are morcellated into a long piece by a sharp scalpel. **(C,D):** Before and after the removal of the large fibroid uterus. The minilaparotomy wound was only 6 cm in length. **(E)** The whole fibroid uterus was removed in one long piece, as shown in the picture.

## Discussion

Minilaparotomy was defined as a skin incision  $\leq$  6-7 cm in length. It is a safe and feasible hysterectomy in a selected group of patients [2,3]. Some centres set criteria for not performing hysterectomy using the minilaparotomy approach, including obese patients, immovable uterus, and large uterus sizes. With the improvement of surgical technique, minilaparotomy can now be performed for a uterus with very large fibroids, as in this case report. Although we had previously reported a vaginal morcellation technique to perform a hysterectomy for a large uterus [4], this patient with a very large uterus was considered very difficult for a vaginal morcellation. Thus we performed a minilaparotomy hysterectomy. To our knowledge, the weight of the heaviest uterus removed by minilaparotomy hysterectomy was 3250 g [5] However, the morcellation techniques used to remove large fibroid uterus in various reports had not been described in detail, and many were done via a piece by piece morcellation only [6]. In this paper, our purpose is to present a morcellation approach that will remove a large uterus in one piece (excluding the cervix) and allow the pathologist to easily reconstruct the uterus during the gross examination of the entire specimen to arrive at a precise pathology.

However, from the author’s experience, it might sometimes be difficult to locate and ligated both ovarian vascular pedicles via the minilaparotomy wound due to the size of a large uterus. A combined laparoscopic-assisted minilaparotomy hysterectomy approach had been reported to facilitate this step [7,8]. A laparoscopic procedure was used to identify the ovarian pedicles, coagulating and cutting off the blood supplies before attempting the hysterectomy via minilaparotomy. For our manual morcellation approach, the operative accessibility is easier than those done via an extended incision of an umbilical wound because a bigger aperture provides better exposure and allows a larger trunk of tissue to be removed for each cut. Using a power morcellator or manual intra-abdominal morcellation during laparoscopy will not be feasible for a very large fibroid uterus because of the limited space. Thus this minilaparotomy morcellation approach is a good alternative. Besides, operative bleeding would not increase once all the blood supplies to the large uterus were controlled.

Nowadays, an increasing number of studies on minilaparotomy hysterectomy has been reported to remove large fibroids > 10 cm. Minilaparotomy has been used as a minimally invasive alternative [3], and studies showed that compared to

laparoscopy, laparotomy and vaginal surgery, the operative time is quite similar or shorter. The estimated blood loss, the duration of the ileus, and discharged home are comparable [9], and it is also far more cost-effective. Therefore, minilaparotomy hysterectomy makes it suitable for gynaecologists with limited laparoscopic surgical skills to remove a large fibroid uterus without additional risks. Understandably, the risks of failure of the operation, abdominal wound infections, postoperative pain, excessive bleeding and complications of laparotomy had discouraged both patients and doctors from easily accepting this approach. To enable minilaparotomy to be more acceptable by doctors, practice to improve the surgical skill including the use of morcellation techniques in this paper will greatly enhance its development and acceptance.

## References

1. Wong WSF, Lee TCE, Lim CED (2010) Novel Vaginal “paper roll” uterine morcellation technique for removal of large (> 500 g) uterus. *Journal of Minimally Invasive Gynecology* 17: 374-378.
2. Hoffman MS, Lynch CM (1998) Minilaparotomy hysterectomy. *American Journal of Obstetrics and Gynecology* 179: 316-320.
3. Panici PB, Zullo MA, Angioli R, Muzii L (2005) Minilaparotomy hysterectomy: a valid option for the treatment of benign uterine pathologies. *European Journal of Obstetrics & Gynecology and Reproductive Biology* 119: 228-231.
4. Wong W, Lee T, Lim C (2010) Novel Vaginal “Paper Roll” Uterine Morcellation Technique for Removal of Large (> 500 g) Uterus. *Journal of Minimally Invasive Gynecology* 17: 374-378.
5. Glasser MH (2005) Minilaparotomy: a minimally invasive alternative for major gynecologic abdominal surgery. *Perm J* 9: 41-45.
6. Sato K, Fukushima Y (2016) Minilaparotomy Hysterectomy as a Suitable Choice of Hysterectomy for Large Myoma Uteri: Literature Review. *Case reports in obstetrics and gynecology* 2016: 6945061.
7. Felix Wong (2011) A Retrospective Series of Laparoscopic Hysterectomy (LH) and Modified Mini-laparotomy Abdominal Hysterectomy (MAH) for the Management of Enlarged Uterus - a Reappraisal of the Surgical Approach for Hysterectomy. *The Chinese Journal of Minimally Invasive Surgery* 11: 289-294.
8. Sheth SS (2014) Hybrid Approach for Difficult Vaginal Hysterectomy. *2014 Vaginal hysterectomy*, JP Medical Ltd. ISBN 9351521796.
9. Fanfani F, Fagotti A, Longo R, Marana E, Mancuso S, et al. (2005) Minilaparotomy in the management of benign gynecologic disease. *European Journal of Obstetrics & Gynecology and Reproductive Biology* 119: 232-236.