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Transvaginal Myomectomy for A Huge Cervical Myoma with Cervical Cyst: A Case Report and Review of the Literature

Lufang Wang[1], Dilu Feng[1] and Jie Min[1*]

[1]Department of Obstetrics and Gynecology, Union Hospital, Tongji Medical College, Huazhong University of Science and Technology, Wuhan, 430022, China

[*]Corresponding author:

Jie Min,
Department of Obstetrics and Gynecology, Union Hospital, Tongji Medical College, Huazhong University of Science and Technology, Wuhan, 430022, China, Tel: 13971646915,
E-mail: 691055202@qq.com

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1. Abstract

Cervical myoma is one of the rare types of uterine fibroids with various manifestations ranging from vaginal and pelvic swelling to sexual bleeding, urinary retention and constipation. This report described our experience with a huge cervical tumor in a young nulligravida woman who successfully underwent transvaginal myomectomy. Magnetic resonance imaging (MRI) and CT urography (CTU) were done before operation to assist in diagnosis. After the huge mass was surgically removed, hysteroscopy was carried out to excluding the genital and urinary system malformations. And then, we shaped the rest part of normal cervical tissue through a W-sutured-passway at the point 3.6.9.12 of the cervical canal to tighten the suture and stanch bleeding. Postoperative pathological results suggest that uterine leiomyomas, cervical polyps with extensive squamous metaplasia and nanoscale cyst formation. comprehensively evaluating the condition and improving relevant examinations before operation, distinguishing the surrounding anatomical relationship and selecting appropriate surgical treatment methods are all essential for successful treatment of giant cervical myoma.

2. Introduction

Cervical myoma belong to the special site of uterine leiomyoma fibroids and its incidence is very low, accounting for about 0.6%-2% of uterine leiomyoma [1]. Cervical fibroids can lead to difficulty in sexual intercourse, or bleeding after sexual intercourse and local compression symptoms like urinary retention, frequent urination, constipation. If the tumor body is large, it may cause menstrual change and even cause secondary anemia [2,3]. Huge cervical fibroid may even present as a polypoidal vaginal mass or masquerade as chronic uterine inversion [4]. Magnetic resonance imaging (MRI) and ultrasound play a vital role in the detection of cervical fibroids. MRI can identified and categorized the quantity, size, and location (i.e. anterior, posterior, lateral or cervical tube)) of cervical fibroids [5]. The treatment of cervical fibroids includes myomectomy or hysterectomy and the surgical route mainly includes through the vagina or abdomen, depending on the location and size of leiomyoma, age and fertility requirements [6]. Due to the special location of cervical fibroids, the diversified clinical manifestations and the close proximity to the vital pelvic structures, it also needs to be identified from germ urological malformations. Therefore, the difficulty of the diagnosis and surgery of cervical fibroids increases. Previous literature reported that cervical leiomyoma cases are mostly concentrated in postmenopausal women or pregnant women. The former may be complicated with pelvic organ prolapse and hysterectomy is the most surgical method, while the latter mostly chooses surgical treatment after childbirth [7-8]. The primary objective of this report is to describe our experience with a case of a huge cervical fibroid polyp with cysts in a young nulligravida woman who successfully underwent transvaginal myomectomy to shape the cervical again and preserve her fertility or other normal physiological function. In addition, we carried out a review of the relevant literature.

3. Case Report

3.1. Patient Information and Clinical Findings

A 25-year-old nulligravida woman presented with the complaint of huge irreducible mass protruding out of vagina since last ten months. She had regular menstrual cycle without any menstrual-related complaints. there were no compression symptoms like urinary retention or constipation. She has no special previous history or surgery and her family has no cancer patients. Her body mass index was 17.47. The vulva vagina sees irregular shape soft wrap block, like the size of the man's fist. Since the patient was unmarried and asexual life history, double diagnosis was not performed, and the anal diagnosis was not significantly abnormal in the uterus and attachment area.

3.2. Diagnostic Assessment

Her blood routine examination: Hb:110g/L and no obvious abnormalities observed in the rest items. Liver and kidney function and coagulation function were normal. Ultrasonography revealed a huge swelling between the cervix and vagina with a size of about 8.6*6.2*7.8cm mixed with liquid dark areas of 3.4 * 2.0 * 3.0cm. MRI showed that there was a large mass in the cervix-vaginal area. The maximum section was 9*6.1cm and multiple cystic shadows were seen posteriorly (Figure 1a,1b). Tumor-associated antigen results show that: AFP:0.633 ng/ml,CEA 0.905ng/ml, CA125 34.55 U/ml,CA199 1.4U/ml. CT urography (CTU) show that no occupying lesions were found in the two kidneys and no significant expansion in the renal pelvis calyces and ureters(Figure 1c,1d).

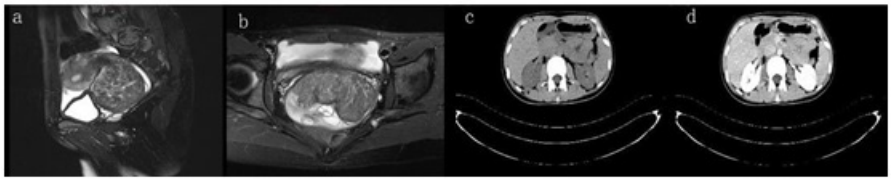

Figure 1a.b: MRI of a large mass (white arrows) in the cervix-vaginal area in a 25-year-old nulligravida woman. c.d. CTU shows no abnormalities in the urinary system.

3.3. Treatment

The examination before surgery suggested that the package is located in the vaginal-cervix. We proposed to do transvaginal myomectomy for the huge cervical fibroid and the patient was counseled for surgery with a high possibility of bleeding, infection and even a hysterectomy. Since the huge cervical mass needed to be differentiated from the genital and urinary system malformations, the urological system examination was completed before surgery and no abnormality was found. The vagina, cervix and uterine cavity were examined intraoperative. During the surgery we found that a huge cyst-like mass was seen in the vagina opening (Figure 2a). Cervical opening was visible among a solid tumor, and the uterine cavity could be probed with the probe (Figure 2c). The huge cyst-like mass was surgically removed (Figure 2b) and sent for rapid pathological examination (the upper) and the result showed that (cervical mass) cervical polyp accompanied by squamous metaplasia and the formation of cervical nasa cyst. The hysteroscopy was carried out, and the uterine cavity depth was 8cm. The uterine cavity shape was normal, the endometrium was thin and reddish and the fallopian tube openings were visible on both sides (Figure 2c). The cervix was lengthened about 6cm and enlarged, seen as a solid tumor that tends to cervical myoma. The cervical fibroids were exposed by circular incision about 2cm above the external cervical opening and cervical tissue was pushed up. The solid tumor was carefully performed circularly resection and the rest normal cervical tissue was remained. Suture hemostasis was performed and the wound surface was electrocoagulated. In order to shape the cervical again and recover its function, suture of the remained cervical tissue was proceeded throught a W-like suture passway at the point 3.6.9.12 of the cervical canal with a 1/0 synthetic line. A metal catheter was used to probe the urethra to the bladder, the metal probe was used to check whether the cervical canal was unobstructed and no obvious bleeding was found on the wound (Figure 2d). The surgical procedure was performed using a schematic presentation in Figure 2e.

3.4. Postoperative Pathology

Postoperative pathological results suggested that uterine leiomyomas (Figure 3a), cervical polyps with extensive squamous metaplasia (Figure 3b) and nanoscale cyst formation (Figure 3c). Immunohistochemical staining shows tumor cells SMA (+) (Figure 3d), Desmin(+) (Figure 3e), h-caldesmon(+) (Figure 3f), CD10(-) (Figure 3g),Ki67 (LI:2%) (Figure 3h).

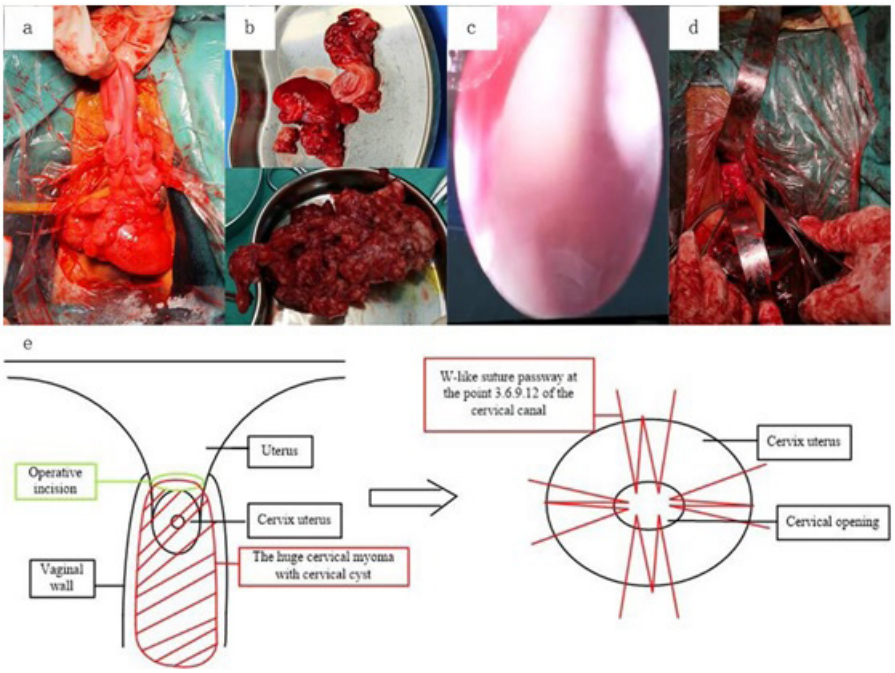

Figure 2a: Vaginal cervical mass (white arrows) before surgery; b. The huge mass was surgically removed. The upper specimens were sent for rapid pathological examination and the lower for routine pathological examination; c. The patient had a normal uterine morphology; d. Postoperative cervical morphology; e. The schematic presentation of the surgical procedure.

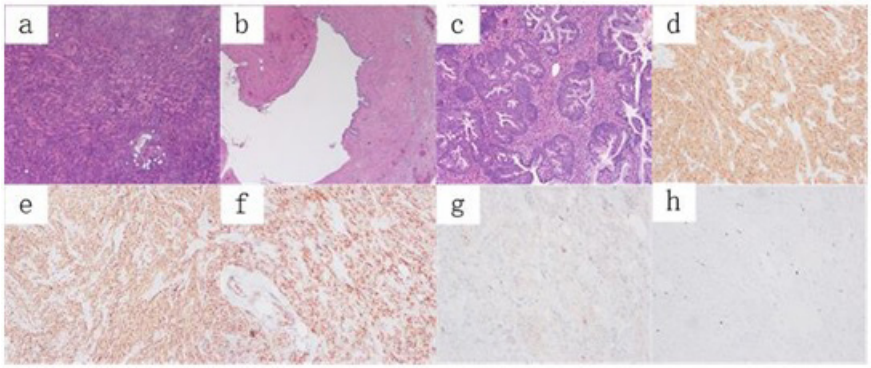

Figure 3a: uterine leiomyomas; b. cervical polyps with extensive squamous metaplasia; c. nanoscale cyst formation; d. SMA(+); e. Desmin(+);f. h-caldesmon(+); g. CD10(-); h. Ki67（LI:2%.

4. Discussion

Transvaginal or abdominal myomectomy should be the standard fertility preservation procedure of choice for cervical fibroids in women who desire to preserve their fertility. In this case, the patient was mainly hospitalized with vaginal mass as the main complaint, therefore, transvaginal cervical myomectomy was selected. We reviewed the literature with (‘cervical myoma’ OR ‘cervical fibroid) AND vaginal myomectomy in PubMed. In view of the aforementioned rarity of cervical myomas, it is not surprising to have a limited number of case reports excluding pregnant cases. The detailed information of the case is summarized in Table 1.

Because of the special position of cervical fibroids, it plays an excellent pretender, which brings certain difficulties for diagnosis and treatment. According to the site of cervical fibroids, it can be divided into anterior wall type, posterior wall type and side wall type. Cervical fibroid polyp is asymptomatic when it is small. With the increase of fibroids, once the symptoms appear, it is found that the swelling has been several times larger than the uterus [13]. If cervical fibroid polyp embedded in the pelvic cavity, it can compress the pelvic tissues and nerves, causing lower abdominal pain and low back pain. If cervical fibroid polyp grows forward or backward, it can compress the bladder, urethra, or rectum, causing frequent urination, dysuria, urinary retention, or constipation. When fibroids grow to both sides, it forms broad ligament myoma, which compress the ureteral, causing the ureteral or hydronephrosis pelvis and compress pelvic blood vessels and lymphatic vessels, causing edema in the lower limbs [14]. MRI has obvious advantages in the diagnosis of cervical fibroid polyp, showing its relationship with surrounding tissue. During the operation, we should have comprehensive ideological preparation, carefully distinguish the surrounding anatomical relationship, especially pay attention to

the relationship between uterine blood vessels and ureter to avoid damaging the rectum and bladder. Anastomosing the injury immediately once the injury is found. In this case, the vaginal mass was large and the cervical exposure was difficult. The final examination confirmed that cervical opening was visible among a solid tumor, which leads to the extension of the cervix and prolapse out of the vagina and need to be identified from uterine prolapse, genitourinary malformations and anterior vaginal wall swelling. The treatment of cervical myoma is mainly surgical resection. The surgical approaches include laparotomy, laparoscopy and transvaginal [15]. Huge cervical fibroids make the location of pelvic anatomy change, closely related to the ureteral, and the operation is difficult and dangerous. Therefore, special attention should be paid to the operation to prevent damage to important organs and intraoperative bleeding. Once cervical fibroids are confirmed, surgery should be performed as soon as possible to reduce complications. Laughlin-Tommaso SK found that preoperative GnRHa administration has the merits of fibroid size reduction and improving the hemoglobin level in women with anemia [16]. Chang and colleagues reported a mean blood loss of 99mL in his series with the aid of BUAL (Bilateral uterine artery ligation at its origin from the internal iliac artery) and diluted vasopressin injection. However, they admitted a loss of up to 500 mL in the case of a huge myoma (1.200 gr) [17]. The key to reduce bleeding in our operation is electrocoagulation hemostasis. The operation was performed via vagina and the anatomical structure was explored during the operation. The electrocautery was used to cut and coagulate. After the tumor was removed, W-shaped sutured was performed for hemostasis of the cervical stump to stop bleeding. Hb of the patient was 110g/ L before operation and 101 g/L after operation. The estimated intraoperative bleeding volume was 400 ml. In this case, according to the preoperative vaginal examination and magnetic resonance examination of the patient, the cervical myoma was mainly located in the vagina. The patient was young and had fertility needs, so transvaginal cervical myomectomy was performed, and the cervix and uterine cavity were explored during the operation to exclude genital malformations. Hatem Abu Hashim proposed the mnemonic "MUSIC" as a helpful guide for a consistent surgical strategy to avoid urinary tract injury and large bleeding: M (preoperative MRI for diagnosis), U (prophylactic ureteric catheterization), S (shell out the myoma following Bonney's principles, i.e., start-up and stay intracapsular), I (immediate suction to clarify deadspace), and C (close the cavity by spiraling stitch) [18].

Table 1: Summary of review of the available literature of vaginal cervical myomectomy (only case series and reports)

Authors (yr) (ref)	Study type	Operation done	Details
Wai Yoong et al. 2017, (Journal of Minimally Invasive Gynecology,24,811-814) [9]	Case series (n = 19)	Vaginal Myomectomy Using the D€uhrssen (Longitudinal Median Cervical) Incision	-The median age at time of procedure was 46 years (range, 43–55) -The median myoma size was 7 cm (range, 6–9) -The median duration of surgery was 60 minutes (range, 40–120) -One patient sustained a bladder injury that occurred when making the anterior cervical incision -The median length of stay was 8 hours (range, 6–36) and the median estimated blood loss was 90 mL (range, 50–150)
Frank M.M. et al.2021 (J Med Cases. 12(7), 288-290) [10]	Case Report	Vaginal Myomectomy and Total Vaginal Hysterectomy	- A 44 year-old woman, para 3 - It measured 8 × 8 × 6 cm and weighed ± 529 g - Estimated bleeding is about 200 mL.
JI Ikechebelu et al. 2012 (Nigerian Journal of Clinical Practice. 15(3):358-360. [11]	Case Report	Vaginal myomectomy	-A 37-year-old para 3 with three living children -Specimen consists of grotesque, dark brown, fibro collagenous tissue weighing 3 kg and measuring 22.4 × 20.5 × 11.5 cm with a peduncle measuring 3 cm. -The estimated blood loss was 100 ml -Operative time was not reported
Nilgun Turhan et al. 2014 (International Journal of Surgery Case Reports. 5(8): 513–515. [12]	Case Report	vaginal hysterectomy	- A 52-year-old woman, gravida 4, parity 3, abortus 1 - A 13 cm × 8 cm solid, inflammated, ulcerated, necrotic mass, protruding from the vaginal introitus was remarkable on pelvic examination and the body of the cervix could not be visualized separate from the mass --Operative time was not reported - Estimated bleeding was not reported

5. Conclusion

In conclusion, for huge cervical fibroid polyp, comprehensively evaluating the condition before operation, improving relevant examinations, such as MRI and urinary system examination, excluding other malformations and intervening before operation or ligate internal iliac artery if necessary to reduce intraoperative bleeding are all very important. Due to the change of anatomical structure during operation, it is necessary to distinguish the surrounding anatomical relationship, especially pay attention to the relationship between uterine blood vessels and ureter to avoid damaging rectum and bladder. Adopting individualized treatment scheme, and selecting appropriate surgical treatment methods achieves the best treatment effect.

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