CASE REPORT

Broad ligament uterine fibroid: Management with Davinci robotic myomectomy

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Received 16 December 2014; accepted 26 March 2015

Abstract  Background: We describe a patient with two fibroids; the largest was a broad ligament fibroid, which was managed successfully with robotic assisted laparoscopic myomectomy. It is well known that myomectomy of a large broad ligament fibroid presents a challenge to the surgeon with intraoperative complications such as excessive bleeding and ureteric injury or later complications such as pelvic hematoma and infection.

Case report: A 40-year-old nulliparous white female presented with dysmenorrhea, menorrhagia and pelvi-abdominal mass and primary infertility. Trans-vaginal 2D ultrasound (US) revealed an enlarged uterus 9.6/6.1/7.9 cm in dimension. Two uterine fibroids, intramural sub-serous in nature were seen on trans-vaginal 2D US. Trans-vaginal US with Doppler flow study suggested that the larger fibroid is broad ligament in nature with minimal vascularity between the broad ligament fibroid and the uterus. The patient underwent robotic assisted laparoscopic myomectomy. First an intramural sub-serous fibroid was removed, then a large broad ligament fibroid was dissected from the uterus and the anterior leaf of the broad ligament was sutured. A diagnostic hysteroscopy was performed at the end of the procedure and revealed a normal endometrial cavity. Post-operative course was uneventful.

Conclusion: The aim of presenting this case was to demonstrate that in patients with a large broad ligament fibroid, who want to preserve their reproductive potential, robotic assisted laparoscopic myomectomy is feasible and safe. Trans-vaginal US plays an important role in determining the

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Peer review under responsibility of Middle East Fertility Society.
1. Introduction

Uterine leiomyomata, or myomas, are one of the most common benign tumors of the reproductive tract, affecting more than 70% of women in their lifetime (1). Approximately 25% of reproductive-aged women have myomas. Definitive surgical treatment of myoma is hysterectomy while myomectomy is the treatment for those women who have symptomatic myomas and desire uterine or fertility preservation (2,3). Leiomyomas can arise from any tissue including the broad ligament. The incidence of broad-ligament leiomyoma is <1%. Myomectomy can be either done abdominally, laparoscopically or hysteroscopically. Recent trends toward minimally invasive surgery have resulted in increasing numbers of laparoscopic and robotic-assisted myomectomies (4–6). Although minimally invasive surgery has known advantages over open surgery, including shorter hospital stay, quicker recovery, less blood loss, and fewer postoperative adhesions, most of the myomectomies are done abdominally. This is due to the complexity and the necessity of extensive suturing for the desired multi-layered uterine closure, which is technically hard to do laparoscopically (7,8). Traditional laparoscopic myomectomy requires advanced surgical skills and thus may only be offered to select patients on the basis of myoma characteristics and surgeons’ expertise. The introduction of robotic surgery has allowed more surgeons to perform complex laparoscopic procedures (9). The robotic surgical system allows 3-dimensional perception of the surgical field and improved ease of multi-layered uterine closure. This has led to an increase in the number of robotic-assisted laparoscopic myomectomies performed worldwide (5,10,11).

2. Case description

A 40-year-old nulliparous white female presented with dysmenorrhea, menorrhagia, pelvi-abdominal mass measuring about 9 cm and primary infertility. Trans-vaginal 2D US revealed an enlarged uterus 9.6 × 6.1 × 7.9 cm in dimension. Two uterine fibroids intramural sub-serous in nature were seen on trans-vaginal 2D US measuring 7.1 × 6.2 cm, 3.6 × 4.2 cm in diameter. Trans-vaginal US with Doppler flow study suggested that the larger fibroid is a broad ligament in nature and that there was minimal vascularity in the area of attachment between the broad ligament fibroid and the uterus (Fig. 1).

Trans-vaginal 2D US with saline infusion hysterosonogram (SIH) showed that the endometrial cavity was not affected. Trans-vaginal 3D US confirmed the presence of a large broad ligament fibroid (Fig. 2).

Minimally invasive surgery was selected as per the patient request and based on the assessment and experience of our group. Robotic myomectomy was selected in this case as it provides better visualization, dissection and hemostasis than operative laparoscopy, especially in this critical area where the myoma is in close proximity to the ureter and the uterine vessels. The patient underwent robotic assisted laparoscopic myomectomy (Figs. 3a–3d. First a 4 cm intramural sub-serous fundal fibroid was removed. Then the broad ligament was opened showing a large broad ligament fibroid (9 cm in diameter) attached to the lower uterine segment with no attachment to the cervix and with a wide stalk measuring about 4 cm (Fig. 3b). Using both monopolar and bipolar cautery the fibroid was dissected from the uterus. There was no need to take any uterine sutures as complete hemostasis in the pedicle was achieved using the bipolar cautery (Fig. 3c). The anterior leaf of the broad ligament was sutured.

Care was taken to avoid injury of the right ureter and uterine vessels. Blood loss during the procedure was minimal. The fibroids were morcellated and removed from the peritoneal cavity. Diagnostic hysteroscopy, performed at the end of the procedure, to rule out any small submucous fibroids or polyps.
that may have been missed by radiological tests, revealed a normal endometrial cavity. The pathology report confirmed the diagnosis of uterine fibroid weighing 300 g. and measuring 13 × 10 cm (aggregate of morcellated leiomyomata tissue). Post-operative course was uneventful and the patient was discharged home the next day. Hysterosalpingogram (HSG) was performed 3 month post-operatively to determine the status of the fallopian tubes following the surgery to counsel the patient regarding her fertility potential. The HSG revealed a normal endometrial cavity and possible bilateral cornual blockage versus a spasm (Fig. 4). Another reason for failure of filling of the fallopian tubes on HSG was leakage of radio-opaque material in the cervical canal and upper vagina due to the acutely anteverted position of the uterus.

3. Discussion

Myomectomy is indicated if preservation of fertility is wanted, and can be performed through laparotomy, laparoscopy, or hysteroscopy. Myomectomy is reported to result in pregnancy rates up to 70% (12–14). Careful preoperative investigations using trans-vaginal US and possible MRI is helpful to select the most appropriate surgical approach (15). A hysteroscopic resection may be the best choice for predominantly submucous myomas, whereas a myomectomy by laparotomy is often the choice if the myomas are numerous or large (16). Laparoscopy is associated with shorter hospital stay and
recovery, and less intra-abdominal adhesions, which is an important goal if fertility is to be preserved (13,17). Moreover, complication rates with laparoscopic myomectomy are lower compared with abdominal laparotomy (13,18–20). Reported rates for re-operation, residual myomas, and recurrence of myomas are equal for laparoscopic myomectomy compared with laparotomy (21).

Laparoscopic myomectomy even with an experienced laparoscopist may find major parts of the procedure to be challenging, as precise dissection and suturing is particularly difficult when the myomas have a deep intramural or another unfavorable localization such as broad ligament. Unfortunately, those are the myomas that also have a probable impact on fecundity.

The da-Vinci system (da-Vinci® Surgical System, Intuitive Surgical Inc., CA, USA) is now widely used in gynecological operation. Its use in the field of gynecological surgery was first introduced in 2005. With an increasing use of it, the system provides instruments with a wrist function at the tip, movement downgrading, tremor elimination and a stable 3-Dimension view. In all, these features of the robot may theoretically help the surgeon to overcome some of the difficulties associated with traditional laparoscopic surgery. A disadvantage of the da-Vinci system is the high cost of investment and maintenance. Preparation time is relatively long. Probably this will diminish when all staff has gained more experience. In comparison with traditional laparoscopy the increased number and size of the incisions augments the risk of trocar hernias and patient complaints. The alternative approved method for the surgical management of our patient would have been a laparotomy. To our knowledge, this is the first case described in the literature for removal of broad ligament myoma through robotic route.

4. Conclusion

The aim of presenting this case was to demonstrate that in infertile patients with a large broad ligament fibroid, who want to preserve their reproductive potential, robotic assisted laparoscopic myomectomy is possible. Pre-operative planning and surgical expertise are mandatory to achieve this goal. Trans-vaginal US and Doppler study play an important role in determining the degree of attachment, location and vascularity between the uterus and the broad ligament fibroid. This can help in planning the surgical approach for each particular patient.

Author Disclosure Statement

1. Ahmed Abdel Aziz, MD has no competing financial interests to claim, nor does he have any commercial associations that might create a conflict of interest to disclose.
2. Salem K. Joseph BS has no competing financial interests to claim, nor does he have any commercial associations that might create a conflict of interest to disclose.
3. Mostafa I. Abuzeid MD has no competing financial interests to claim, nor does he have any commercial associations that might create a conflict of interest to disclose.

Conflict of interest

The authors declare no conflict of interest.

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