Case Report

Uncomplicated full term pregnancy after da Vinci-assisted laparoscopic myomectomy

Silvina Bocca, MD, PhD, is a Reproductive Endocrinologist at the Jones Institute for Reproductive Medicine and an Assistant Professor in the Department of Obstetrics and Gynecology at Eastern Virginia Medical School. Her main clinical interests are in the field of reproductive surgery and assisted reproductive technologies. Her research is focused on ovarian follicular development in humans and in non-human primate models and she is carrying out research to unravel the enigmas of implantation.

Dr Silvina Bocca

Silvina Bocca, Laurel Stadtmauer, Sergio Oehninger
The Jones Institute for Reproductive Medicine, Department of Obstetrics and Gynecology, Eastern Virginia Medical School, 601 Colley Avenue, Norfolk, VA 23507, USA
Correspondence: e-mail: OehninSC@EVMS.edu

Abstract

Laparoscopic surgery with the assistance of the da Vinci robotic system has been recently introduced in gynaecology, as this new technology provides three-dimensional vision and easier suture capability. This study reports, for the first time, the case of an uncomplicated full term pregnancy after laparoscopic myomectomy with the assistance of the da Vinci robotic system. The patient was a 35-year-old woman presenting with secondary infertility and a single 3 cm, predominantly intramural, fundal myoma. Following surgery, she conceived with minimal intervention therapy and delivered a healthy term infant by Caesarean section. The successful outcome suggests that this advancement can restore reproductive capacity with improved suturing capability of the uterine wall. More studies are needed to establish indications and outcome of the technique according to the number, size and location of fibroids.

Keywords: da Vinci robotic system, laparoscopy, myomectomy, pregnancy

Case report

The patient was a 35-year-old, gravida 1, para 0, with a previous spontaneous miscarriage and with 18 months of infertility. She had previously conceived without any treatment 3 months after discontinuation of birth control pills, but that pregnancy resulted in a first trimester spontaneous miscarriage.

Menarche was at age 10 years with normal developmental stages. There was no history of sexually transmitted diseases or abnormal Pap smears. Menses were regular every 28–31 days with occasional mid-cycle spotting. She had consistently detected ovulation by both basal body temperature and home urinary LH testing kits.

Her past medical and family histories were unremarkable. She had had three laparoscopies with fulguration of mild endometriosis for pelvic pain, and a laparotomy for appendicitis with lysis of adhesions.

Vital signs and general physical examination were within normal limits. Pelvic examination showed a uterus midline, normal size, shape and consistency, and no adnexal masses or tenderness to palpation.

A hysterosalpingogram revealed synchronous filling and spilling of both Fallopian tubes and a T-shaped uterine cavity without any filling defects. 2D and 3D ultrasound (Figure 1a, b) revealed the presence of a 3 cm fundal fibroid, mainly intramural, but with a subserosal component, located approximately 0.3 cm away from the endometrium. A hydrosonogram revealed a small and difficult to distend cavity without clear impingement of the fibroid into the uterine cavity (Figure 1c).

The patient underwent laparoscopic resection of the fibroid with the assistance of the da Vinci robotic system. The patient was positioned in the dorsal lithotomy position in direct operating room stirrups. A HUMI uterine manipulator and a Foley catheter were placed. Four trocar sites were inserted: a 12 mm intraumbilical for the video camera, two lower lateral 8 mm connected to the arms of
the robot, and a 10 mm right upper quadrant port for the assistant to hand sutures and use irrigation. Inspection of the pelvis confirmed the presence of a single fundal fibroid, with otherwise normal adnexal areas and no evidence of endometriosis or pelvic adhesive disease. Next, the fibroid was injected with diluted vasopressin (8 ml, 0.5 IU/ml) through a laparoscopic needle. Hot scissors were used to transect the serosa over the fibroid (Figure 2). The myoma was grasped with a forceps and dissected with scissors. Careful haemostasis was accomplished with bipolar coagulation. The myometrial wall defect was closed in two layers with interrupted 2 O vicryl sutures and the serosa was closed with 3 O vicryl using a continuous suture. The myoma was removed with an endobag through the umbilical port. The patient was discharged 2 h after the procedure. Pathology confirmed the presence of a 3 × 2 cm leiomyoma.

Two months after surgery, the patient started minimal ovulation enhancement/timed intercourse with clomiphene citrate 100 mg p.o. q.d. from days 3 to 7 of the menstrual cycle and monitoring of urinary LH. She conceived in the 2nd month of treatment with a serum β-human chorionic gonadotrophin (HCG) of 658 IU/ml at 5 weeks' gestation. A single, viable intrauterine pregnancy was detected by transvaginal ultrasound at 6 weeks and 3 days (Figure 3). Pregnancy was totally uncomplicated. The patient underwent a planned Caesarean section at 38 weeks and 5 days. A healthy viable female infant with Apgar scores of 8 and 9 was delivered weighing 6 lb 3 oz. Both mother and infant had an uncomplicated post-partum/post-natal course.
Discussion

Laparoscopic surgery has revolutionized the concept of minimally invasive surgery. Robotic-assisted surgery is one of the latest additions to the field of minimally invasive surgery. Many operative procedures have been performed in urology, cardiac and general surgery. Robotically assisted surgery has also been applied in gynecology. Falcone et al. (1999) described robotic-assisted laparoscopic tubal reanastomosis in 1999. Diaz-Arrastia et al. (2002) reported 11 patients undergoing laparoscopic hysterectomy using a computer-enhanced surgical robot. Advincula et al. (2004) reported on 31 patients who underwent robotic-assisted laparoscopic myomectomy. Robotic-assisted laparoscopic sacral colpopexy (DiMarco et al., 2004) and tubal ligations (Ferguson et al., 2004) have also been reported in the gynaecological literature.

Robotic-assisted laparoscopy is new to the field of surgery. As reported by Nezhat et al. (2006), robotic-assisted laparoscopy provides 3D vision and easier suture capability without tremor. The main benefit of the da Vinci robotic system is that it allows the surgeon 7 degrees of movement, therefore greatly increasing the freedom and precision of movement when using the laparoscopic instruments intra-abdominally. In addition, the system provides improved depth perception with the incorporation of the 3D vision. This allows for more meticulous and better-targeted coagulation that can reduce the damage to the uterine wall, and therefore, in theory, increase the chances of a successful pregnancy at term. By implementing laparoscopic instruments with multiple axis, fine-surgery techniques are easier to perform. This results in easier suture capability, allowing closing the uterine wall in two or three layers as well as facilitating the application of deep sutures in the myometrial layer, even if the intramural component of the fibroid reaches the endometrial layer, a task that is more difficult to perform using traditional laparoscopy. The robotic system has some disadvantages, however. At present, its cost is high, the equipment is bulky, it takes time to assemble the robot, and there is a new learning curve to ascend.

A large series of myomectomies using traditional laparoscopy performed in 514 patients reported 158 pregnancies with 27% spontaneous abortions, 2.6% ectopic pregnancies, 0.6% therapeutic abortions, 25% vaginal deliveries and 75.5% deliveries by Caesarean section (Seracchioli et al., 2006). The average size of the largest myoma removed was 5.44 ± 2.46 cm (range 3–15). Twenty-four per cent of patients presented with subserous myomas, 41.7% with subserous–intramural fibroids, and 29.9% with intramural myomas. No instances of uterine rupture were recorded. These authors reviewed the literature on uterine rupture. A summary of all cases reported revealed that the number, size, and type of myoma did not seem to play a significant role in uterine rupture.

This study presents the case of an infertile woman with a single, medium-sized, fundal intramural fibroid who underwent robotic-assisted laparoscopic myomectomy and who conceived with minimal ovulation enhancement and timed intercourse 2 months post-surgery. So far as is known, this is the first report of an uncomplicated full term pregnancy following laparoscopic myomectomy using the da Vinci robotic system.

Data on the impact of myomas such as the one described here on fertility are equivocal (Bulletti et al., 2006). Although purely speculative, the temporal association between the presence of the 3-cm intramural fibroid, its careful resection and the immediate achievement of pregnancy may suggest that the technique restored reproductive capacity and allowed the patient to have a successful term pregnancy. Nevertheless, and similar to the introduction of other innovative technologies, larger and comparative studies are needed to establish indications and validate the outcome of robotic-assisted laparoscopic myomectomies according to the number, size and location of the fibroids.

References


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