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A Successful Robotic Hysterectomy in a Patient with Multiple Previous Pelvic Surgeries and Failed Laparotomy

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Abstract

This 44-year-old nulliparous female patient had suffered from lower abdominal pain and urinary frequency for the past month. Ultrasound and CT showed two uteri myoma about 6.5 cm and 4 cm in size and an adnexal cystic lesion around 9 cm in size. She received several pelvic surgeries previously including abdominal myomectomy, laparoscopic left cystectomy and failed abdominal hysterectomy due to severe pelvic adhesion. Her symptoms persisted and, after seeking multiple consultations with different gynecologists, she was not suggested to have repeat surgery. Finally, she went to our hospital for robotic total hysterectomy surgery and it was performed successfully.

Keywords: Robotic surgery; Severe pelvic adhesion; Previous laparotomy

Introduction

Severe pelvic adhesions often occur due to gynecological surgeries such as myomectomies, cystectomies, tubal surgeries, or may rise from endometriosis or intra-abdominal infections [1]. In the past, these conditions were considered a contraindication for laparoscopic surgeries because of the increase in surgical difficulty and operating times, leading to conversion to laparotomy, and involved in 8.8% of re-admissions [2].

However, there is no documented case about conversion to robotic surgery due to failure of previous laparotomy. We hope this case may help us to re-define the role of robotic surgery in managing complicated benign gynecological diseases.

Case

This 44-year-old nulliparous female patient had suffered from lower abdominal pain and urinary frequency for the past month. She came to the outpatient clinic of Keelung hospital for medical consultation. Ultrasound and CT showed two uteri myoma about 6.5 cm and 4 cm in size and an adnexal cystic lesion around 9 cm in size.

Her menstrual period duration was 5 days with an interval of 30 days. There was a moderate amount of blood and severe abdominal pain during menstruation cycle. She received several pelvic surgeries previously including abdominal myomectomy, laparoscopic left cystectomy and failed abdominal hysterectomy due to severe pelvic adhesion (Figures 1 and 2).

Her symptoms persisted and, after seeking multiple consultations with different gynecologists, she was not suggested to have repeat surgery. Finally, she went to our hospital for robotic total hysterectomy surgery and it was performed successfully.

Discussion

Surgical options for this case including vaginal hysterectomy (VH) and Laparoscopically assisted vaginal hysterectomy (LAVH) [3] may be applicable. However, if the patient has a high risk of pelvic adhesion, minimally invasive approaches to hysterectomy may not be performed. Factors that increase the risk of pelvic adhesion include pelvic infection, tissue hypoxia or ischemia, trauma caused by the vast majority of surgical procedures, foreign body reaction, previous adhesiolysis, and the presence of intra-peritoneal blood [4].

Besides, number of the preoperative risk factors affected the conversion to laparotomy during VH or LAVH for benign uterine conditions [5,6]. According to previous article, we found that low parity, body mass index (BMI) \geq 30 kg/m², previous abdominal surgery, pelvic adhesion and large uterine size were compatible with our patient.

Total abdominal hysterectomy is a common surgery in gynecology with the majority performed due to benign conditions. So, our patient was a candidate for total abdominal hysterectomy but she also suffered from severe pelvic adhesion due to previous emergent surgery and other risk factors. Even conventional abdominal total hysterectomy could not be achieved. The previous article directly compares perioperative outcomes of robotic versus laparoscopic hysterectomy for benign diseases [7]. The analysis of those papers points to the fact that more complex hysterectomies are being performed robotically like stage III-IV endometriosis [8], previous multiple laparotomies, cases with severe adhesion, and where uterus were larger in size and weight [9]. We know a lot of risk factors which associated with conversion to laparotomy for women undergoing robotic gynecologic surgery [10]. However, there is no documented case about conversion to robotic surgery due to failure of previous laparotomy [11]. In our clinical practice, we accumulated a lot of experience for managing patients with severe anterior abdominal (Figure 1) or pelvic adhesion (Figure 2). So we attempted to overcome this obstacle with a new method (The da Vinci Si System). First, according to previous research [12], 51.7% adhesions along midline incision below umbilical level are due to previous laparotomy. Hence, the camera port can be set at 6 cm

Received September 06, 2016; Accepted September 28, 2016; Published September 30, 2016

Citation: Su IL, Wu HH, Liu WM (2016) A Successful Robotic Hysterectomy in a Patient with Multiple Previous Pelvic Surgeries and Failed Laparotomy. Adv Robot Autom 5: 153. doi: 10.4172/2168-9695.1000153

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Figure 1: Severe adhesion before Robotic surgery for Case. (A and B) Anterior abdominal bowel adhesion along previous post-operative scar from umbilical level to uterus. (C) Cul-de-sac obliteration with severe bowel adhesion



above the umbilicus routinely (Figure 3) or at least avoid old surgical scar locations if extensive pelvic adhesions are highly suspected. Then, in order to apply this method to all kinds of body shapes, we arranged the da Vinci trocar port by landmarks of human anatomy or the pattern of abdominal adhesions under the camera. If mild or no adhesion is noted, we insert the bilateral da Vinci arm trocar ports at the cross point between the horizontal of superior umbilical rim and bilateral midclavicular line at each side. Lastly, if there is need for suction and irrigation during adhesiolysis, another assistant port may be required. The assistant port is located along the anterior axillary line and over the lateral side of the line between the anterior superior iliac spine and the umbilicus. The optimal trocar sites are determined under camera.

The Endo wrist feature is also a useful tool for dealing with severe pelvic adhesions and difficult angles within the pelvic cavity (Figure 4). Certain strategies can be adopted to manage adhesions between the uterus and bowels or bladder (Figure 5) including bending the bipolar forceps to push or pull the adherent uterus to an feasible position by the bipolar arm (Figure 6), and set the accessory port to help the separation of the tissues (Figure 7). By this setting, the adhesions could be dissected more efficiently and safely without damaging the serosa of the bowel or bladder [13]. Most important of all, we performed a special procedure of uterine artery pre- ligation through retroperitoneal downstream ureter tracking to overcome doubts about excess blood loss due to extensive pelvic adhesions [14]. Another study showed that, for cases with severe adhesions, robotic surgery was associated with a shortened operation time, reduced blood loss and lowered postoperative pain compared with laparoscopy [13]. In our case, operation time was 3 hours and 15 minutes, blood loss was minimal, postoperative pain was well controlled by patient controlled analgesia (PCA) and total hospital stay was 4 days.

Conclusion

From this case, as severe pelvic adhesions were suspected due to



Figure 3: The trocar port placement of The da Vinci Si System for gynaecology surgery.



Figure 4: Cul-de-sac adhesiolysis was done. (A) Cul-de-sac post robotic adhesiolysis (B) Para- metrium with bowel adhesion.



Figure 5: Bladder adhered to anterior uterine wall post robotic adhesiolysis.



Figure 6: Bend the bipolar forceps to pull the adherent uterus.



Figure 7: Severe adhesion over para-cervical space post robotic adhesiolysis.

past history of multiple prior pelvic surgeries or implied by pelvic examination, conventionally, surgeon might make suggestions on surgical option of laparotomy. This time, robotic surgery can be a potential better choice.

The advantage in robot-assisted laparoscopy for severe pelvic adhesion is plausible. Therefore, any patient with high risks of severe abdominal adhesion including a history of previous abdominal surgery, BMI ≥ 30 kg/m², large uterine size, low parity, endometriosis, and recurrent pelvic infection . During operation, except the experience of the surgeon, some special technique can facilitate to reduced blood loss and success rate of surgery. Besides, post-operation result showed no increases in surgical time, blood loss, or intra- and postoperative complications. Severe pelvic adhesion is one of the best indications for robot-assisted laparoscopy in gynecologic surgery.

Conflict of Interest Statement

All authors declare that there is no conflict of interest in the subject of this study.

Ethics Approval

The research protocols were approved by the Taipei Medical University Joint Institutional Review Board (TMUJIRB 201301047).

Acknowledgements

We would like to acknowledge the Taipei Medical University Hospital Cancer Centre for the assistance in data collection. This work is granted by Ministry of Health and Welfare (MOHW103-TDU-B-212-113001) and the Ministry of Science and Technology (MOST 104-2320-B-038-063).

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