

Culdolaparoscopy: A Preliminary Report

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ABSTRACT

Objective: To introduce a surgical technique that combines culdoscopy with laparoscopy and microlaparoscopy.

Methods: This was a feasibility study conducted at The Mount Sinai Hospital of Queens. The technique is used when a larger port is required during laparoscopy or microlaparoscopy procedures. The additional port is placed in the vagina and, under laparoscopic surveillance, into the posterior cul-de-sac.

Results: This operation has been performed successfully in 5 oophorectomies, 4 myomectomies, 3 salpingo-oophorectomies, and 1 salpingectomy.

Conclusion: This technique reduces the need for abdominal ports in excess of 5 mm. These ports can have a visual or operative function depending on the nature or stage of the procedure. The vaginal port can serve a visual function similar to that of culdoscopy or may be used for the introduction of operative instruments and the extraction of specimens. A principal benefit of using the larger vaginal port is derived from the capability of assisting laparoscopy and allowing the surgeon to use fewer and smaller abdominal trocars.

Key Words: Culdoscopy, Laparoscopy, Surgery.

INTRODUCTION

Peritoneoscopy via the posterior vaginal fornix in the lithotomy position was used in Europe in 1936¹ and in the United States in 1940.² Visualization via the vaginal port in the knee-chest position (culdoscopy) was reported in 1944.³ These techniques were abandoned in favor of laparoscopy. The posterior fornix is also used for insufflation,⁴ a technique that is usually reserved for the obese patient. Transvaginal hydrolaparoscopy instills normal saline solution and places a small telescope via the posterior cul-de-sac.⁵

The posterior colpotomy is a procedure that some laparoscopists used to extract myomata, ovarian cysts, gallbladders, and appendixes. I began using the vagina as an additional visual, operative, or extracting port in laparoscopy. The reason was to avoid the use of larger or a greater number of abdominal ports. The use of 10-mm or greater abdominal ports has been specifically associated with complications in hernias. To avoid the use of these larger abdominal ports, the microlaparoscopy technique uses ports 2 to 3 mm in diameter. Some cases involve limitations on the visual field, rapid insufflation, heavy irrigation, difficult extraction, or the need to use bigger instruments. To overcome these limitations, a vaginal port that is 10 or 12 mm in diameter may be used. This maneuver has proved helpful in the surgeries performed.

MATERIALS AND METHODS

This was a feasibility project conducted with a limited number of patients in 1 hospital by 1 surgeon. Patients were selected from cases scheduled for surgery for benign conditions. Prior to surgery, all patients had a bimanual pelvic examination to confirm that no obliterations existed in the area of the posterior cul-de-sac.

To perform culdolaparoscopy, at least 1 assistant is needed; however, having 2 assistants is better. I use 2 monitors. These monitors are movable and have an articulated arm to support proper visualization throughout the surgery, which is essential for sustaining an effective view when the surgeon is operating from the vaginal port. The patient is placed in the lithotomy and

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Trendelenburg position. The legs are placed in the Allen type of telescopic stirrups. An examination under anesthesia is performed to assure that no obliterations exist in the posterior cul-de-sac. The remainder of the preparation follows the standard procedure for laparoscopic surgery.

Laparoscopy or microlaparoscopy are performed for initial visualization using 3- to 5-mm ports. The technique uses a uterine manipulator (ZUMI-4.5 TM of Circon Cabot, Racine, WI). A posterior vaginal retractor is required to expose the posterior fornix. A trocar that is 10 or 12 mm in diameter and 15 cm long is placed against the posterior fornix. The posterior vaginal retractor is then removed. The uterine manipulator and the trocar are pushed cephalad and anterior. The point of pressure in the posterior cul-de-sac is easily identified with the laparoscope. This maneuver visually confirms the proper location. When necessary, bowels are kept away with a probe. Using gentle control and steady pressure, the trocar is advanced from the posterior fornix into the cul-de-sac. This trocar becomes an operative port for 5- to 12-mm instruments, including a gastrointestinal anastomosis clamp and a motorized morcellator. In addition, this port can be used to place a telescope. For adnexal surgery, a view from the vaginal port is helpful in some steps, particularly when we are operating with fewer or smaller abdominal trocars. For the oophorectomy, the vaginal port could be used to place a 10-mm telescope. This provides a good view of the mesovarium. The mesovarium is coagulated and transected using the 3- to 5-mm instruments placed in the abdominal trocars. When the ovary is removed from the mesovarium, a 3- or 5-mm telescope is placed in one of the abdominal ports and an endoscopic bag is placed via the vaginal port for the extraction. Similar steps are taken in salpingo-oophorectomies and in salpingectomies.

Four cases of subserous and pedunculated uterine myomas measuring 5 to 8 cm in diameter were selected for this series. I performed the enucleation of the myomata using the established laparoscopic technique. After enucleation, a motorized morcellator was used transvaginally via a 12-mm trocar. The same port was then used for morcellation, extraction, irrigation, and suction. The incision in the posterior cul-de-sac was then closed with one suture of 2-0 chromic placed endoscopically; otherwise the suture is placed via the vaginal fornix.

This operation has been performed successfully in 5 oophorectomies, 4 myomectomies, 3 salpingo-oophorectomies, and 1 salpingectomy. No complications occurred related to this procedure.

DISCUSSION

Complications in laparoscopy often occur during the insertion of abdominal trocars. This appears to increase with the size and number of trocars introduced. At the present time, a trend exists toward using fewer and smaller abdominal ports for diagnostic and operative laparoscopy. However, when working with 3-mm or smaller abdominal ports, we occasionally encounter problems that require improved overview visualization, rapid insufflation, irrigation, extraction, and the need to operate with instruments that are 10 mm or larger in diameter.

Reports have been published that state that laparoscopic culdotomy is not associated with significant postoperative scar formation.⁶ Extensive experience with culdoscopy has shown complications to be rare. The most serious of these include bowel perforations during the blind insertion of a vaginal trocar. These perforations tend to occur in the rectum and extraperitoneal. The technique presented in this study employs laparoscopic surveillance during the introduction of the vaginal trocar, which offers a safeguard in the prevention of such complications. To avoid the use of more or larger abdominal ports, I began using culdoscopy in the lithotomy position associated with laparoscopy or microlaparoscopy. This technique requires the ability of the team to operate from different perspectives. Laparoscopy is done using the umbilical area for the telescopic view, and the operation is performed through abdominal ports. The operation resembles a laparotomy. When operating from the vaginal port, the operation is performed in the opposite direction from the optics. When the telescope is placed in the vagina and the operation is performed through the abdominal port, the orientation and steps resemble a vaginal surgery. The functions of the ports whether visual, operative, or extracting could change due to the nature or stage of the procedure.

CONCLUSION

In conclusion, I have found that the use of this additional vaginal route to visualize, operate, or extract during laparoscopy or microlaparoscopy is useful for placing the

largest trocar in the posterior cul-de-sac while reducing both the number as well as the size of the abdominal trocars. The use of culdolaparoscopy has provided good results in treating gynecological pathologies and has the potential to benefit females with other surgical pathologies.

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