Laparoscopic vaginoplasty using a single peritoneal flap: 10 years of experience in the creation of a neovagina in patients with Mayer-Rokitansky-Küster-Hauser syndrome

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Objective: To assess anatomical and functional outcomes of a novel laparoscopic vaginoplasty technique using a single peritoneal flap (SPF) in patients with Mayer-Rokitansky-Küster-Hauser (MRKH) syndrome.
Design: Prospective follow-up study.
Setting: University-based tertiary-care hospital.
Patient(s): Patients with MRKH syndrome (n = 83) and randomly selected frequency-matched age-comparable healthy women serving as controls (n = 85).
Intervention(s): From March 2004 to March 2014, a total of 83 patients with MRKH syndrome underwent laparoscopic vaginoplasty using an SPF.
Main Outcome Measure(s): Intraoperative parameters, postoperative parameters, and anatomical outcomes were recorded. The functional results of patients who became sexually active were assessed using the Female Sexual Function Index (FSFI) questionnaire and were compared with those of the controls.
Result(s): Laparoscopic vaginoplasty using an SPF was successfully performed in all 83 patients, with no intraoperative complications. The mean operative time and intraoperative blood loss were, respectively, 71.2 ± 18.9 minutes and 88.5 ± 57.2 ml. The mean length and width of the neovagina at the 6-month follow-up examination were, respectively, 8.2 ± 0.8 cm and 3.0 ± 0.6 cm. Anatomical success was achieved in all patients. At 12 months after surgery, functional success, as assessed by the FSFI questionnaire, was achieved in 95.3% of patients. The FSFI scores did not differ significantly between patients with MRKH and healthy women in a control group.
Conclusion(s): Laparoscopic vaginoplasty using an SPF may be a feasible and effective approach that has satisfactory anatomical and functional outcomes for patients with MRKH syndrome. (Fertil Steril® 2015;104:241–7. ©2015 by American Society for Reproductive Medicine.)
Key Words: MRKH syndrome, laparoscopic vaginoplasty, single peritoneal flap, neovagina, sexual function

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Mayer-Rokitansky-Küster-Hauser (MRKH) syndrome, which has an incidence of 1 in 5,000 to 10,000 live-born females, is characterized by the congenital absence of a uterus and vagina, with normal ovarian function and external genitalia, secondary sexual characteristics, and a normal female karyotype (46, XX) (1–3). Infertility and lack of sexual activity seem to have the greatest impact on quality of life of patients with MRKH syndrome. After being diagnosed in adolescence, owing to primary amenorrhea, patients often experience serious psychological and emotional anguish, resulting in low self-esteem and a distorted body image

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(4). When patients are older, they often request the construction of a neovagina of appropriate axial direction and adequate size to permit satisfactory sexual intercourse.

Numerous nonsurgical and surgical techniques have been described for the creation of a neovagina in patients with MRKH syndrome (5); however, no consensus has been reached on the best surgical treatment option. Experts first recommend a nonsurgical approach (Frank's method [6]), which requires gradual and long-term self-dilation. If patients do not consent to using vaginal dilation, or discontinue it, various surgical techniques can be used to create a neovagina. The 3 most frequently used surgical techniques for vaginal reconstruction are: laparoscopic sigmoid vaginoplasty (7); the laparoscopic Vecchietti technique (8); and Davydov's laparoscopic technique (9, 10).

Among these, Davydov's laparoscopic technique seems to be the most feasible and effective approach for the creation of a neovagina (11, 12). To obtain and transfer adequate peritoneum to cover the wall of the neovagina, Davydov's laparoscopic technique requires the mobilization of a relatively large portion of the pelvic peritoneum, via various methods. This peritoneal mobilization and the associated "pull-down" technique are complicated, and difficult to perform. On the basis of this method, we developed a novel laparoscopic vaginoplasty technique that uses a single peritoneal flap (SPF) and involves mobilization of only the supravesical peritoneum, such that it can be easily pulled down to cover the wall and vault of the neovaginal cavity. The objectives of the present study were to evaluate the technical feasibility and the anatomical and functional outcomes of laparoscopic vaginoplasty using an SPF.

MATERIALS AND METHODS

Patients

From March 2004 to March 2014, a total of 83 patients diagnosed with MRKH syndrome (age range: 18–29 years) underwent laparoscopic vaginoplasty using an SPF, in the Fourth Hospital of Hebei Medical University. In all patients, MRKH syndrome was diagnosed based on gynecological examination, abdominal ultrasonography, and laparoscopic exploration. Before surgery, all patients underwent psychological assessment and instruction. The preoperative evaluation included a physical examination, ultrasonographic examination, hormone profile analysis, karyotype testing, urinary system evaluation by an intravenous pyelogram, and magnetic resonance imaging.

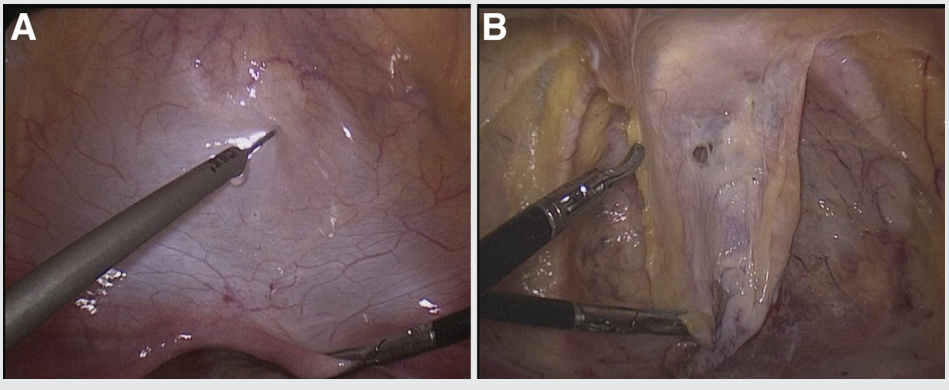
We randomly recruited 85 healthy women, as volunteers, who accompanied patients to our outpatient clinic between March 2004 and March 2014 to serve as the control group. These volunteers were 20–29 years of age, had experienced sexual intercourse within a month before enrollment, and had no gynecological diseases. The 2 groups were comparable with respect to race, education, and social status. The study was approved by the Institutional Review Board of the Hebei Obstetrics and Gynecology Institute, and informed consent was obtained from all subjects.

Surgical Procedure

All surgical procedures (n = 83) were performed by senior gynecological surgeons who had extensive experience in gynecological surgery. The patient was placed in the lithotomy position under general anesthesia. A Foley catheter was inserted. Laparoscopic vaginoplasty using an SPF involved the first laparoscopic step, the perineal step, and the second laparoscopic step.

During the first laparoscopic step, after exploration of the pelvis and abdominal cavity, the space between the bladder and supravesical peritoneum was injected with a solution of normal saline containing adrenaline (1:200,000 dilution). Under the laparoscope, general bulging of the supravesical peritoneum was observed (Fig. 1A). The bulging peritoneum was incised along the fibrous strand connecting the 2 rudimental uterine horns, the bilateral round ligaments, and the medial umbilical ligaments. The incised peritoneum was detached from the bladder by sharp dissection, using laparoscopic scissors. Thereafter, an SPF was formed (10 × 10 cm) that retained

FIGURE 1



First laparoscopic step: (**A**) General bulging of the supravesical peritoneum was observed. (**B**) The single peritoneal flap (10 × 10 cm) was detached from the bladder that retained a 5-cm–wide portion of the connective peritoneum with undivided pelvic peritoneum near the navel.

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