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Original Article

Comparison of Two Techniques of Laparoscopy-Assisted Peritoneal Vaginoplasty

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ABSTRACT Neovagina creation is essential for patients with the Mayer-Rokitansky-Kuster-Hauser syndrome. We compared a technique involved the pushing down of the peritoneum with the technique of separating the peritoneum for laparoscopy-assisted peritoneal vaginoplasty. We collected patients with congenital absence of vagina who underwent laparoscopy-assisted peritoneal vaginoplasty of the First Affiliated Hospital of Zhengzhou University between January 2011 and May 2013. The 2 surgical groups (pushing group and separating group) were compared for various parameters. The values of the following parameters were significantly lower for the pushing group compared with the separating group: mean operating time (78 ± 13 minutes vs 135 ± 28 minutes), mean duration of hospitalization (12.9 ± 2.7 days vs 18.0 ± 3.8 days), mean cost of hospitalization (14 016 ± 1640 RMB vs 18 783 ± 2143 RMB), requirement for a drainage tube (4% vs 27%; $\chi^2 = 8.864$), requirement for analgesic drugs (20% vs 40%; $\chi^2 = 3.977$), and postoperative rehospitalization (3.3% vs 10.0% at 2 months and 6.7% vs 26.7% at 6 months; $\chi^2 = 4.268$ and 5.196). Mean values for blood loss (57 ± 19 mL vs 66 ± 20 mL), time to pass gas (21 ± 4 hours vs 23 ± 7 hours), and length of the reconstructed vagina (9.0 ± 0.4 cm vs 8.9 ± 0.5 cm) were not significantly different between the 2 groups. In addition, mean postoperative Female Sexual Function Index score did not differ significantly between the 2 groups or among the 2 groups and a control group (27.0 ± 4.8 vs 26.7 ± 5.2 vs 27.9 ± 4.5; $p > .05$). The technique involving pushing down of the peritoneum offers advantages of reduced cost, complications, hospitalization, operative time, and pain over the traditional technique. Sexuality approaches so-called "normal" sexuality. Journal of Minimally Invasive Gynecology (2016) 23, 346–351 © 2016 AAGL. All rights reserved.

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Mayer-Rokitansky-Kuster-Hauser (MRKH) syndrome is characterized by congenital aplasia of the uterus and of the superior two-thirds of the upper vagina [1]. Clinically, MRKH syndrome can occur as an isolated syndrome (type I) or in combination with malformations in other organ systems (type II) [2]. Almost all patients with MRKH syndrome have normal secondary sex characteristics, a female karyotype of 46 XX, normal vulvar appearance, an absent vagina, and primary amenorrhea [3]. The condition is rare, with an incidence of 1:4500 in America [4] and 1.9% within the Chinese [5].

Surgery is recommended for vaginal reconstruction. The surgical techniques are designed to create a canal of adequate size oriented in the correct axis by developing the space between the bladder and rectum. Pratt [6] reported the use of sigmoid colon in vaginal reconstruction in 1961. Subsequently, harvesting free skin [7] and skin flaps [8] to form the lining of the neovagina were reported. Davydov [9] in 1969 and Rothman [10] in 1972 proposed a method for reconstructing the new vaginal lining with the peritoneum from the Douglas pouch. This traditional technique using the patient's own peritoneum involves dissection to free the peritoneum and then pulling it down to the mucosa of the introitus. Laparoscopically assisted colpopoiesis from the pelvic peritoneum without pelvic dissection was introduced by Popp in 1992 [11], and is well presented in international publications [12].

Soong et al [13] first described peritoneum vaginoplasty with the aid of a laparoscope. In 2008, Luo [14] proposed improving this procedure with the use a

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laparoscope along with a special peritoneal propeller, in what became known as the Luohu technique. Today, many surgeons are moving away from the traditional Davydov technique and making modifications of their own; however, few studies to date have compared the improved technique with the traditional technique through specific data evaluation.

Our technique can be considered a modified version of the Luohu technique. We use a routine instrument, the clamp holding a gauze roll, to push down the peritoneum from the pelvic cavity to the introitus under laparoscopic guidance. In the present study, we sought to evaluate the safety and efficacy of this technique by comparing it with the traditional technique in terms of various parameters.

Materials and Methods

Study Design and Patients

This study was designed as a retrospective investigation of the clinical characteristics of 60 patients with congenital absence of vagina who underwent laparoscopy-assisted peritoneal vaginoplasty at the Obstetrics and Gynecology Department of the First Affiliated Hospital of Zhengzhou University between January 2011 and May 2013. The patients underwent vaginoplasty using the technique of pushing down the peritoneum or the technique of separating the peritoneum and were classified into 2 groups, the pushing group (n = 30) and the separating group (n = 30) accordingly. The choice of technique was made on a case-by-case basis, depending on the preference of attending surgeon. The same groups of doctors (a chief physician, an associate chief physician or attending physician, and 1 or 2 assistants) performed all of the procedures. In addition, data were acquired from 30 normal, age-matched women for comparison of Female Sexual Function Index (FSFI) scores with the study groups. These women were all family members of outpatients, and had no gynecologic disorders during the follow-up period. The study was approved by the Internal Review Board of the First Affiliated Hospital of Zhengzhou University, and informed consent was obtained from each enrolled patient.

The mean patient age was 20 years (range, 17–24 years) in the pushing group and 21 years (range, 20–25 years) in the separating group (p = .15). Three patients (10%) in the pushing group and 2 patients (6.7%) group and separating group were married (p = .964). All enrolled patients had a normal 46 XX karyotype on chromosomal analysis, normal sex hormone levels, normal vulvar development, absence of vagina, and primary amenorrhea. Abdominal sonography revealed the presence of normal bilateral ovaries but an absent or primordial uterus in all cases. None of the patients had a history of pelvic surgery or pelvic tuberculosis or chronic pelvic inflammatory disease likely to cause extensive adhesions in the peritoneal cavity.

Assessment of Surgical Technique

The same competent physician was responsible for the evaluation of perioperative parameters, such as blood loss, hospitalization costs, and patient recovery. Intraoperative blood loss was assessed by measuring the blood drawn by a suction device and weighing the blood-soaked gauze. Functional outcome was assessed using the FSFI, a brief and validated self-reporting questionnaire evaluating female sexual function. The FSFI encompasses 6 domains: desire, arousal, lubrication, orgasm, satisfaction, and pain. Functional outcome was deemed very good at an FSFI score of $\geq$30, good at an FSFI score of 23 to 29, and poor at an FSFI score $<$23. The FSFI scores for the 2 study groups were compared with those of the control group.

Surgical Procedure

Preoperative Preparation

Two days before surgery, the patient was restricted to a semiliquid diet and given oral metronidazole. On the day before surgery, the patient underwent intestinal lavage. A vaginal mold was prepared in-house and sterilized at high temperature. The procedure was performed with the patient under general anesthesia and in the supine lithotomy position.

Pushing Group

The first laparoscopic step was to establish pneumoperitoneum and advance a laparoscope through a subumbilical incision to carefully inspect the entire abdominal and pelvic cavity. Next, at the perineum, the dimple of the vulva was identified and diluted adrenaline in saline was injected therein; an H-shaped incision was then made at the site,

Fig. 1

Laparoscopic image showing the gauze rolls held by endoscopic nippers.