



Contents lists available at ScienceDirect

Gynecology and Minimally Invasive Therapy

journal homepage: www.e-gmit.com

Original article

Simple neovaginoplasty using spontaneous regeneration ability of labial and vestibular flap in patients with Müllerian agenesis

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ARTICLE INFO

Article history:

Received 23 January 2017

Received in revised form

29 May 2017

Accepted 1 June 2017

Available online xxx

Keywords:

Labial advancement flaps

Müllerian agenesis

Neovagina

Vaginoplasty

ABSTRACT

Objectives: This study is aimed to introduce a simple neovaginoplasty procedure without significant complications using the spontaneous regenerative ability of labial and vestibular advancement flaps in patients with Müllerian agenesis.

Materials and methods: Prospectively collected data of 5 patients with vaginal agenesis due to Müllerian duct abnormality who underwent neovaginoplasty using labial and vestibular advancement flaps were retrospectively reviewed. Operative details, perioperative outcome, complications, length and width of the neovagina, and the postoperative sexual activity were evaluated.

Results: The mean operation time was 48 min (range 30–60 min) and the duration of follow-up ranged from 7 to 50 months. The mean length of the neovagina was 9.6 cm × 3.5 cm and 10.8 cm × 3.5 cm at hospital discharge and at final follow-up, respectively. No significant complications occurred during or after surgery. Epithelialization was completed by 8–20 months and the time to first sexual intercourse ranged from 3 weeks to 27 months and none of the patients experienced any intercourse-related difficulties.

Conclusion: Our neovaginoplasty technique using labial and vestibular advancement flap is simple, safe, minimally invasive and effective while avoiding the morbidity associated with other grafting techniques.

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Background/Introduction

Müllerian agenesis, also known as Mayer–Rokitanski–Kuster–Hauser (MRKH) syndrome is a rare congenital anomaly of the female genital tract with a reported incidence of 1:5000–10,000 in female infants.^{1,2} With the congenital absence of vagina and uterus, affected individuals have normal 46XX female karyotype, functional ovaries and normal development of secondary sexual characteristics. It accounts for approximately 10% of primary amenorrhea.³

Conflicts of interest: The authors have no conflict of interest relevant to this article.

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

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<http://dx.doi.org/10.1016/j.gmit.2017.06.004>

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Both surgical and non-surgical techniques have been suggested over the years for neovagina formation in patients with Müllerian agenesis.^{4–6} The most widely used non-surgical techniques are the Frank technique⁷ and its modification by Ingram⁸ which are both accomplished by applying constant pressure to the perineum using specially designed dilators.

Surgical techniques include vaginoplasty using various intestinal segments such as the rectum, ileum and sigmoid.^{9–11} Davydov procedure which can be performed either conventionally¹² or laparoscopically¹³ brings down the peritoneum of Douglas pouch into the vaginal cavity whereas laparoscopic Vecchietti procedure involves an acrylic sphere in the perineum connected to an abdominal traction device through the abdomen.^{14,15}

McIndoe operation which is the most widely used method uses a split thickness skin graft over a mold to create a new vagina.¹⁶ To prevent contracture that can occur with the shrinkage of graft, full thickness skin grafts¹⁷ and vaginoplasty using skin flaps from labia minora,^{18,19} inner thigh²⁰ and myocutaneous flaps using gracilis

muscle^{21,22} and rectus abdominis muscle²³ have also been attempted and reported.

However, each method has its own shortcomings including unsatisfactory cosmetic appearance, extensive operation time, high risk of postoperative complications, invasiveness as well as discomfort,²⁴ and no consensus over the best therapeutic approach has been reached.

Purpose/Aim

The primary goal of the treatment of vaginal agenesis is to construct a physiological vagina to enable normal sexual intercourse with minimal procedure-related morbidity. Therefore, this study was aimed to introduce a simple and safe neovaginoplasty using spontaneous regeneration ability of labial and vestibular advancement flaps in five patients with Müllerian agenesis.

Materials and methods

Between July 2011 and June 2014, 5 patients with vaginal agenesis due to Müllerian duct agenesis underwent neovaginoplasty using labial and vestibular advancement flaps at the Center for Minimally Invasive Surgery and Treatment, Department of Obstetrics and Gynecology in Good Moonhwa Hospital. This study was approved by the Institutional Review Board of Good Moonhwa Hospital (#2011-03).

Patients

All patients had primary amenorrhea and were aware of the absent vagina and uterus upon first visit to out hospital. Secondary sexual characteristics including breast development, axillary and pubic hair, and appearance of external genitalia were normal.

Transrectal ultrasound was initially performed to confirm absence of uterus and the presence of ovaries.

All patients were submitted to preoperative assessments including physical examination, chromosomal studies, either abdomino-pelvic magnetic resonance imaging (MRI) or computed tomography (CT) to assess the Müllerian anomaly as well as the presence of renal anomalies, and counseling on advantages and disadvantages of non-surgical and surgical techniques.

Preoperative treatment

All women were encouraged to try Frank's method preoperatively using Vaginal Dilator Set (Vaginismus.com, USA) and all were compliant to self perineal pressure application. The duration of preoperative treatment ranged between 14 days and 15 months depending on the time until individually desired operation schedule.

Operative technique

Under general anesthesia, the patient was placed in lithotomy position and a 16 Fr urethral Foley catheter was placed. The posterior portions of both labia minora were grasped with Allis clamps (Fig. 1A), and a midline incision was made in the perineum from the fourchette (Fig. 1B). Starting from this incision, a tunnel between the bladder and rectum was created by blunt and sharp dissections in the upward direction. Through blunt dissection the risk of rectal perforation and urethral injury can be minimized. This blunt dissection is continued until a 3.5 cm wide, 10 cm lengthened tunnel is obtained (Fig. 1C). Fibrous tissue encountered during dissection between the bladder and rectum was cut using unipolar electrocautery or metzenbaum scissors. The epithelial layer of redundant labia minora and vestibulum were dissected from the underlying tissue (Fig. 1D and E).

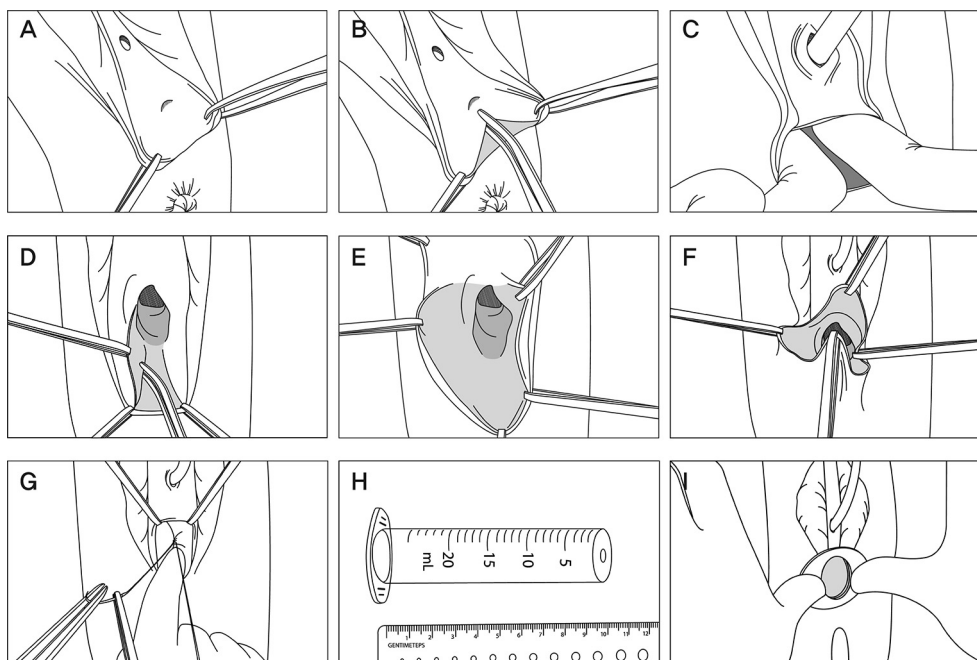


Fig. 1. Operative procedures of Neovaginoplasty using labial flap. (A) Posterior portions of both labia minora were grasped with Allis clamps. (B) A midline incision is made in the perineum from the fourchette. (C) A tunnel between the bladder and rectum is created by blunt and sharp dissections in the upward direction. (D, E) The epithelial layer of redundant labia minora and vestibulum are dissected from the underlying tissue. (F) The mobilized skin and mucosa were then moved into the created tunnel as deeply as possible but without tension of the flap. (G) The mobilized skin and mucosa are sutured to the wall of the tunnel with interrupted #3-0 polysorb sutures. (H) The adaptor is cut off from a 20 plastic syringe. (I) The trimmed syringe was placed in the vaginal cavity after surgery.

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