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Nonsurgical neovagina creation in congenital vaginal agenesis: a case report of movement-based dilator therapy

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Objective: To report the use of progressive, high-frequency movement-based dilator therapy (MBDT) to create a neovagina in a patient with congenital vaginal agenesis.
Design: Case report.
Setting: Tertiary care military hospital.
Patient(s): A 22-year-old woman with congenital vaginal agenesis.
Intervention(s): Self-directed MBDT.
Main Outcome Measure(s): Vaginal elongation by self-directed MBDT.
Result(s): The patient achieved a 6.5-cm vaginal length after 6 pelvic health physical therapy sessions over a span of 4 months of progressive, high-frequency MBDT.
Conclusion(s): Progressive, high-frequency MBDT should be considered as part of a first-line dilator therapy regimen for patients with congenital vaginal agenesis interested in creating a neovagina. (Fertil Steril Rep® 2023;4:321–5. ©2023 by American Society for Reproductive Medicine.)
Key Words: Vaginal agenesis, dilator therapy, pelvic floor physical therapy, movement-based dilator therapy

INTRODUCTION

Mayer-Rokitansky-Küster-Hauser syndrome, also known as Müllerian agenesis, is a rare congenital condition characterized by the absence of a vagina or uterus. The incidence of congenital vaginal agenesis is estimated to be 1 in 4,500–5,000 female births (1, 2). The current consensus is that vaginal dilation should be considered a first-line therapy for creation of a neovagina in women with congenital vaginal agenesis (2–4).

In spite of the high success rates of primary vaginal dilation at 90%–96%, currently, there is a lack of consensus and standardization of effective dilator therapy regimens for women with congenital vaginal agenesis (2–4). Treatments described in the literature have been directed by providers with various backgrounds and specialties (3, 5–7). Documented vaginal dilation regimens currently cite the high duration and frequency of static vaginal dilation techniques, ranging from 10 to 60 minutes for 1–3 times per day over a span of 4–12 months (3–5, 7, 8) with no documented reports of progressive, high-frequency movement-based dilator therapy (MBDT).

Poor compliance and outcomes are often attributed to the time-consuming nature of vaginal dilation, as well as the high levels of associated physical and psychological distress (3, 4, 9–11). MBDT has been a noted alternative to traditional vaginal dilator therapy for dyspareunia, and, after shared decision-making with the patient, was offered as an alternative to traditional vaginal dilator therapy for vaginal agenesis. This case report describes the use of progressive, high-frequency MBDT as an effective nonsurgical treatment option to achieve the functional total vaginal length (TVL) for pain-free vaginal penetration.

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CASE REPORT

A 22-year-old woman with congenital vaginal agenesis presented to the Female Pelvic Medicine and Reconstructive Surgery service with self-report of failed dilator therapy at 17 years of age. Previously, the patient was provided with large-caliber dilators and verbal instruction from her previous gynecology team of nurses and physicians to use for at least 30–60 minutes per day. The patient reported that she tried self-led therapy a few times over the years but was discouraged because of the physical pain and lack of clarity on the technique. After counseling on surgical and nonsurgical interventions with a pelvic health physical therapist (PHPT) and Female Pelvic Medicine and Reconstructive Surgery team, the patient decided to commit to a 3-month trial of pelvic health physical therapy while considering proceeding with a Vecchietti procedure. The Vecchietti procedure is a surgery that creates a neovagina through continuous invagination using a specialized traction device anchored through the abdomen to pull a metal vaginal "olive" into the pelvis from the vaginal dimple. The tension is increased on the device to stretch the vagina approximately 1 cm per day until the vagina reaches a length of 7–8 cm (12). A surgical neovagina requires daily dilation postoperatively to prevent the vagina from losing function and length. Informed consent was obtained from the patient before proceeding with this therapeutic method in addition to written and verbal consent for publication.

Magnetic resonance imaging demonstrated complete uterine and vaginal agenesis, with normal-appearing ovaries, follicles, and kidneys. She was a highly physically active, healthy, nonsmoker with a body mass index of 24.2 kg/m^2. She was actively enrolled in college and lived with 2 female roommates during the time of PHPT intervention. She denied a history of sexual, emotional, or pelvic trauma as well as any bowel, bladder, or pain conditions. The patient identified as a cisgender heterosexual female with previous intimate relationships with cisgender heterosexual males. She abstained from penetrative vaginal or anal sexual play and preferred external manual clitoral stimulation for sexual pleasure. She was not currently in a romantic or sexual relationship when she presented to the PHPT service.

The initial PHPT session included a comprehensive biopsychosocial and pelvic floor assessment and patient education on her vulvovaginal anatomy with aid of a mirror and anatomical illustrations. She had normal labial and vulvar tissues and clitoral mobility as well as normal results of cotton swab testing and light touch sensory screening of the S2 through S4 dermatomes. The patient was found to have a 2-cm vaginal dimple as well as poor pelvic floor muscle (PFM) recruitment, strength, and endurance (Table 1). No trigger points, tenderness, or sensitivity was found on examination of the superficial and deep pelvic floor musculature.

The patient was instructed in vaginal dilation with a medical grade nonlatex rigid plastic dilator (Fig. 1) using a movement-based approach, as opposed to static vaginal dilation often cited in vaginismus, female sexual pain, and gynecologic oncology literature (13–15), which focuses on inserting progressively larger dilators for prolonged periods of time. The patient was educated on the possible risks and side effects of dilator therapy and to stop activity if she experienced any pain, bleeding, or bladder or bowel symptoms. For the MBDT techniques for introital accommodation and vaginal length, she was instructed to apply sustained pressure at the introital borders of the superficial PFMs as depicted by the asterisks in the ovals in Figure 2A. A sweeping technique was used to access the deep PFM in a posterior-lateral direction, as depicted in Figure 2B. The patient was instructed to perform a contract-relax technique of the PFM when the myofascial restrictions were appreciated during dilator therapy. The contract-relax method included performing a contraction and lift of the levator muscles around the dilator and then on relaxation, compressing the PFMs and surrounding myofascial tissues in a down and outward motion. The patient was instructed to start self-vaginal dilation by performing MBDT for a total of 5 minutes per day in addition to isolated PFM contractions for 5 repetitions, 3 times per day.

The patient returned to PHPT every 2–3 weeks for 3 sessions, and dilator therapy was progressed from a small-sized (22 mm) to medium-sized (29 mm) caliber dilator with increasing duration from 5 to 15 minutes of daily vaginal MBDT. The patient underwent a total of 6 PHPT visits over a span of 4 months and achieved a TVL of 6.5 cm (Table 1). There was also an improvement in the Female Sexual Function Index (FSFI) score from 17.7 to 22.8, indicating an improvement in sexual satisfaction, specifically in the domains of desire, arousal, lubrication, and sexual satisfaction

TABLE 1

Results and treatment progression by visit.

Visit	Week	TVL (cm)	PFM strength (MMT)	PFM endurance (s)	Dilator diameter (mm)	Dilator dose, duration (min)	Frequency per week (d)
1	0	2	1/5	2	22	5	7
2	2	2	2/5	2	22, 29	10	7
3	5	3	2/5	3	29	10	7
4	8	4	2/5	3	29	15	7
5	11	5	2+/5	5	29	15	7
6	17	6.5	3/5	5	29	15	7

MMT = manual muscle testing; PFM = pelvic floor muscle; TVL = total vaginal length.

Miles. Neovagina dilator technique. Fertil Steril Rep 2023.

FIGURE 1

Dilators used in the move-based dilator treatment. (**A**) Medium caliber dilator (29 mm). (**B**) Small caliber dilator (22 mm).

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(Table 2). Of note, the patient was abstinent throughout the duration of her treatment; therefore, scoring of questions on the FSFI pertaining to sexual partners was unchanged. There was no change in her Female Genitourinary Pain Index score, which demonstrated that she started and completed MBDT without any pain, urinary, or quality of life impairments (Table 2). No adverse reactions or side effects were reported during the PHPT trial. She endorsed a high level of satisfaction with her ability to create and maintain a neovagina with self-led MBDT and did not proceed with surgical management.

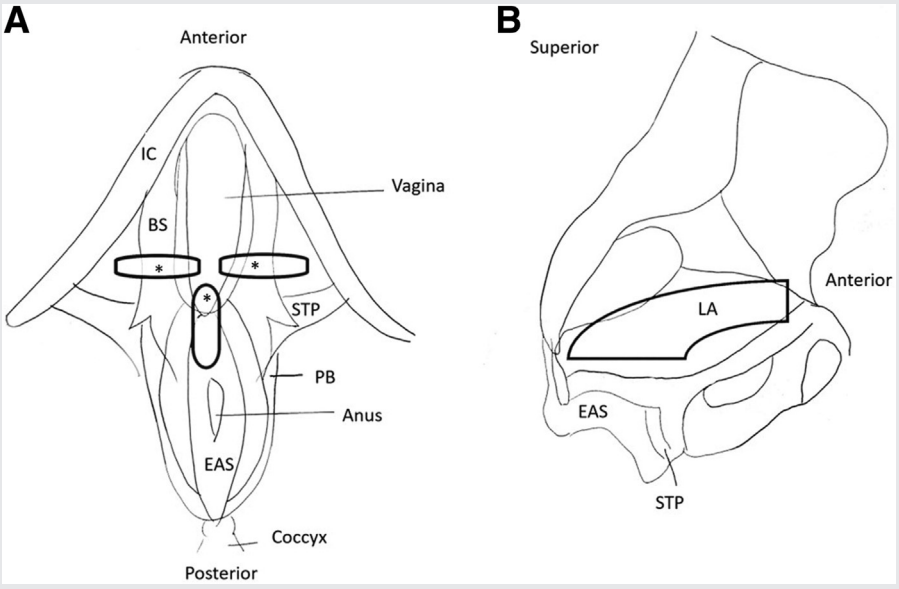
DISCUSSION

This patient was able to achieve a TVL of 6.5 cm with only 6 PHPT visits over a course of 4 months because of her engagement in progressive, low-dose, high-frequency MBDT. An adequate vaginal length has been described in Mayer-Rokitansky-Küster-Hauser syndrome literature as when satisfactory intercourse has been achieved or by a vaginal length of >6 cm and uniform width after conservative dilator therapy and/or surgical intervention (5, 16). Additionally, she demonstrated an improvement in several domains of the FSFI, demonstrating an improvement in sexual satisfaction, desire, arousal, and lubrication. The patient did not develop any bladder, bowel, or pain complaint as evidenced by the 0% impairment documented in the Female Genitourinary Pain Index. This is important to note because bladder and bowel dysfunctions are commonly reported side effects of dilator therapy interventions for creating neovaginas in women with congenital vaginal agenesis.

The patient attributed the success of this trial of vaginal dilation because of the increased understanding of her diagnosis, anatomy, dilator techniques, and encouragement provided by her PHPT. She also reported high satisfaction in the ability to use MBDT for smaller amounts of time per day in the absence of pain or discomfort. She was previously instructed to perform dilator therapy statically for longer periods of time despite pain experienced. Although vaginal dilation is widely accepted as the first-line conservative management for vaginal agenesis, there are several barriers to the creation of a neovagina with vaginal dilation for patients with congenital vaginal agenesis. The barriers to successful dilator therapy include a lack of a sexual partner, large time commitment, and physical and psychological discomfort (4, 11, 17). This patient was able to successfully commit to MBDT without pain or discomfort for a total of 15 minutes per day to achieve a TVL of 6.5 cm over a 4-month period, with only 6 visits with a PHPT. Because the patient received educational and therapeutic support and MBDT concomitantly, we cannot attribute all outcomes to the dilator technique alone. Compared with other modalities, progressive, high-frequency MBDT has the potential to enhance patient self-efficacy while remaining a low-cost, conservative initial management in the creation of a neovagina.

Physical therapists specializing in pelvic health have the unique perspective of assessing vaginal agenesis from a behavioral and neuromuscular contextual framework. The MBDT used to create a neovagina in this case integrated graded exposure and myofascial techniques to address introital accommodation and vaginal length as 2 components of the same functional goal of pain-free vaginal penetration. As opposed to traditional dilator therapy, which requires a

FIGURE 2



Pelvic schematic of myofascial treatment. (**A**) Vulvar view. The asterisks demonstrate the location of sustained pressure at the introital borders during the movement-based dilator therapy treatment. (**B**) Pelvic view. The arc demonstrates the location where the contract-relax myofascial technique was applied. BS = bulbospongiosus; EAS = external anal sphincter; IC = ischiocavernosus; LA = levator ani; PB = puborectalis; STP: = superficial transverse perineal muscle.

Miles. Neovagina dilator technique. Fertil Steril Rep 2023.

significant time investment on the order hours a week, MBDT requires less than 1–2 hours a week of patient-led dilator treatment. Self-led MBDT not only increases patient self-efficacy and empowerment but also promotes the normalization of nonnoxious intravaginal input within the sensory-motor cortex. This framework addresses both the "sensory and emotional" experiences of pain, as defined by the International Association for the Study of Pain (18).

TABLE 2

Outcome measures at the initial and discharge visits.

Outcome	Initial	Final	Maximum score
Female Sexual Function Index[a]			
Desire	3	3.6	6
Arousal	4.2	5.4	6
Lubrication	4.5	5.4	6
Orgasm	4.8	4.8	6
Satisfaction	1.2	3.6	6
Pain	0	0	6
Total	17.7	22.8	36
Female Genitourinary Pain Index			
Pain	0	0	23
Urinary	0	0	10
Quality of life	0	0	12
Total impairment	0	0	45

[a] All domains for the Female Sexual Function Index had a maximum score of 6, for a maximum score of 36, where a low score indicated worse sexual function. However, because of patient abstinence from intercourse with a partner, the maximum adjusted score would be 24.8 because of the adjusted scores in satisfaction and pain domains.

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In conclusion, this case report highlights the role of the movement-based vaginal dilation techniques that are safe and effective in the creation of neovaginas for patients with congenital vaginal agenesis.

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