Review

# Vaginal Dilator Therapy: A Guide for Providers for Assessing Readiness and Supporting Patients Through the Process Successfully

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A B S T R A C T

Vaginal dilator therapy is used to increase vaginal length for vaginal agenesis, to increase vaginal width for vaginal narrowing, and to prevent or treat stenosis after vaginal surgery. Although it is an effective therapy, many reproductive health providers have had little training on how to guide patients through this therapy. The purpose of this review is to educate providers on how to assess patient readiness and how to support patients through the process of vaginal dilation.

*Key Words:* Vaginal dilation, Vaginal agenesis, Mayer-Rokitansky-Küster-Hauser syndrome, Androgen insensitivity syndrome, Müllerian agenesis, Vaginoplasty, Vaginal stenosis, Vaginismus

## Introduction

Vaginal dilator therapy increases vaginal length for patients with vaginal agenesis, increases vaginal width for those with vaginal narrowing, and treats or prevents stenosis after vaginal surgery, radiation, or vulvovaginal dystrophy (Table 1). Amussat first described therapeutic digital pressure to treat vaginal agenesis in 1935. Dr Frank described using progressive vaginal dilators in 1938.[1] Dr Ingram modified the Frank method, instructing patients to sit on a dilator attached to a bicycle seat to apply pressure to the vaginal dimple.[2] Subsequently, surgical methods for vaginal elongation have dominated the scientific literature. Peritoneum, skin, amnion, buccal mucosa, and bowel have all been repurposed for vaginal elongation and augmentation.[3–6] Operative methods without grafts include the Duputryen and Sheares methods, which involve dissecting between the bowel and bladder and leaving a stent to allow epithelialization, as well as the Vecchietti and balloon methods, which involve operative continuous mechanical dilation.[7]

The complications of these operations include bladder or rectal perforation, urinary tract infection, graft necrosis, neovaginal granulation tissue, inflammatory bowel disease, diversion colitis, fistulae, neovaginal hair growth, and prolapse.[8–14] All vaginoplasties are at risk for strictures and stenosis, and long-term reoperation rates might be as high as 40%.[15] Postoperative and ongoing vaginal dilation is typically required for most procedures to decrease the risk of stenosis. Conversely, primary dilation alone has less than a 1% risk of complication, primarily prolapse and bleeding.[16,17] Not surprisingly, when including the costs of all procedures, equipment, and physician visits, vaginal dilator therapy is significantly less expensive than surgical intervention ($796 for dilator therapy versus $18,520 for surgical vaginoplasty).[18,19]

Because of the higher cost and rate of complications of surgery compared with primary vaginal dilator therapy, one might wonder if surgery is more successful. In the literature, success has been historically defined by anatomy. There is not a consistent anatomic length that is considered optimal, but the most common definition of anatomic success is on the basis of vaginal or neovaginal length. To measure length, a cotton bud may be inserted into the vagina to record the length from the posterior fourchette to the apex of the vagina. The average vaginal length after surgery (ie, McIndoe vaginoplasty) is 7.4 cm, compared with 7.3 cm with self-dilation and 8.7 cm for coital dilation.[20] Vaginal length, however, is not predictive of pleasurable sexual activity with or without vaginal penetration. To address this, more recent outcomes have focused on function, defined as "satisfaction with sex life" or "successful sexual function." If the aim is function, primary dilation and coital dilation are more successful than surgery. Approximately 94%-96% of patients report achieving this goal with primary dilator therapy or coital dilation.[16,21,22]

Because of the high rates of functional success, lower cost, and lower rate of complications for primary vaginal dilator therapy compared with surgical intervention, the American College of Obstetricians and Gynecologists has recommended primary vaginal dilation as first-line therapy for vaginal agenesis.[23] It is important to note that the best reported outcomes for vaginal dilator therapy have been at centers with experienced providers to guide patients through the therapy. Unfortunately, many reproductive

The authors indicate no conflicts of interest.

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1083-3188/$ - see front matter 
https://doi.org/10.1016/j.jpag.2019.05.002

**Table 1**
Indications for Vaginal Dilator Therapy

| | |
|---|---|
| Vaginal agenesis | Mayer-Rokitansky-Küster-Hauser syndrome |
| | Androgen insensitivity syndrome |
| Post-surgical stenosis | Vaginal atresia |
| | Transverse vaginal septum |
| | Urogenital sinus |
| | Cloacal anomaly |
| | Gender-affirming vaginoplasty |
| | Episiotomy and vaginal laceration repair |
| Iatrogenic stenosis | Brachytherapy |
| | Laser therapy |
| Vulvovaginal inflammatory conditions | Graft vs host disease |
| | Lichen sclerosis |
| | Lichen planus |
| | Inflammatory bowel disease |
| | Stevens-Johnson syndrome |
| Functional stenosis | Vaginismus |

health providers have had little training on how to teach dilator therapy or support their patients through the process.[24] Therefore, the purpose of this review is to educate providers on how to assess readiness and support their patients through the dilation process.

## How to Assess Readiness

The most common reason cited by providers for early discontinuation of dilation therapy is lack of patient motivation or readiness.[24] Particularly with adolescent patients, there is often a desire to "fix" vaginal agenesis or stenosis and to rush into dilator therapy before the patient is fully ready. Providers should minimize normative pressure that the patient and family might feel regarding vaginal elongation.[25] Instead, dilation should be described as a process that should be delayed until the patient is completely ready, which could be soon, sometime in the future, or never. If she states that she is ready, she should be asked about her motivation and to identify any psychosocial, logistical, and anatomic issues that she feels might impede progress (Tables 2 and 3).[26] A frank discussion about the process, time commitment, challenges, and need for close follow-up is essential.[21] Because the treatment is patient-driven, it is critical that the patient must express a clear wish to dilate. Patients should be counseled that the ideal time to start dilation is when they are motivated and ready. If the provider is not comfortable assessing motivation and readiness, referral to a therapist with experience with vaginal agenesis or a center with expertise is warranted.

**Table 2**
Barriers to Success With Vaginal Dilator Therapy

| | |
|---|---|
| Psychosocial | Motivational problems and poor compliance |
| | Unstable relationship |
| | Interpersonal conflict |
| | Parental misunderstanding of diagnosis |
| | Sociocultural factors |
| | Mental health issues |
| Cognitive issues that affect comprehension | Young age |
| | Underlying learning disability |
| | Lack of knowledge of process |
| Logistical | Lack of privacy |
| | Travel distance to clinic |
| | Busy schedule |
| Anatomic | Discomfort and pain |
| | Scar from "hymenectomy" |
| | Absence of dimple |
| | Multiple congenital anomalies |

**Table 3**
Questions to Ask Before Initiating Dilator Therapy

| |
|---|
| What is your personal motivation? |
| How do you feel about your condition? |
| How do you feel about your body? |
| How is your self-esteem? |
| Are your struggling with anxiety or depression? |
| Are you in the midst of a sexual relationship or anticipating one soon? |
| Are you in a healthy relationship? |
| Is your family or partner supportive? |
| Do you have a private place to dilate? |
| Do you anticipate any barriers to dilation? If so, how could you solve them? |
| How confident do you feel that you will succeed? |
| If you are not confident, what are your concerns? |

Patients are often concerned that they will not succeed. It is important for the provider to provide reassurance and encouragement, despite starting length or age. There is no starting vaginal length that predicts success or failure. It is important for the patient to know that although the starting length is correlated with end vaginal length and duration of dilator therapy, starting length is not correlated with anatomic or functional success. In a recent study, 21 women with Rokitansky-Küster-Hauser syndrome and androgen insensitivity syndrome had a mean starting length of 4 cm (±2.3) cm and a mean length at the end of therapy of 8.5 cm (±2.4) cm. Multiple patients starting with a vaginal dimple length of less than 2 cm were able to elongate the vagina to 8-10 cm.[27,28] Therefore, even patients with a vaginal length less that 1 cm should be reassured that they can achieve functional success with dilation. Additionally, dilator therapy in patients younger than 18 years of age has been shown to have functional success equivalent to that in those 18 years of age and older. Nonetheless, waiting until the patient is truly motivated might result in a higher rate of success and less frustration.

## Getting Started

The patient should be initially taught how to perform dilation in clinic with a provider carefully guiding her through the steps. This visit might take additional time and support and should be scheduled accordingly. She should be advised to void before starting dilation. The patient should then be positioned in a semirecumbent position and provided a mirror. Because many women do not have knowledge of their genital anatomy, the provider should show the patient the location of the labia majora, labia minora, clitoris, urethra, distal vaginal, and hymen, if present. She might have been erroneously told that she has "no vagina" previously. With a mirror, the provider can show her the exact location of her vagina. The provider should demonstrate how to place the extra small dilator in a downward angle toward the sacrum and then measure how far this dilator can be advanced. The patient should then herself demonstrate how to place and advance the dilator until she senses significant stretch, but not pain. If she experiences pain, topical lidocaine jelly may be applied to the introitus and allowed to absorb for 20 minutes before using the dilator to decrease tenderness. She should also be

instructed how to tighten and relax the levator muscles. She can be shown how to clean the dilators with water and a gentle soap. She should be encouraged to void before and after dilation (Table 4).

### What is the Optimal Frequency and Duration of Dilator Therapy?

The patient should be encouraged to dilate 1-3 times per day for 10-30 minutes. Frequency of dilation has been shown to be more important than duration of therapy. For example, 3 times per day for 10 minutes might increase length more quickly than once per day for 30 minutes. More frequent dilation (2-4 times per day) has a higher rate of anatomic success (76%) compared with once per day (49%). Functional success does not differ, however. In fact, there is no significant difference in functional success with dilation 2-4 times per day vs once per day.[16] Therefore, the patient should be encouraged to dilate as frequently as her schedule will permit.

### Provision of Dilators

If possible, providers will stock dilators in clinic, to allow in-clinic teaching and instruction and decrease barriers to dilation for their patients. The initial dilator will typically measure approximately 10-15 mm in width and should be rounded at the top. If a dilator is not available in clinic, the provider may demonstrate the process of dilation using the rounded end of a blood collection tube to press against the vaginal dimple. If the provider's office does not stock dilators, they may be purchased online.[24] Patients might prefer dilators that are softer or have handles. When some depth has been reached, she should change to a more cranial angle and increase to the next-size dilator. She might be counseled that vibrators might also decrease pain and improve the experience with the process.

### Supporting Patients during Dilator Therapy

Close follow-up is recommended. If possible, the patient should be advised to return to clinic within 2 weeks, 4 weeks, and 6-8 weeks. At each visit, the provider should measure the depth of the vagina and ask about any concerning symptoms. The patient should be advised to report if she is having bleeding, urinary symptoms, or pain.

**Table 4**
Steps for Teaching Dilator Therapy

| Steps for Teaching Dilator Therapy |
|---|
| 1. With a mirror, show the anatomic landmarks to the patient so she understands where her clitoris, urethra, vagina, and anus are located exactly |
| 2. Measure the starting depth and width with a Q-tip and dilator |
| 3. Demonstrate appropriate angle with the dilator and talk about how to avoid the urethra |
| 4. Make sure that she can demonstrate how to apply pressure with the dilator |
| 5. Discuss the vaginal and perineal muscles and how to relax the muscles when advancing the dilator |
| 6. Discuss strategies to soften the vaginal mucosa including lubricants, soaking in the bath, and pleasurable self or partner stimulation |
| 7. Discuss ways to ensure privacy |
| 8. Provide vaginal dilator instructions (https://www.seattlechildrens.org/pdf/pe1292.pdf or https://youngwomenshealth.org/2013/10/08/vaginal-dilator-instructions) |
| 9. Review sexually transmitted infection prevention strategies including condoms and the human papilloma virus vaccine |
| 10. Schedule follow-up and make sure she knows the clinic number to call |
| 11. Encourage her to build a supportive team, including significant others, friends, family. and peers |

#### *Bleeding*

If the patient is experiencing bleeding, an examination can be helpful to assess for trauma. Typically the bleeding is related to mucosal irritation. Increasing lubrication and using a wider dilator may prevent trauma. If there is a low estrogen effect, particularly for patients who have hypogonadism, prescribing daily estrogen cream might improve the resilience of the vaginal mucosa. For light bleeding the patient might be advised to take a rest day and then resume dilating when the bleeding has ceased.[24]

#### *Pain*

Strategies to decrease pain with dilation include increasing lubrication, lidocaine jelly, estrogen cream, oral analgesics, and anxiolytics.[29] Women with Rokitansky-Küster-Hauser Syndrome might have decreased blood flow to the vagina compared with controls, however, with arousing stimuli, experience improvement in blood flow.[30] Therefore, switching to a softer dilator or vibrator, and engaging in activities during dilation that increase arousal might improve blood flow to the vagina and decrease pain. Evaluation of the levator musculature for vaginismus is essential. In this situation, pelvic floor physical therapy might be especially beneficial for additional support through the dilation process.[31]

#### *Urinary Symptoms*

Urinary symptoms are prevalent in patients with vaginal agenesis even before dilator therapy. More than 50% of patients with vaginal agenesis report urinary hesitancy and urgency. Additionally, 37%-42% report bladder pain, incomplete emptying, and burning. Finally, approximately 15% report incontinence before starting dilation. These symptoms might increase with dilator therapy.[32] Baseline symptoms should be established before starting therapy. If the symptoms worsen, urinalysis and urine culture to assess for infection, and testing for gonorrhea and chlamydia for the patient engaging in sexual activity should be obtained. The technique should be reviewed to make sure that the patient is not inadvertently dilating her urethra or pressing on her bladder with an incorrect angle. Finally, Kegel exercises and voiding habits should be reviewed. Again, pelvic floor physical therapy might be especially helpful for patients with these symptoms.[31]

### When is Penetrative Sexual Activity Permitted?

There is no vaginal length prohibiting coital activity. In fact, a study of 20 patients using coital dilation alone for vaginal agenesis was notable for 95% having success. The starting lengths ranged from 0 to 4.5 cm and the ending lengths ranged from 7 to 12 cm within 2-12 months after coitarche.[22] Therefore, patients might be counseled that

gentle penetrative sexual activity with a supportive partner may be initiated when she feels ready and might accelerate the process of dilation.

### Postoperative Dilation

It is critical to counsel any patient before surgery that dilator therapy is usually initiated soon after surgery to prevent stenosis. Therefore, patients need to be assessed for readiness to dilate before surgery. Despite extensive literature regarding intraoperative technique, there is little literature dedicated to the ideal timing or duration of postoperative stenting or dilation. Typically, for vaginoplasty techniques that require grafts or extensive mobilization of the native vagina, a vaginal stent is left in place immediately after surgery. After the patient is discharged, patients are advised to either wear a stent continually for 3-6 months, to wear a stent while sleeping, or to use dilators once to 3 times per day.[17] Some advocate for initiating dilation immediately after surgery and others advocate for waiting until 4-6 weeks after surgery.[33] Close follow-up is necessary after surgery to provide support for dilation therapy.

### Maintenance Dilator Therapy

Guidance regarding the optimal frequency or duration for ongoing dilation is lacking. Patients might express a lack of motivation and might feel that dilation is embarrassing, a chore, or an unpleasant reminder of their condition.[34,35] They might choose to stop dilating completely. Those who have never had surgery can be reassured that even if some vaginal length is lost with a gap in dilation, length can be reestablished quickly with resuming dilation or coitus.[16] Because the risk of stenosis is certainly higher after surgery, ongoing intermittent dilation is likely necessary if the patient is not having regular penetrative sexual intercourse. For situations in which the risk of stenosis is high, dilation is typically recommended 3 times per week for at least 2 years and potentially indefinitely.[36]

### Ongoing Support

Even post surgery and dilation, women might believe that their vagina is abnormal and might fear sex.[27,37,38] Patients with vaginal agenesis or vaginal dysfunction have higher rates of sexual dysfunction and experience higher rates of depression and body image issues.[39] Part of ongoing care includes addressing these concerns. Although providers might want to promote adherence, patients might have complicated feelings about their underlying condition, which might be amplified by the process of dilation.[40,41] Patients' decisions about whether or not to dilate their vagina should be supported. Although ceasing dilation might result in stenosis after surgical treatment, women's feelings about their condition and about the process of dilation should be acknowledged and respected. Providers can emphasize that pleasurable sexual activity does not require penetration of the vagina. They should be encouraged to seek counseling, ideally from a therapist with experience caring for those with vaginal agenesis. Peer support might be particularly beneficial and should be encouraged (Table 5).

**Table 5**
Sources of Peer Support for Vaginal Agenesis

| Source |
|---|
| Beautiful You MRKH foundation: www.beautifulyoumrkh.org/ |
| Androgen Insensitivity Syndrome-Differences in Sex Development Support Group: http://aisdsd.org/ |
| Center for Young Women's Health: https://youngwomenshealth.org/mrkh-all-guides |
| The MRKH Organization: http://www.mrkh.org/ |
| Accord Alliance: http://www.accordalliance.org/ |
| Vaginismus support: https://www.facebook.com/groups/Dyspareunia.Support/ |

Finally, patients should be advised about methods to decrease sexually transmitted infections, including use of condoms, and should be advised to have the human papilloma virus vaccine if they have not been immunized because of the risk of human papilloma virus infection of the vulva and vagina.[42] Routine vaginal cytology is not recommended, however, if an abnormal lesion is identified, biopsy may be performed.[23]

### Future Directions

In conclusion, vaginal dilation is a successful treatment for vaginal elongation and stenosis. Additional long-term outcomes research is needed for all conditions for which dilator therapy is recommended. Investigation into dilator therapy after surgery might provide consensus regarding optimal timing of initiation and duration. Because many providers report limited training with this therapy, additional education and training in medical school and residency is necessary. Assessing psychological readiness, providing guidance, and encouraging peer and psychological support before and after dilation is imperative. Providers who do not feel prepared to fully support their patients through the dilation process should encourage their patients to seek consultation at a center with expertise.

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