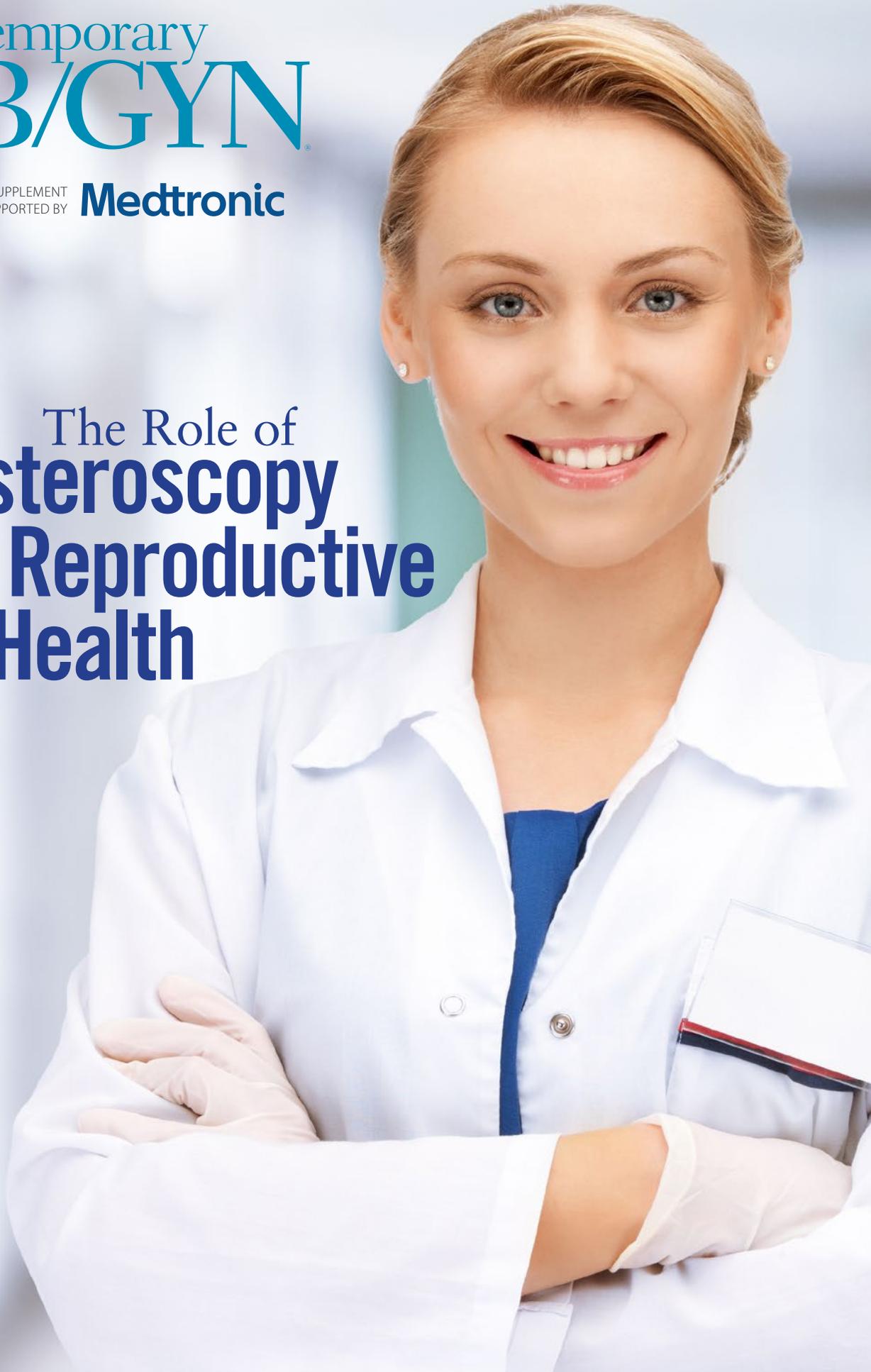


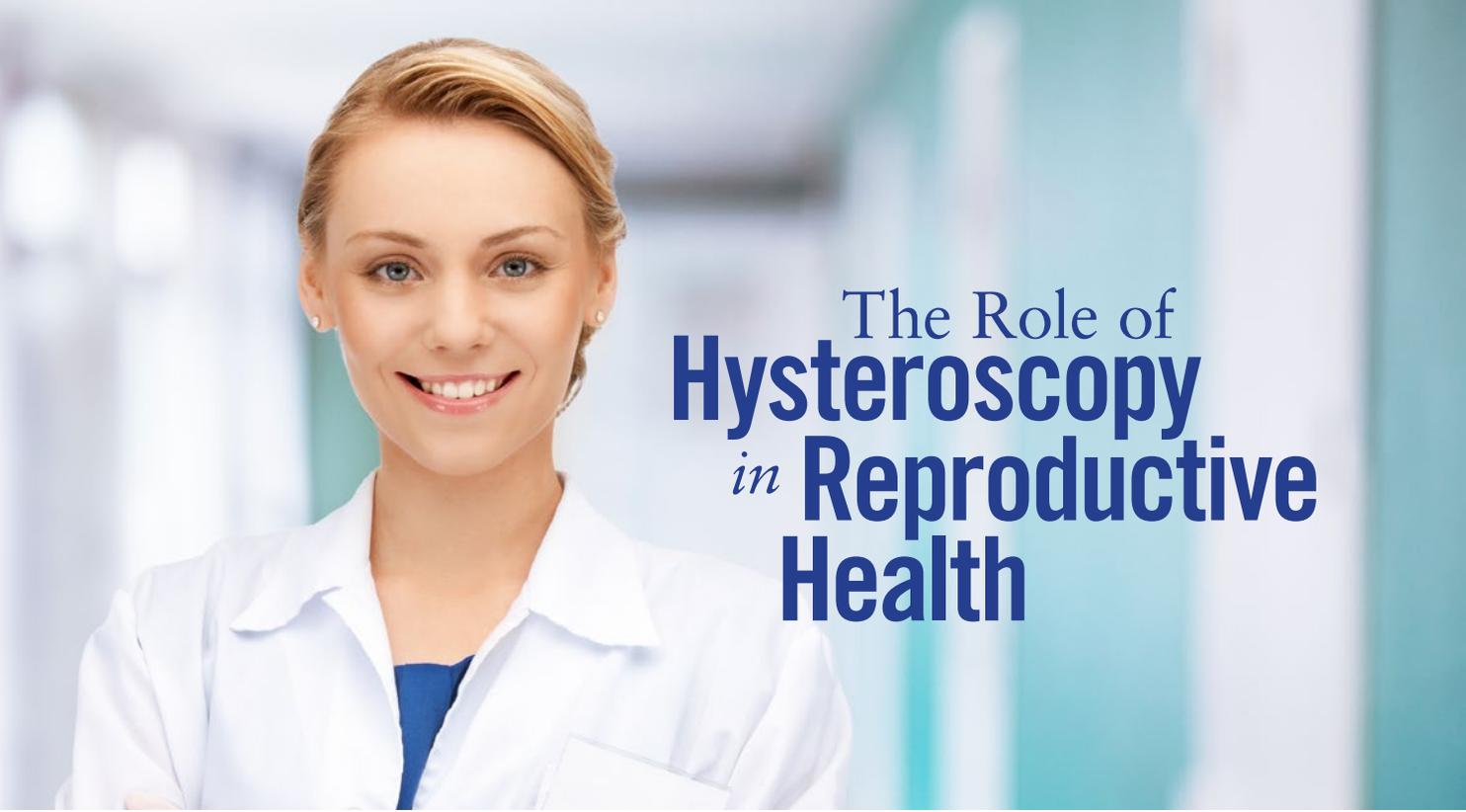
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# Contemporary OB/GYN

A PROMOTIONAL SUPPLEMENT  
SUPPORTED BY **Medtronic**

## The Role of **Hysteroscopy** *in* **Reproductive Health**





# The Role of Hysteroscopy *in* Reproductive Health

## Panelists

**Dorette Noorhasan, MD**, is medical director and cofounder of CCRM Dallas–Fort Worth, TX. She is board certified as a reproductive endocrinologist and infertility specialist. Dr. Noorhasan graduated summa cum laude from the University of the Virgin Islands and attended medical school at Boston University School of Medicine. After medical school, she completed her obstetrics and gynecology residency at the University of Texas in Houston and a reproductive endocrinology and infertility fellowship at New Jersey Medical School in Newark. She has published in numerous journals, including *Fertility & Sterility*, *Human Reproduction*, *Women's Health Issues*, *Journal of Pediatrics*, and *Obstetrics and Gynecology International*.



**Charles Miller, MD, FACOG**, is founder, president, and medical director of the Advanced IVF Institute and the Advanced Gynecologic Surgery Institute, Charles E. Miller, MD & Associates, in metropolitan Chicago, IL. He specializes in the treatment of infertile couples and minimally invasive gynecologic surgery. A graduate of the honors program in medical education at Northwestern University, Dr. Miller completed his residency in obstetrics and gynecology at the University of Texas Southwestern Medical School, Parkland Memorial Hospital. Dr. Miller later earned his fellowship in reproductive endocrinology and infertility at the Hospital of the University of Pennsylvania. He is a past president of the International Society for Gynecologic Endoscopy and the AAGL.



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**DORETTE NOORHASAN, MD**, has disclosed that she has no relevant financial relationships specific to the subject matter within the last 12 months.

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**DUE TO A VARIETY OF FACTORS**, the number of women with infertility issues in the United States is on the rise. According to the latest data from the Centers for Disease Control and Prevention, approximately 12.1% of women between the ages of 15 and 44 years have fertility problems and 7.3 million have used an infertility service. These percentages increase as women age, with approximately 16.2% of women between the

ages of 40 and 44 years experiencing fertility issues. These percentages skyrocket in women who have not had a previous successful childbirth.<sup>1</sup>

In this supplement, two infertility experts discuss the importance of diagnosing and treating abnormal uterine pathology during infertility work-ups. They also discuss the tools that are available to providers to help accomplish that goal.

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## ■ Infertility in today's patients

**Moderator:** *Your practices both focus significantly on managing and treating infertility issues. How do the majority of your current patients end up in your practice?*

**Dorette Noorhasan, MD:** There are several ways that patients typically find me. The first is a direct referral from their ob/gyn. The second is a simple Internet search. The third is word of mouth from my prior patients who have had a good experience. Social media is also very important. There are insurance plans as well that direct patients to Centers of Excellence for infertility. Fortunately, at CCRM Dallas–Fort Worth, we are lucky enough to be a Center of Excellence.

**Charles Miller, MD:** When I was a younger man, it was virtually all via physician referral. Nowadays, while there are still a lot of physician referrals, many of my current patients come through referrals from their family or friends or through personal links to patient advocacy groups.

**Moderator:** *In today's healthcare environment, do you find that the majority of general ob/gyns will attempt to manage their patient's infertility issues on their own initially, or do most of them refer patients to specialists such as yourselves right from the start? Do you have a preference?*

**Dr. Noorhasan:** I'm OK with either approach. There are several physicians in my area who will refer patients directly to me, particularly patients with advanced reproductive age ( $\geq 35$  years), abnormal fallopian tubes (tubal factor), or abnormal semen parameter (male factor). Some ob/gyns will try to manage infertility initially in younger patients and in those without abnormal testing, only sending these patients to me after they have failed approximately 3 cycles of ovulation induction with oral medications such as clomiphene citrate or letrozole.

**Moderator:** *What are currently the most common causes of infertility you see in your practice?*

**Dr. Miller:** Successful fertility comes down to the sperm traveling to meet and fertilize the egg, and then the fertilized egg successfully implanting into the uterus. Thus, the causes of infertility are secondary to the following:

- Male factors, including sperm count and function
- Cervical factors, namely the ability to create a conducive environment within the cervix to allow transport of the sperm from the vagina into the uterus
- Egg factors, including folliculogenesis, ovulation, and luteinization
- Pelvic factors, which allow ovum pick up, fertilization in the fallopian tubes, and implantation in the uterus

In addition to these factors, endometrial polyps, submucosal fibroids, intrauterine adhesions, uterine malformation, and retained products of conception can also all lead to implantation issues affecting fertility.

**Dr. Noorhasan:** The most common cause of infertility that I see today is age-related. We're all waiting until later in life to have children—traveling the world, starting our careers, those types of things—and starting a family is often put on the backburner. And then, by the time it becomes a priority, there is a heightened risk of infertility issues.

There are also a lot of people I see in their late 30s or 40s who are on their second or maybe even third marriages, who have children from a previous marriage and thought they were done building a family. Maybe they had a vasectomy or had their tubes tied, but now they've met someone new and want to have another child. Infertility issues are common in that population as well.

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## ■ Hysteroscopy: the basics

**Moderator:** *In general, what is the value of using a hysteroscope in an ob/gyn practice?*

**Dr. Miller:** In an ob/gyn practice, hysteroscopes give you the ability to not only diagnose but also often treat conditions

related to abnormal uterine bleeding and some causes of pelvic pain. In a practice that focuses on infertility issues, a hysteroscope is an invaluable tool that allows providers to treat conditions related to abnormal uterine structures that may affect fertility.

**Dr. Noorhasan:** When patients come in to see me with infertility, I tell them that there are four things I initially evaluate: their eggs, their reproductive tract, their male partner's sperm, and my "other" category, where I look for thyroid problems, diabetes, and other issues that can impact infertility.

The hysteroscope is the gold standard for allowing providers to look directly into the uterus and determine if problems are related to fibroids, polyps, and/or scar tissue. In addition to being a diagnostic tool, hysteroscopy allows you to treat these problems rather easily.

**Moderator:** *How do you determine when hysteroscopy is going to be appropriate in a given patient?*

**Dr. Miller:** My initial screening tool in women with fertility issues is a saline-infused sonogram, which allows me to evalu-

ate the uterus, uterine conditions, and—with the use of saline and air—tubal patency. The saline-infused sonogram gives me the ability to look at the myometrium, which an examination of the uterine cavity does not allow. If the saline sonogram shows the presence of polyps, fibroids, or intrauterine adhesions, I will use the hysteroscope as my operative tool.

There are other infertility specialists as well as ob/gyns who will use a hysteroscope as their primary diagnostic tool, especially those who often deal with infertility issues, as direct visualization is considered the gold standard. That is certainly an option, although I tend to reserve hysteroscopy as an operative tool in patients I suspect to have endometrial pathology, submucosal fibroids, or uterine malformations that will need to be treated.

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## ■ Diagnosing and treating retained products of conception

**Moderator:** *How does the presence of retained products of conception affect fertility?*

**Dr. Miller:** Retained products of conception are essentially foreign material inside the endometrial cavity, which can cause problems with the endometrial lining and negatively impact implantation of the embryo. There can also be scarring that occurs with retained products of conception, which results in issues impacting proper endometrial lining development and fluid collection within the endometrial cavity, both of which can disrupt implantation.

**Moderator:** *What can be done in women with retained products of conception?*

**Dr. Miller:** Without question, the treatment of choice in women with retained products of conception is direct visualization and treatment via mechanical hysteroscopic tissue removal. That approach allows you to shave those products back to the level of the endometrium. Hysteroscopy allows you to hone in on the pathology that needs to be treated and see the endpoint so that you are not affecting normal, healthy tissue. I have been utilizing this technique for more than a decade. It is associated with low rates of adhesion formation.

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## ■ Diagnosing and treating uterine adhesions

**Moderator:** *How does the development of uterine adhesions result in infertility?*

**Dr. Noorhasan:** Scar tissue is avascular, which makes implantation and development of an embryo difficult. During natural conception, once the egg is fertilized with the sperm in the fallopian tube, the embryo migrates down from the fallopian tube and finds a cozy spot in the uterus to implant and grow. Because scar tissue is avascular, it is difficult for an embryo to implant or grow on it. Embryos need to establish maternal vascular supply during the implantation process, and if one cannot do so optimally, it makes implantation and growth difficult, resulting in either infertility or miscarriage.

**Dr. Miller:** There is one further way that an intrauterine adhesion can be problematic for women trying to get pregnant. Adhesions may be associated with fluid buildup in the endometrial cavity that prevents embryo implantation.

**Moderator:** *What are the risk factors for the development of intrauterine adhesions?*

**Dr. Miller:** Adhesions can be caused by endometritis post-instrumentation, particularly as a result of termination of pregnancy or miscarriage. Adhesions can also occur secondary to retained products of conception or postsurgical cases such as polypectomy, myomectomy, lysis of adhesions, and transection of uterine septum. There is also a cesarean scar defect called uterine isthmocele that can lead to adhesions.

**Moderator:** *Do previous episodes of failed in vitro fertilization (IVF) commonly result in intrauterine adhesions?*

**Dr. Noorhasan:** It's very unlikely for a failed IVF cycle to result in an intrauterine adhesion. Now, if you implanted an embryo and the patient later had a miscarriage that required surgical removal of retained products of conception, that's a different story. But a typical failed IVF is unlikely to result in intrauterine adhesions.

**Moderator: What are the benefits of a hysteroscopic approach in the diagnosis of intrauterine adhesions?**

**Dr. Miller:** The hysteroscopic approach allows you to “peek and treat,” in other words, to directly evaluate the severity of the adhesions and immediately treat under direct visualization. In the past, most ob/gyns would perform a blind dilation and curettage (D&C), which was really challenging because you couldn’t assess the extent of adhesive disease or know if adhesiolysis was complete. By the same token, there was a risk of traumatizing areas of the uterine cavity where there was normal tissue. Using a hysteroscopic approach that allows you to see what is being treated is a tremendous improvement.

**Moderator: What can be done in women with intrauterine adhesions?**

**Dr. Noorhasan:** In women with mild intrauterine adhesions, you can perform operative hysteroscopy and take down the scar tissue fairly well without any additional assistance. With moderate-to-severe adhesions, many times we will do the hysteroscopy at the same time we are doing either an abdominal ultrasound or a laparoscopy to help guide the hysteroscopy. Sometimes, the scar tissue is so severe that you don’t know where the anatomy ends, which mandates use of laparoscopy or ultrasound guidance to avoid a uterine perforation.

In our clinic, we typically have a second physician perform the laparoscopy or abdominal ultrasound and watch to make sure we are not going too far out in any direction as we are taking down the scar tissue, so that we stop once we have reached normal uterine tissue.

**Dr. Miller:** A patient who develops intrauterine adhesions once is at significant risk of recurrent adhesions, so it’s important that you develop a clear strategy before the start of the procedure. The two edges of the uterus are juxtaposed, so that if you simply remove adhesions between the two walls—say from the anterior to the posterior wall—after you take out your instrument and the fluid leaves, those walls are once again juxtaposed and thus may fuse, causing adhesions. When there are significant adhesions involving two edges of the uterus, we will often use a uterine stent to separate the edges for 5 to 14 days, as well as estrogen for 1 month to prevent those edges from fusing.

When removing intrauterine adhesions, it is important to minimize the use of energy applied during the procedure. The concern is that the excessive use of energy in the uterus can spread laterally and cause tissue necrosis. We treat our severe cases of lysis of intrauterine adhesions utilizing laparoscopy or ultrasound guidance.

**Dr. Noorhasan:** I will also insert an intrauterine stent or balloon and leave it in for 4 to 7 days after surgery to keep the uterus distended and prevent scar tissue from re-forming. Additionally, I will prescribe estrogen pills following surgery to help rebuild the endometrium. That’s the area that is usually most significantly scarred, so estrogen can help rebuild the endometrial lining.

In most patients with intrauterine adhesions, we are able to remove the scar tissue during hysteroscopy.

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## ■ Use of hysteroscopy in women with failed IVF

**Moderator: What are the benefits of diagnosing and/or treating pathology prior to each IVF cycle? And what is the potential role of hysteroscopy in that process?**

**Dr. Noorhasan:** I perform a saline-infused sonogram as the initial screening test and follow up with a hysteroscopy if anything is abnormal, but hysteroscopy is generally considered the gold standard.<sup>2,3</sup>

In 95% to 99% of all cases, my experience is that a saline-infused sonogram is comparable to a diagnostic hysteroscopy, especially if it’s a three-dimensional sonogram. You can see a lot of details with that. If the saline-infused sonogram demonstrates an abnormality, I will then perform an operative hysteroscopy for treatment. If I have a patient who fails two IVF cycles and has only had normal results on a saline-infused sonogram, I will typically perform a hysteroscopy and sometimes a laparoscopy to make sure there is not anything we are missing. We rarely will find anything because we are so attentive to making sure the uterus is normal prior to IVF, but it will happen occasionally.

**Dr. Miller:** I take a similar approach and will also typically wait until two failed IVF cycles before following up a saline-infused sonogram with hysteroscopy, although it depends in part on the age of the patient and their insurance coverage. In a woman who is older, there is more urgency to accomplish your goal. We are fortunate that Illinois is a state that mandates fertility coverage as part of health insurance, but for patients who do not have that coverage, each IVF cycle can be a significant financial burden. It’s therefore vital to perform appropriate diagnostic testing so that you are absolutely sure of the patient’s pathology. In those cases, I would likely only wait until one failed cycle or even add hysteroscopy to a saline-infused sonogram upfront. I would also be more likely to use mechanical hysteroscopic tissue removal to biopsy tissue and look for any plasma cells in the sample to rule out a possible occult endometritis.

## ■ Choosing the right hysteroscope for your practice

**Moderator:** Which hysteroscope do you currently use in your practice? Why was that your technology of choice?

**Dr. Noorhasan:** I use the TruClear™ hysteroscopic tissue removal system by Medtronic. What I like about the TruClear™ system is that it has a passive outflow channel, which allows fluid to leave the uterine cavity. In a patient in whom there is significant bleeding or debris obstructing my visual field, I can turn on the outflow channel to drain the fluid in the uterus and the inflow channel simultaneously pumps clean fluid back in. In a hysteroscopic system without an outflow channel, the only way to clear your visual field is to pump in more fluid, which can increase your fluid deficit.

**Dr. Miller:** I also use the TruClear™ hysteroscopic tissue removal system. In the office setting, it allows me to deal easily with endometrial polyps, retained products of conception, and even small fibroids. In the outpatient, operating room setting, I also have the ability to utilize the TruClear™ Dense Tissue Shaver Plus for type 0, type 1, and some type 2 fibroids, as well as when dealing with retained products of conception immediately post-delivery when the uterus is still enlarged.

**Moderator:** What are some of the other key features of the TruClear™ system that make it clinically efficient?

**Dr. Miller:** It's an instrument you can use to both look at the uterus and treat any abnormalities at the same time. While the TruClear™ system doesn't have its own instrumentation to transect uterine septum and intrauterine adhesions, we have been able to find scissors that are adaptable to the platform so that I can use the TruClear™ hysteroscopes."

The beveled scope and the small overall size of the TruClear™ hysteroscopes allows me to enter the endometrial cavity easily. I'm able to use a vaginoscopy technique with no dilation, so that I can go from the vagina to the cervix to the uterine cavity without having to place a tenaculum. That is very conducive to procedures in the office setting. Moreover, the integrated continuous inflow and outflow offers excellent visualization even with activation of the shaver.

In my outpatient surgical suite where I'm treating larger fibroids and more significant pathology, I have a family of instruments that we have adapted to use with the TruClear™ Elite hysteroscopes. I can perform just about any procedure I need to with the TruClear™ system at this point.

**Dr. Noorhasan:** They have improved a lot of the optics and the operating channel with the TruClear™ hysteroscopes recently. In previous iterations of the TruClear™ hysteroscopes, you had to lock and then unlock it to insert instruments through. Now, there is a dedicated area where you can put instruments through without having to lock and unlock the device.

Back when I was in my medical training, when you had a woman with large fibroids in her uterus, you had to switch from a tiny 3-mm hysteroscope that allowed you to only look at the uterus to a much larger 10-mm hysteroscope (called a resectoscope) for treatment. There was no size in between to rely on.

Now, with the TruClear™ system you can go from smaller 3- to 4-mm diagnostic scopes to 5- to 7-mm scopes for treatment. Not having to use a larger 10-mm scope can make a big difference, because at a certain point, a woman's cervix simply will not dilate to accommodate the larger size.

Also, in the past, you had to pull out the entire scope every time you resected a portion of the fibroid using a resectoscope. But with the TruClear™ system, it can stay inside the uterus the

whole time. It cuts and suctions simultaneously, so you don't need to pull the scope out, take the specimen off the resecting device, and then reinsert the scope. That was a big advance.

My operating time to remove polyps and small fibroids used to be 45 minutes to an hour. Now, the procedure takes only a few minutes. Not only does that save me time as a surgeon but it also means that the patient is under anesthesia for a shorter time. It's a win-win for everyone.

**Moderator:** This has been a terrific discussion. We want to thank both of you for your insights. I hope that our audience is able to take away some helpful information from our discussion to inform their practice's approach to the use of hysteroscopy.

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