Preventing and Managing IUD Complications
October 4, 2018

Renyea Colvin:

Now I'd like to introduce our presenter, Dr. Michael Policar. Dr. Policar served as the clinical professor of Obstetrics, Gynecology, and Reproductive Sciences at the University of California San Francisco School of Medicine. From 2005 to 2014 he was Medical Director of support and evaluation for the Family PACT Program, the Family Planning Access, Care, and Treatment program operated by the California Department of Healthcare Services' Office of Family Planning. He currently serves as Professor Emeritus of Obstetrics, Gynecology, and Reproductive Sciences at UCSF. Thank you for joining us, Dr. Policar, and the floor is yours.

Dr. Michael Policar:

Okay, great, thank you Renee and thank you all for joining us today. Let me give you a little background about what we're going to talk about and then we'll jump in and get started, and as you heard earlier there will be plenty of time for questions at the end. So, as you know, Family PACT has made a real effort over the last few years to try to prepare as many clinic sites as possible, ideally all of them, to be able to provide both IUD and implant services. So, I assume that those of you who have logged in have gone through a training, either one that the office of family planning sponsored or possibly another through where you initially did your training or through a contemporary forums meeting, something like that. So, today we're not going to cover the basics, we are going to go into somewhat greater detail about managing the rare complications that occur in relation to IUDs, and more importantly how to prevent them. I also want to mention that this is actually part of a series of webinars. In that you'll notice today that I'm not covering pain management at all. We're actually planning on having a separate webinar on that topic sometime in January or February of 2019. Where we will go into much more detail about pain management for various types of office procedures.

Dr. Michael Policar:

So, with that, let's go ahead and get started. I have two disclosures, one is that in the last month I have been a litigation consulting, litigation consultant, excuse me, for Bayer Healthcare for a class action suit that has to do with the Mirena IUD. And then more recently I've trained with Cebela Pharmaceuticals to become a proctor for Phase III trials of a copper IUD called VeraCept, wherein the clinical trials have just been getting started.

Dr. Michael Policar:

So, as you know as experienced IUD placement clinicians, most IUD insertions and virtually all removals are easy. However, the tough ones can be really tough. And one of the areas where I have some experience with this, and you'll hear me referring to it in the talk is that at the San Francisco General Hospital in our Women's Health Clinic, we actually have a period clinic session which is called our Complex Contraception Clinic. A majority of those women who are seen in Complex Contraception are

there because of difficult IUD removals, IUDs with missing strings, and so on. So, we've come to develop an appreciation that while the vast majority of circumstances where women are using IUDs are completely uncomplicated and satisfactory, that when the more difficult ones happen, they are important to focus on in getting the management correct.

Dr. Michael Policar:

So, what we'll do is start with a couple of scenarios that have to do with difficult IUD placements, and then in part two we'll go to complications right after that.

Dr. Michael Policar:

So, let's start with Kristin who is a 29-year-old, non-gravid woman who's seen for a levonorgestrel IUD placement. She's been on Depo-Provera for the last three years, she had a LEEP for a CIN 3 lesion at age 25 but has had negative cytology since. A tenaculum was applied to her cervix but the clinician was unable to pass a metal sound. So, in the circumstance where you run into a patient who has cervical stenosis, especially in a circumstance like Kristin where she has a good reason for that, given her prior LEEP. What are the things that you can do to help deal with that cervical stenosis, and successfully achieve the IUD placement?

Dr. Michael Policar:

Well, what we'll go through is a 10 or 11 step process in terms of things that you can do to make tenaculum use, as well as sounding the uterus, easier to do in the context of women who have cervical stenosis. The first thing relates to the tenaculum, and that is changing the amount of traction. Remember the reason for the tenaculum is to help straighten out the angulation, particularly of the endometrial cavity relative to the endocervical os. And possibly by using less traction or more traction in your direction, pulling toward you, you'll be able to get through the os that way. Second is that you can apply traction in a different direction. In other words, as you pull towards yourself with the tenaculum, instead of straight at your chest or your eye level, you can lift the tenaculum a little cephalad or directed a little bit more posteriorly as a way of finding the canal and the internal os in that way. Third is to gently hold the sound at the internal os and then wait. Oftentimes what happens is that the internal os will involuntarily contract during the time that you try the instrument of the cervix. And just holding the sound against the internal os, sometimes for 30 to 60 or even 90 seconds, will be enough for that muscle to relax, and then the sound will be able to go through the internal os. Now if those things don't work, the next thing you can do is change the curvature of the sound. The way that most of us use metal sounds is that they are fairly straight and have a little upward bend, or if you flip that 180 degrees a downward bend at the end. But some women can be more anti-flexed or more retroflexed than the way that you originally adjust the sound. So, if you are using a malleable metal sound, try adjusting the curvature, either through sterile paper or with sterile gloves, and possibly you'll be successful after that. Next is to apply light pressure at various angles 360 degrees around the cervix as you're looking for an opening. So, remember now what you're doing is pulling on the tenaculum with one hand, towards yourself, and now with the sound, you're trying various angles where you sweep the sound out to the right or to the left, up or down, to try to find the more tortuous endocervical canal that will lead you to the os. And particularly approaching somewhat more anteriorly or posteriorly by the use of the sound will be able to get you through.

Dr. Michael Policar:

Now if those things don't work, step six is to find an os finder device. And these are really helpful products to have in your clinic. You can either buy the disposable type, or there's also a product where the set of three can be sterilized and reused. And as you can see from the photograph the os finder devices have either rather minimal tapers or a very long gradual taper. And having these available are very helpful if you're not able to make adjustments in the tenaculum or the sound and be able to get in. Then fairly early on you should switch over to using the os finder in order to be able to find the direction of the canal, to dilate the internal os a little bit, and you'll find that the sound will go in much more easily. And I would say that really for those of you who are doing almost any kind of endometrial procedure, whether it's endometrial biopsies or, certainly with IUD insertions, that having these os finder devices is really quite helpful.

Dr. Michael Policar:

Next is that excuse me, you can use a thinner sound. What many clinicians do if they can't get through with a metal sound and they don't have a plastic sound available is to use an endometrial sampler. What by brand name is referred to as a Pipelle. But there are other brands out there as well, and oftentimes that will make it through and allow you to sound in a way that a metal sound, because of its greater diameter, will not. Next thing you can do as we go down the list is to reposition the tenaculum. We've talked about moving the tenaculum at different angles, but what this refers to is that if you put the tenaculum on the anterior lip, try to move it to the posterior lip. Or if you put it on horizontally, reapply it vertically, and sometimes just that changing of the position of the tenaculum will be enough to help you get through the internal os. Now the last couple things that we can do are to try a shorter, wider speculum that will help bring the cervix closer to you as you pull down with a tenaculum. That one to use in that case is called a Moore-Graves speculum, it's a standard, duckbill gray speculum. The Moore adaptation is that the speculum is about an inch shorter, and given the fact that the blades are not as long you can pull the cervix more towards you in your direction, and oftentimes that'll straighten out the angulation of the canal in the internal os in the lower segment, and allow you to get in. Then sort of the last couple steps is to actually dilate the internal os with either a small metal dilator or a small plastic dilator if you have experience with that. Next is that if you've been completely unsuccessful but the patient still has some interest in having an IUD insertion, then you can try priming with misoprostol. The one good study on this topic that was reported from Chile, the regiment was misoprostol 200 mg per vagina 10 hours before the IUD insertion, that would be the night before, and then again four hours before the placement. Now I do want to emphasize the fact that this does not mean routinely using misoprostol, there are at least six studies that show that that does not help to reduce pain or to increase the success rate. But in the case of a failed dilation, a failed insertion of an IUD, the study that I mentioned to you from Chile actually shows that with the use of misoprostol for the second try, that it actually increases the likelihood of the second try. Then the last thing to mention on this topic is that at any point, it would be helpful to place a cervical block, either in the form of a paracervical block or an intracervical block, for a couple reasons. Obviously, number one to make this much more comfortable for the patient as you're trying to dilate her cervix, and then number two, just to help with the relaxation of the smooth muscle of the internal os.

Dr. Michael Policar:

Now what if you are able to pass the sound, but not able to put the inserter in for the IUD? Almost always that's because of the fact that the plastic inserter has a tendency to bow. So, you've opened up the internal os enough to be able to get in the sound, but when you try to put the inserter through the os, it bends. So, a way of making the inserter stiffer is to choke up on the inserter handle. That will make the tip of it more rigid. Second is to place some sterile lubricant on the tip of the inserter which, perfectly reasonable to do that as long as it's sterile, it will help it sort of slip through that now preliminarily dilated internal os. Then another trick which seems to help is to leave a small plastic sound in the canal and then come alongside it with the inserter. Because by leaving that small sound in the canal, basically you've now charted a pathway through the canal, through the internal os, and you can just pass the inserter right past it. And of course, the next step is to take the sound out, leave the inserter in, and then proceed with doing the IUD insertion.

Dr. Michael Policar:

All right, let's go on to our next topic which is Betsy. She's a 19-year-old non gravid woman who tells you that she faints easily. Betsy has a history of feeling light-headed at the sight of blood, and in fact she recently had a fainting spell after having a HPV, Gardasil, immunization. As you know that agitant that's in Gardasil can be quite painful for some people and there are reported cases of women having vasovagal fainting, or for that matter men, after having an HPV immunization injection. She told her primary care provider about this problem, she listened to Betsy's heart, ordered an electrocardiogram, they were all normal. Now while Betsy is having her levonorgestrel IUD placed, she says, is this going to take much longer? I really need to go to the bathroom. And when you hear that, you know that that's always a tip-off, whether you're doing an IUD placement, an implant placement in the arm, even a colposcopy or an endometrial biopsy, that when patients all of a sudden really have to go to the bathroom, that is particularly characteristic of an impending vasovagal episode.

Dr. Michael Policar:

So, what happens with vasovagal episodes is that by the stretching of the cervix, although it could be any other type of procedure, sometimes it's just the sight of blood. What it does is to trigger a reflex where a person has extreme peripheral vasodilation, that is to say the blood pools in the veins of their arms and legs. Another part of that reflex is the heart rate will drop quite low, usually in the ballpark of around 30 or 35, and of course there's a drop in blood pressure that happens both because the heart rate is less as well as the peripheral vasodilation. In my experience, where I've diagnosed lots of vasovagal episodes, I do that primarily based on the bradycardia. So, if the patient says she feels like she's going to faint, I grab her wrist, I feel her radial pulse. And if it's less than 40, I know she's undergoing an impending vasovagal. Now these episodes are more likely with the pain of cervical manipulation, irrespective of why. Cervical biopsies, endometrial biopsies, putting in an IUD. It's also more likely in women with previous episodes of vasovagal fainting, and more likely to happen in women who are dehydrated or who have been NDO before their procedure.

Dr. Michael Policar:

The full spectrum of symptoms includes weakness, light-headedness, visual blurring or the complaint of tunnel vision, a complaint of nausea, vomiting, feeling like she's going to throw up, feeling excessively

warm or cold, tinnitus which means a ringing in the ears, and we've already talked about this sudden need to either urinate or defecate.

Dr. Michael Policar:

Now the signs of an impending vasovagal are a facial pallor, in other words the blood sort of drains out of the face. And a woman who's about to have a fainting episode will oftentimes have this distinct sort of green hue to her face before she actually faints. Other things which happen before the sinkable fainting episode is yawning, pupillary dilation, a sense of nervousness, diaphoresis means that you're having a hard time catching your breath, and sometimes even slurred or confused speech.

Dr. Michael Policar:

So, the ways you prevent a vasovagal, which by the way are unavoidable in women who are having IUD insertions. They don't happen often, but sooner or later you will run into a patient with a vasovagal, is that people should be well-hydrated before they have their procedure, in fact it's a good idea in your clinic to have a supply of a sports drink around so that people can hydrate beforehand if they haven't actually done that. Eat something before placement, so women should never be NPO before they have an IUD placed. And then prophylactically have the woman control her muscles if she has a known history of a vasovagal episode. This by the way is exactly what should have been done for Betsy. Is to explain to her that she's at risk of this happening again with her IUD insertion and that she really needs to squeeze down on her muscles given her past history of vasovagal episodes, particularly with her Gardasil injection.

Dr. Michael Policar:

Now how do you explain that? So, it is isometric, meaning equally bilateral contractions of the arms and the legs. So, you can actually model for her just intense squeezing down of her hands, her arms, her feet, and her leg muscles. It doesn't help to squeeze your abdominal muscles or to squeeze down at all in your trunk. But you do try to squeeze down as hard as you can, as much as you can in your hands and arms, feet, and legs. What that does is it brings the blood back to the core and will often abort the response. There's no need to take the speculum out immediately, have her change position, just instruct her how to tense her arms and her legs. And as I said, these contractions will then push the blood back to the center of the body and abort the reflex. Now most of the time that's all she needs to do is to squeeze down for maybe 30 to 60 seconds and her heart rate will come up, she'll feel better. If that doesn't help, then it's usually better to desist, to stop doing the procedure. Possibly have her lie on her side, and then with the help of assistants, do something to lift her legs up as a way of draining that blood from her legs into her trunk. And if it still doesn't work, then what's recommended is to actually use an injection of atropine IV, one ampule, which is .4 milligrams or one CC of atropine given IV, which is kind of the, sort of the last resort we do for vasovagal.

Dr. Michael Policar:

But in the vast majority of circumstances, simply contracting down your arms and your legs is enough to abort the vasovagal. And in a woman who's had that before, who's had that problem before, anticipating it, teaching her how to squeeze down her arms and her legs even before you start the procedure can be very helpful.

Dr. Michael Policar:

All right, let's go on, and now begin our discussion about complications themselves. Now, specifically what complications are we talking about with IUDs? Well, they're things that should be familiar to you that I'm sure that you tell people about as you do their informed consent. But let's talk about how common they are first and then we'll talk specifically about IUD complications and how to prevent them and manage them. So, one is a perforation, meaning that either with the sound or the inserter, a hole is made in the muscle of the uterus. The risk of that is about one in a thousand, they are mostly benign. Second is an expulsion of the IUD. And half the time a woman realizes that she's expelled her IUD, the other half of the time they are expulsions which are asymptomatic, and the patient didn't even know she's lost her IUD. The likelihood that that will happen is somewhere between one and 6% of all IUD insertions. Now, they are relatively less likely in a woman who has what's an interval IUD insertion, she hasn't been pregnant recently. Then the likelihood of expelling an IUD is somewhere around 3%. But on the other hand, if she has a postpartum or a post-abortal insertion of an IUD, then the risk of an expulsion is somewhat higher. Next is the risk of an unsuccessful placement. Sometimes we feel kind of bad about what happened if we try to do an IUD placement and it doesn't work. Well in a big study done in the UK, somewhere around 9% of attempts at putting in an IUD are unsuccessful, although when you try again that number drops down to about 6% are unsuccessful after the second attempt. Next is that the IUD fails, and the woman actually becomes pregnant. That is less than one per hundred women per year. And the rate of PID, pelvic inflammatory disease, while it is slightly increased in the first 20 days after an IUD insertion, then goes to a rate of about one to two cases of PID per thousand women per year, which is the same as the general population.

Dr. Michael Policar:

Now some of the tip-offs of these complications are the fact that if a woman calls or comes in with severe bleeding or abdominal cramping three to five days after her IUD insertion, we think about the possibility that she may have an embedded IUD, or that potentially it's in the process of expelling, a partial expulsion, or she could have one of those infections which happen in the first three weeks after the IUD insertion. Second is that for women who have irregular bleeding or pain every single cycle, especially beyond three months when you would expect that to go away. We should think that the IUD may be dislocated, which means that it's embedded or that it's partially expelled, or again the possibility that there's a perforation, which is the problem. Next is if she has fever, sweats, chills, unusual vaginal discharge, of course, we will think about either a vaginal infection or a PID.

Dr. Michael Policar:

Other things to watch for are pain during intercourse, which can either be due to PID or a partial expulsion, missed menstrual period or other signs of pregnancy of course we think about being pregnant in that circumstance. And we'll talk in a few minutes about the threads being shorter, longer, or missing entirely.

Dr. Michael Policar:

So, let's go back to our cases, and our next patient is Jennifer who's a 39-year-old gravida two para two whose question is, what was that pain? So, Jennifer came in for a six-week postpartum visit after a spontaneous vaginal delivery and disclosed that she wanted a copper IUD. She is breastfeeding, and she

has no postpartum bleeding. By manual exam her uterus was eight to nine weeks size, but it was quite firm and non-tender, what one would expect at a six-week postpartum visit. However, during sounding to put in her copper IUD, moderate resistance was met at the internal os, and then the sound just continued to go all the way up to 14 centimeters, which is quite a bit more than what you would expect. She complained of pain only during the initial part of the sounding procedure. So, what's happening with Jennifer almost certainly is the fact that she's had perforation with the sound. There was a moderate amount of resistance at the internal os, then once that resistance was overcome the sound just kept going and going. We would have expected in her postpartum status her uterus might have sounded to nine or 10, maybe even 11. But if it goes without any resistance at all to 14 centimeters, then you would certainly need to think about a perforation. Another less likely possibility is that she just has a rather large uterus and it sounded to 14 centimeters because of her postpartum state. But with this particular picture of the resistance at the internal os followed by no resistance at all after 14 plus centimeters, you almost certainly have a perforation.

Dr. Michael Policar:

What are you going to do in that circumstance? What you would worry about is this patient, in her x-ray you may notice in her right upper quadrant there's an IUD up there, it looks like probably a Mirena that's literally under her diaphragm up near her gallbladder which is the result of a translocation, a perforation where the IUD is actually left in the abdominal cavity.

Dr. Michael Policar:

So, let's talk a little bit about perforations. They are more likely to occur when the uterus is tipped very backwards, so if you have a retro-flexed or a posterior uterus, perforations are quite a bit more likely. Postpartum placement, especially in lactating women. So, this is an attitude which has kind of gone back and forth over time, but the most recent article which was quite a large series from Scandinavia showed that while the overall rate of perforations is about one in a thousand, in postpartum women, especially lactating women, it's more like about six in a thousand. And that's definitely not a reason we should not be putting IUDs in postpartum women, that's still a relatively low rate at six in a thousand, but it is quite a bit higher than it is in women who are not postpartum. Then the third issue that has to do with uterine perforation is the skill and the experience of the provider. The more IUDs you've done, the less likely you are to encounter a perforation. The typical location is right in the midline at the uterine fundus. So, think about a sound, or even an inserter, going through the very top of the uterus. There are no significant arteries or veins in that area, of course there's a blood supply but no major vessels, and if a sound or an inserter goes through the top of the fundus, it would be extremely uncommon to cause any kind of damage higher up in the intestines, or in the mesentery, or in the retroperitoneale organs. And for that reason, fundal perforations are almost always asymptomatic and they're almost always benign. Think of what happens when a woman has an amniocentesis. A large needle is put through the muscle of the uterus. Basically, that's what's happening with a perforation. You make a tract through the uterine muscle, that tract will go down, will go away, rather, will close down, very quickly. The problem is not so much the hole in the uterus, the problem is if the IUD is left in that tract, that's what's called an embedment, where if the IUD works its way through the tract and ends up in the abdominal cavity, that's called a translocation. We'll talk more about those in just a minute. So, when you would suspect a perforation is if the sounding is much deeper than you expected. Or if you have a lot of resistance,

particularly at the internal os, followed by absolutely none at the fundus. And if you have Realtime ultrasound in your office, it can be used to help confirm the fact that a perforation actually has occurred.

Dr. Michael Policar:

It's really quite easy to see, when you use Realtime ultrasound, either the sound hitting the top of the endometrial cavity or literally going through a tract. But you don't have to have the IUD available, I'm sorry, you don't have to have the ultrasound available, it's helpful if you do. Now what about management of our patient? We suspected that we caused a uterine perforation with the sound. So, if the perforation happens before the IUD is deployed, stop the procedure, certainly don't make any attempt to put the IUD in place after a sound-induced perforation, just stop. She may be able to have another attempt in a few weeks or a month. Number two, if you detect the fact that there's been a perforation during the placement of the IUD itself, you should remove it. So, the best example of that is you've been able to sound appropriately but when you're doing the IUD insertion itself the inserter goes much further than you expect it to. And maybe you deployed the IUD or not. If you can retrieve it, then that's the optimal circumstance. Now if you've detected the fact that the patient does have a uterine perforation, again usually in the case with the sound, what you do is monitor her for 30 minutes for excessive pain or bleeding. Remember that if she does bleed it won't be coming from her vagina, it'll be into her abdominal cavity. But it's usually a very small amount of bleeding that happens. Most patients will feel completely fine and back to normal within 20 or 30 minutes, and they can be discharged. However, she doesn't have an IUD, so provide her with an alternate method of contraception. And what we typically do is wait until the after the next menstrual period to try again. So, wait at least two, three, four weeks for that tract to close down before another attempt is made at an IUD insertion, and by the way when she comes back for that additional attempt, it may be more successful if it's done with ultrasound done at the same time as the IUD insertion, just to make sure that there's not a repeat perforation.

Dr. Michael Policar:

Now what are some of the things you can do to prevent a perforation from happening? Always, with every IUD insertion, to a bimanual exam beforehand to detect anti-flection, retroflection, and particularly if it's extreme, taking that into account as you're doing the insertion. Second is to always use the tenaculum to give you traction, to straighten out the uterine axis. Careful hand positioning of the sound and the inserter, and particularly with the sound that means holding it like a dart. You don't want to hold the sound in such a way that you can apply lots of pressure, push it right through the internal os and potentially through the fundus. Instead, you protect yourself by holding the sound like a dart, and you might even brace your fingers against the speculum, and that prevents you from going too deep. Consider using a plastic sound, routinely. And the reason for that is that an OBGYN in Salt Lake City, Utah, Dave Truck, did a study of women who had had a hysterectomy, the uterus had come out of the body, and then with that, those uterine pathology samples, what he did was to look at how much pressure was necessary to cause a perforation through that excised uterus with either a metal sound or a plastic sound. With a metal sound it took a fair amount of pressure, with a plastic sound it was almost impossible. So, we know that plastic sounds will usually bend before they'll actually cause a perforation. Next is never use the IUD inserter to sound the patient. This one's really important, a shortcut that many clinicians take. Because they say, I don't want to sound the patient, it hurts her, it takes too much time, I will just use the Bayer inserter or the Paragard inserter, IUD inserter, as the sound, and that way I can

skip the step of doing the sound. Not a good idea for two reasons. Number one is because of the fact that oftentimes the inserter is just not rigid enough to successfully use as a sound. Number two, what if she sounds to under five centimeters, in maybe a nulliparous adolescent. Or what if she sounds to 16 centimeters in a grand multipara? Well, those are women who are not considered to be candidates for an IUD. Remember the depth of the uterus has to be at least five or five and a half sonometers, the upper limit is somewhere around 10 or 12 sonometers, and let's say for example you sounded someone with the IUD inserter, she sounded to four, and you couldn't do the insertion, you now have an $800 sound. So only open the package after the patient has been successfully sounded, and she knows she fits within the criteria for doing an IUD insertion. Next is don't use the white stabilizing rod as a plunger with copper IUDs. The stabilizing rod is intended to hold the bottom of the IUD in place while you withdraw the tube, not to plunge it into the endometrial cavity. And if you're finding a lot of resistance at the internal os as we talked about earlier, again a cervical block with the use of an os finder device or cervical dilation is really the best guarantee you have of trying to avoid causing a perforation.

Dr. Michael Policar:

Other thoughts are to move slowly and intentionally, try to avoid a circumstance where you're pushing with lots of pressure through the internal os, because once you get through, you'll have momentum that may keep your instrument going. And then also once you've passed through the internal os, just stop, pause for a second, the muscle will relax, and then you can intentionally proceed to the fundus in a more controlled fashion, in such a way that you'll avoid perforation. You'll feel resistance when the sound touches the fundus, and of course that's always a signal to stop advancing the sound at that point. And remember that even though we sound first and then we set the flange on either a levonorgestrel IUD or a copper IUD, that once you put the inserter in, ideally if you've done your measurements correctly the flange should hit the cervix at the very same time that the tip of the instrument hits the fundus. But that's not always the case. So, if you feel the fundus and the flange isn't against the cervix, stop. Or alternatively, if the flange hits the cervix and you don't feel the fundus, also stop in that circumstance. Whichever one hits first, either the flange on the cervix or the instrument at the fundus, then go ahead and stop.

Dr. Michael Policar:

All right, let's go to our next patient who's Rosa. She's a 50-year-old gravida three para three and her complaint is, I can't feel the string. And I know this is one that you see fairly often. So, her IUD that was inserted eight years ago, she remembers it has a T shape, but she's not sure whether it was copper or levonorgestrel. She hasn't been able to feel the string for at least two months, but before that she checked irregularly and thought she felt the string. On your exam the string is not present at the external cervical os.

Dr. Michael Policar:

So, what are the possibilities? So, this is something I had to deal with very frequently at the Complex Contraception Clinic, particularly when I was teaching our residents and fellows. The question is, when you cannot see an IUD string on a patient, there are five possibilities for what that could be. And you really need to think about each one of them as you begin the workup. So, possibility one is that the IUD is in place, you just can't see the string. That's because the string is coiled in the canal or in the

endometrial cavity, or maybe the string was short or broken or had been cut at some point. So, the idea is there you just can't see the string. Second is that she may have had an unnoticed expulsion, the IUD fell out. Third possibility is that she's pregnant. Now, if she has an intrauterine pregnancy, as the uterus gets bigger, it pulls the IUD upward toward the fundus, and the string gets shorter and shorter and finally you can't see the strings at all.

Dr. Michael Policar:

Number four and five are due to mal positioning of the IUD after a perforation. So, one is embedment of the IUD into the muscle of the uterus, and the IUD is so stuck in the wall of the uterus that you can't see the strings. And then the final one again following a perforation is a translocation, where that IUD was inadvertently put through the uterine wall into the abdominal cavity. Translocations happen in two circumstances. One is about half occur right at the same time that the IUD is inserted. The other half of translocations are IUDs that are initially embedded in the wall of the uterus, and then over time they work their way, the IUD works its way through the uterine wall into the abdominal cavity, just like a sliver would work its way out of your skin. So those are the five possibilities. So, think of each of those possibilities as you're working up a patient for a missing string. And again, I'm going to emphasize the fact that that tractive muscle of the uterus is not the problem. Perforation is not the issue. It's the abnormal position of the IUD, either in being embedded in the uterine muscle or the abdominal cavity, which is the problem.

Dr. Michael Policar:

All right, so how are we going to manage those possibilities? Excuse me. So, I'm going to show you the algorithms for the workups in just a moment, but let's say for example that an ultrasound shows that the IUD is exactly where it should be, but the string is coiled up inside. Well, if the patient wants to continue with that IUD, there is absolutely no reason to remove it. So, let's say for example she's had a Mirena in for three years, it has a five or even a seven-year lifespan. There's absolutely no reason to remove the Mirena and put in a new one just because she can't see the string. As long as you've proved that it's within the endometrial cavity based on the ultrasound. Now the patient might ask, well, how do I know that it doesn't fall out at some point in the future? And the answer is that you don't have to do this, but the patient can choose to have a once-a-year ultrasound just to show that the Mirena or her IUD is in the right place until the lifespan of that IUD is up. On the other hand, if she has an IUD in her uterus and can't see the string and she says look, I want to get pregnant or I was planning on having my IUD out, then we can do an office extraction of the IUD, I'll also tell you about how to do that in just a few minutes.

Dr. Michael Policar:

All right, the next possibility is an expulsion, and as I had mentioned to you, the rate of expulsion is somewhere between two and 10%. The risk of expulsion is related to the provider's skill at getting the IUD up in the fundus at the time of placement and not too far down within the endometrial cavity. The patient's age, where younger women are more likely to expel. Parity, where multiparous women are more likely to expel, and uterine configuration, so a woman who has a submucous fibroid is more likely to expel, as well. And then the time since insertion, most expulsions happen within the first six months

after an IUD is placed. Probably not related so much to the timing of the insertion unless it's a postpartum or post-abortion insertion of an IUD.

Dr. Michael Policar:

Oftentimes the way that an expulsion is diagnosed is a woman who comes in and is pregnant. She's late for her menstrual period, maybe has pregnancy symptoms. The string isn't seen, and then on further workup she has no IUD in her body, so she expelled the IUD, and its presenting complication was the fact that she was pregnant. However, partial expulsion might be present with pelvic pain, cramps, intermenstrual bleeding. Partial expulsion means that the stem of the IUD is stuck in the cervical canal so that it's not in the endometrium working the way it should, it is literally stuck in the canal, and that causes intense cramps, pelvic pain, intermenstrual bleeding, usually painful intercourse for the patient, and definitely painful intercourse for the partner if his penis is bumping into the stem of the IUD, which is now at the external os. And then the other thing that may show up, partial expulsion, is that the IUD string is much longer than it had been previously, sometimes it will literally come down to the vaginal introitus. So, the next possibility, we've covered so far, the IUD in situ and the possibility of asymptomatic expulsion.

Dr. Michael Policar:

The third possibility is if she's actually pregnant. And you'll see in a moment when we talk about the stepwise workup, that early on in the patient with a patient with a missing IUD string, we have to do a pregnancy test. If the pregnancy test is positive, then of course the next step is to find out where she's pregnant. Is this an IUP or ectopic. The reason for that is that IUDs don't fail very often. And women who use IUDs have a much lower rate of ectopic pregnancies than women in the general population. Both IUDs prevent ectopic pregnancies. However, when an IUD fails, there's a higher likelihood that that pregnancy is in the fallopian tube than it is in the uterus. And what's typically quoted is that somewhere around 25 to 50% of IUD failures with subsequent pregnancies are in fact tubal pregnancies or ectopic pregnancies. So, step one, woman with a missing IUD string, positive pregnancy test, get an ultrasound. If there's a possibility of ectopic, then that's managed appropriately. On the other hand, if she does have an intrauterine pregnancy then the next question is, your IUD failed, you have an intrauterine pregnancy, do you plan to continue your pregnancy or not. If a woman is planning on having a pregnancy termination, it's best not to remove the IUD, and to await her procedure. Because if you take the IUD out, that actually could trigger a miscarriage. So, if she's going to have a pregnancy termination a few days later, just wait until the time of the termination and the IUD can be taken out at that point. If on the other hand the woman says all right, I understand I'm pregnant, I want to continue with my pregnancy. If you can see the strings, then it's better to try to remove the IUD just by gently pulling on the strings. On the other hand, if the strings are not visible, do not attempt any type of removal. Just because of the fact that there's almost no way to avoid interrupting the pregnancy by instrumenting the uterus when the IUD is in place. However, if she continues the pregnancy with an IUD in place she is at increased risk for a miscarriage, in both first and second trimester, as well as preterm birth. On the other hand, there is no greater risk of birth defects. So, remember that that IUD which is in the uterus as it grows is outside of the amniotic sac, it's kind of pinned, between the amniotic sac and the uterine wall. So, it's not as if the baby is going to be born with an IUD in its hand, because the IUD is outside of the yolk sac.

Dr. Michael Policar:

All right, so, next possibility is a translocation. As I mentioned, a translocation is when the IUD is in the abdominal cavity. Do they always have to come out? And the answer is that copper IUDs have caused a lot of scarring and reactivity within the cavity. More adhesions or scar tissue, and therefore whenever we make that diagnosis they should be extracted by laparoscopy. The levonorgestrel IUDs are less reactive, they're less likely to cause scarring or mal-obstruction or a problem with the bladder, but most experts still recommend laparoscopic removal, or retrieval of a levonorgestrel IUD once it's diagnosed.

Dr. Michael Policar:

Now this final thing to mention is embedment. So that's when an IUD is stuck in the muscle of the uterus. The way we make that diagnosis is that the string is usually missing at the os, we try to remove the IUD, we try to extract it with the forceps I'll show you in just a minute. We tug and tug and tug on the IUD and it just won't come out. That's because of the fact that it's buried in the uterine wall. Or we may do special imaging and realize that the IUD is buried in the uterine wall. Now whenever we diagnose an embedment by either way, a failed office extraction or through imaging, we do want to remove it, because that embedment can progress to a translocation. Again, with uterine contractions the IUD will naturally work its way into the abdominal cavity rather than back to the right place, and therefore we want to remove it before it actually converts from an embedment into a translocation. One of the things that'll really help to find out where the IUD is embedded is what's referred to as advanced imaging, either a 3D ultrasound or a pelvic CT scan. Because it's going to help direct us to what her correct treatment is to remove the embedded IUD. Might be through a hysteroscope. It might be through a laparoscope, or, rarely, it's actually a laparotomy.

Dr. Michael Policar:

Now, why so many alternatives? The answer is because the IUD can be embedded in so many different places. I love this slide because it shows very clearly why we need to know the position of the embedded IUD before it's removed. So, if you look at examples A1 and A2 where there's basically an arm that's embedded in the myometrium, or if you look D1 or D2 where the stem is buried into the myometrium. For the most part, those IUDs, at least A1, A2, and D2 can be removed through a hysteroscope. That might even be done as an office procedure. On the other hand, D1 and C1 have to be removed by laparoscopy, because you have better access to the IUD trans-abdominally with the laparoscope than you do with a hysteroscope. And the worst circumstance at all is D, where you can see that the entirety of the IUD is completely buried in myometrium, and you couldn't get that either with a hysteroscope or a laparoscope, and therefore the woman would have to have a procedure in that case, a laparotomy, in order to make an incision in the uterine muscle and take that IUD out. And the important thing is that a regular 2D ultrasound will not show you that kind of detail. That's why you either need a CT scan or a 3D ultrasound in order to be able to find exactly where that IUD is.

Dr. Michael Policar:

All right, so let's kind of finish up this, and we'll have one more case and then your questions. So, how do you manage the patient then who has a missing IUD string? The first thing is it may just be coiled up in the canal. Use a brush sampler, what's often referred to as a cider brush, just put it in the canal, spin it like a spaghetti fork, remove it, that may be enough to sweep the string out of the canal. If it's not, you

need to know if the patients pregnant. So, perform an office urinary pregnancy test. If it's positive, the next stop is to get an ultrasound to see if this is an intrauterine pregnancy or an ectopic pregnancy. If the pregnancy test is negative, then if you have office ultrasound it's best to ultrasound the patient next. If you do not see any IUD at all in the uterus, on ultrasound, it could be because she has a translocation. So, send the patient to diagnostic imaging to get an abdominal film called a KUB. However, if you see the IUD in the uterus, then we go to the last step, number four is, does she want to continue with the IUD. And if she does, she can continue use for the rest of the lifespan of that IUD. If not, we can attempt to extract it. Oops, wrong direction.

Dr. Michael Policar:

Okay, so this basically is an algorithm that tells you what I just explained if you have an ultrasound in your office. So, no string in the canal, pregnancy test negative, office ultrasound is done. Over on the left side, if the IUD is present and she wants it retained, just leave it. If she wants it removed, we're going to try to extract it in the office. Most of the time we're successful. Some of the time we tug on the IUD and we can't get it out. In which case she has an embedment. And then sometimes we program the endometrium to try to remove the IUD and we can't find it. Then we go over to the right side. So, if the IUD does not show up on ultrasound, in uterus, then the next step is to get a KUB. A KUB looks at all of the abdominal cavity. If it cannot see the radiopacity of the ultrasound, it's not in her body, it's been expelled, end of story. On the other hand, if the KUB shows that it’s in her pelvis, then we ask the radiologist to do a formal ultrasound. If it's present in the uterus it means it's probably embedded, and we go to the next step of doing the 3D ultrasound or the CT scan. On the other hand, if it's present on the KUB and absent in the endometrial cavity, then we know it's translocated and she'll go to laparoscopy.

Dr. Michael Policar:

The next algorithm is similar but not identical, it's what you would do in the case of having no office ultrasound. I won't read that to you because I more or less explained it.

Dr. Michael Policar:

Now, how do you actually go about removing an IUD in the office where you can't see the strings. Pregnancy test is negative, you're not able to sweep the stings out with a cider brush. Get consent for a uterine instrumentation procedure, do a bimanual exam, we've already talked about probing that canal for the strings. Apply tenaculum, do a cervical block if you know how, it is considered to be optional, but it is recommended. Then you choose an extraction device.

Dr. Michael Policar:

And I'd rather show you the extraction devices. So, this one is called an Emmett thread retriever. It's a little like a Christmas tree. You put that through the internal os, you spin it like a spaghetti fork, and either one of the arms or the string will be caught on one of those notches and you can take the IUD out. Now, until very recently these were not available in the United States. They are currently available and can be ordered. Just Google them in the United States and you'll be able to find these.

Dr. Michael Policar:

All right, here's another variant of a thread retriever.

Dr. Michael Policar:

This is the one that we use at San Francisco General, it's called an alligator forceps. Some of them are relatively thicker, others are very narrow, we prefer the narrow ones. But you can see that the value of us is that the fulcrum, basically the grasping end of this forceps, is at the very end. So, what you do is put the tenaculum on, pull down, very gently put the alligator forceps through the canal through the internal os. Then open the forceps, close it, turn 90 degrees, and then withdraw it. What you're trying to find is either the string, the stem, or an arm. And the way you do this is you start by opening and closing the forceps just right through the internal os in the lower uterine segment. Because you don't want to do a lot of probing around, it's painful and can be dangerous. But each time you insert the forceps go a little higher, a little higher, open, close, twist, take it out. And in my experience about half the time you'll grasp the string, and the other half of the time you'll grasp an arm or the stem, and then you'll be able to remove it. Now there are times where you grasp, tug and tug, and it just won't come.

Dr. Michael Policar:

In that circumstance you're dealing with an embedment, you should stop there. Okay, now the last part of this is that at any point doing Realtime ultrasound may help to show you where the IUD is. If the alligator forceps or the Emmett thread retriever don't help, you can actually use a metal hook or an aluminum hook like a crochet hook, which you use just very gently and move it along the anterior wall and the posterior wall. Those were mainly used back in the days of Lissy's Loops, but they may help occasionally. And then finally if you feel the IUD but it just won't come out, just stop. Desist, get that 3D ultrasound or CT scan, and show exactly where the embedment is.

Dr. Michael Policar:

All right, one last topic, and then we'll wrap up and take some questions, I'm going to skip over this slide. I already explained most of it already.

Dr. Michael Policar:

But let me mention one more thing about IUD removal, because this comes up in our... Complex Contraception Clinic every now and then. What about a patient who is going through menopause, and she says, you know, I don't really need this anymore for pregnancy, what should I do? Well, if you can see the strings, remove it. On the other hand, if you don't see any strings visible, then you really need to weigh the risks of instrumenting her uterus. If you ultrasound her, the IUD is present in her uterus, she doesn't need it for birth control anymore, what you have to counsel her about is what's the risk of leaving it for the rest of your life? Maybe a little postmenopausal bleeding, probably not pelvic actinomycosis, versus the risk of removal which is pain and the possibility of perforation. And in our experience in San Francisco General, for postmenopausal women when you know the IUD is in place, but the strings are coiled up inside, more often than not we just leave it. And if it's a tail-less IUD, a stainless-steel coil which by design has no tail, those are not inserted in the United States, only in China, then we advise the woman just to leave that in place unless she insists upon its removal.

Dr. Michael Policar:

Now let me tell you just about the last few slides and then I'll stop. As I mentioned, PID in an IUD user is very uncommon, it's no more likely than women in the general population. But there are two guidelines that tell us what to do in women who develop PID when they use an IUD. The first is from the selected practice recommendations, you'll see a link to getting this in the materials for the webinar. Basically, what the selective practice recommendations say in the chapter on IUDs is, if a woman has PID with an IUD in place, use one of the CDC antibiotic regimens, but you do not need to remove the IUD immediately if the woman needs ongoing contraception.

Dr. Michael Policar:

However, have her come back in two or three days. If she has no improvement in the PID, then continue antibiotics and consider removal of the IUD. Because there are some patients where the IUD inhibits the ability of the body to deal with the infection and you take it out. But that's only in women who fail antibiotic therapy. And if a woman wants to discontinue the IUD, what we typically do is start antibiotics first, wait a day or two, and then have her come back for the IUD removal. Just so that removing the IUD in the face of infection doesn't cause any kind of bacterial shower. But for the most part, we leave the IUD in place when we're treating PID.

Dr. Michael Policar:

Now if you flip it around and look at the CDC STD treatment guidelines, they basically say the same thing. If an IUD user is diagnosed with PID, you do not need to remove the IUD. Treat consistent with the PID recommendations in the CDC STD treatment guidelines. Have the patient come back two or three days later if she's no better consider removing the IUD. And the treatment outcomes are really no, treatment outcomes I mean by treating PID, are no different if you take the IUD out or not. So, there's no reason to take the IUD out unless the woman has not responded to therapy.

Dr. Michael Policar:

I'm going to skip this slide on actinomycoses, you can read that, I will just go to the last one which is, what if a woman has a vaginal infection and has an IUD in place? You diagnose her with trichomoniasis or bacterial vaginosis. Obviously that IUD removal is not necessary in that circumstance, either. Whoops, wrong way. So, I am going to stop at that point, it is 1:01, and I'd be happy to take any questions you have, either on the topics that I discussed in regard to IUDs or things that I didn't mention in the context of complications where you'd like to ask a question.

Dr. Michael Policar:

Hang on a minute, this isn't dead air, we have a number of people who are typing. So, I'll read the first question once the question has been typed and I see it in my chat box. I am not a very fast typer either.

Dr. Michael Policar:

Yeah, hi, it says, do you know who manufactures the reusable set of three os finders that you mentioned. You know, I apologize, I don't have that at my fingertips Jenna, but if you just do as a search term os finders on your computer, you will find a number of companies, I even think there was one of

the companies that has them available on Amazon. You do not need to have a prescription or have a physician order or that sort of thing to be able to buy them. But I know that when I helped to buy them for San Francisco General a few years ago I just Googled it and found two or three different companies that made them. They're not very expensive. We like the ones that could be sterilized and reusable rather than the disposable ones, but both are available.

Dr. Michael Policar:

All right, next question is for Karen. How long after a chlamydia infection is diagnosed and treated would you place an IUD? All right, so the answer is, if we're strictly talking about a cervical chlamydia infection, we're not talking about chlamydial PID, I would say within 48 hours, basically. We know that when we use Azithromycin to treat chlamydia that it works fairly quickly, and there's a small but reasonable amount of evidence which says that once you've treated the chlamydia appropriately, that within 48 hours it should be entirely dead, and that it would be reasonable to do an IUD placement in that circumstance. Now it is a little different in a woman who's been treated for PID, and in fact, that very issue is dealt with in the CDC selected practice recommendations. There we have very little data, but the recommendation is to wait somewhere between four and six weeks after PID has been fully treated before a woman has an IUD insertion. But if it's strictly lower tract chlamydia, I would say either chlamydia or gonorrhea, once it's been treated, that within a few days afterwards that a patient should be able to have her IUD placed. All right, that was Karen. Okay. And yeah, PDPT, patient delivered partner therapy was given at the time of her chlamydia diagnosis and treatment so that's wonderful.

Dr. Michael Policar:

All right, next from Samantha. And that is, if a patient has a PAP that's high SIL, would you wait to do an IUD insertion. Okay, her full question just came in. So, if a patient has a pap that's high SIL, would you wait to insert her IUD until after her colposcopy and treatment. You know Samantha, there's not a hard and fast rule about that. In the past we said if a woman was diagnosed with high SIL that we should not do an IUD placement, that she should wait until she's treated, until after she's treated, rather, because of the fact that the treatment, whether it's a cryotherapy or a LEEP, or a comb for that matter, has some likelihood that the IUD string is going to fracture. And it has no effect at all on the fact that the IUD is not going to make high SIL worse or more difficult to treat or any of that kind of stuff, it's really all about the treatment fracturing the string. The reality is though that we can do some things before we do a cryo or before we do a LEEP where we push the string up the canal, do the procedure, and then try to bring the string back down where we avoid that problem. So, I think you can go either way. I think if a patient has a diagnosed high SIL, doesn't want to take any risk at all about her string fracturing, then she can go ahead and have her treatment with the cryo or with the LEEP and then delay the IUD insertion. But on the other hand, if the patient really wants to have an IUD inserted or on the other hand if she already has an IUD, you can absolutely do the cryo or the LEEP with the IUD in place, try to tuck the string up the canal, and by the way, what if the string breaks? No big deal, it just means that once a year you do an ultrasound to make sure that the IUD hasn't fallen out. So, it's actually not a problem at all if the IUD is in place at the time that she's treated and the string breaks. Any more questions? All right, okay, there you go.

Renyea Colvin:

All right if there are no more questions. Conclude for the afternoon. Thank you everyone for participating, we hope to see you at our next webinar, and thank you Dr. Policar for your amazing presentation.

Dr. Michael Policar:

Sure thing.

Renyea Colvin:

We want to remind everybody to be on the lookout for the evaluation in your email, or click the link in the web links box, or copy down the URL and complete that for us, it takes less than two minutes. Thank you and enjoy the rest of your day.

Dr. Michael Policar:

Okay, Renee.