JORGE GUTIERREZ-ACEVES: 40% what I consider can be useful for you and what can be interesting for you. So this is an interesting paper going from Ordon. What they did is, they did evaluated over a 20 year period what is the trend in their surgical management of urinary stones. And you can see clearly that the incidents of short wave treatment has declined over the years in favor of an increase in the number of ureteroscopy accesses.

Now it seems that for about 10% of the stones all over the world, still percutaneous surgery is a technique that is going to be there forever. So reasonable occasion speaks that in the USA, the incidents of percutaneous surgery is actually going higher to this number. What I want to say is that short wave, you're going to see less patients indication for short waves. You're going to see more and more U scopes, and still you have the thing that a good amount of these patients need still to go for percutaneous surgery.

So why can we do better things for it? Why can we treat more stones in the kidney with ureteroscopy? I think because we do improved endoscopic equipment. We do have this digital technology now available all over. We do have better instruments. By the way, it looks as the kidney, probably some nice tools to avoid migration of stones.

We do have better fragmentation devices. And we have the potential to improve the healing of the ureter after the treatment. So we see more and more series like this one from Monga and Traxter, people speaking that stones, big stones, can be treated in a retrograde manner. And this is a meta-analysis that they did last year.

And what they found is stones larger than two centimeters can be treated with flexible with a stone free rate of 93%. If the stone is between two and three centimeter, 95% success rate. If the stone is larger than three centimeter, the success rate is a little bit lower. But the down side of this is that you need more than one surgery for sure.

At least I will say 1.5 or more than that, and this is something that you have to consider. So flexible ureteroscopy can be an alternative for large stones, but again, you need to think that you're going to have the patients in the OR at least two times. So what is this concept of digital technology for those of you who are not familiar?

This is the so-called chip on the tip technology. And that means that the interpretation of the image is not in the camera-- it's in the chip of the scope. And what it produces, a much better quality of images. The resolution and the quality of the images quite better. And you can see here are two similar cases-- papilla, little strand of papilla, and you see the difference in the fiber optic image compared to the digital image.

This is, again, two similar cases, cases that we do see very frequently-- stones inside the papilla. Sometimes you want inside a little bit of a papilla and remove all those fragments. And this is exactly the same with a fiber optic technology against digital technology. So this is a big advantage, big difference in the image interpretation.

This is a technology that it's there. Any single company is working in this. And this is something that you really want to experience if you have not done it. So a new or a different or an additional advantage of this technology is a narrow band image. And what is this, is that band wide of the image is improved.

And in practical purposes, what it does is the color of the capillaries and the veins is changed from red to brown colors. And that allows a varied interpretation even in the upper track. It has been proved in the bladder, but recently Traxter and some other people have demonstrated that you can increase even in 23% the chances of identifying a tumor and probably can do better when you try to resect the tumor. You'll resect 10% more of the area that you need to treat.

So what is the limitation or what is the downside of this technology? The size of the scope. This is for sure the bigger limitation. If you compare the 7.5 French standard size for the fiber optic technology with 8.5, even 10.5 French for the initial scopes. So this is a big limitation. And we do see frequently that many patients we cannot use these scopes because we can't simply do not advance the scope up into the kidney.

So you need to do a complete dilation of the ureter. If you want to use an access sheath, you need to think in the 13 French access sheath, which is big for many patients. And for sure, the cost is at least duplicated in most of the available products now. I think the future for this product is that the technology is going to reduce the size here. And I understand the main companies is coming shortly in market with a much smaller size endoscope, and we're looking for about to try this.

So you can see here the difference again. This is the same company using the fiber optic technology, digital technology, and the size is quite bigger, even when the image again is good enough. So about the technique, is there any new thing? I'm not sure it's something new, but I want to speak about the proof things we are routinely doing. How can we probably improve this?

So to access the kidney, to advance the flexible scope, you want to dilate the ureter orifice. So what we do routinely, we do what we call optic dilation using a semi-rigid scope. And this is the way we do. Two guide wires. The second guide wire is going through the scope. The first guide wire is the safety guide wire, and you advance the scope in between the two guide wires, all over into the kidney.

This is not a new thing, but this is something that I will insist that you have to do if you really want to make a complete dilation of the ureter, and then you can easily work. Easier access, the access sheath, or the flexible scope without access sheath. Now how can you advance a flexible scope? You can advance it over the guide wire. That means that once the optic bar is done, the ureter now is dilated.

And then you hold the scope, someone helping you hold the scope, and you will advance the scope over the guide wire. If you want to do this and you want to protect the scope, I would suggest a double deep double flexible tip guide wire, and the glide wire. This is going to be much easier for you to advance the scope.

If you consider to use access sheath, we will speak about them shortly. I think this is the way to do it again. After optic dilation, you advance the access sheath. And very important to say, you have to do it under fluoroscopic control. Don't do it without fluoroscopic control because you're not sure what's going on in the bladder and the ureter.

Once you're there, you can remove the second guide wire, but you have to remember, you need a safety guide wire still. The alternative is this new tools. This is an interesting sign where you can use only one wire guide. So the same guide that you have a safety, this one you're going to use to advance the sheet.

And at some point, to remove the internal part of the sheath, and the guy is going to run parallel to the sheath. So that eliminates the need for a second guide wire, and then probably it's a little bit easier to advance this sheath. So do you need to use an access sheath for every case? I'm not sure that you do, but if you are considering that you're going to go in and out of the kidney because you have to remove a lot of fragments, yes, you need to do to use an access sheath.

And if you want to reduce internal pressure, you need to use an access sheath. So it also favors a better drainage. The visibility inside the kidney is much better if you use the access sheath, and it facilitates access to the ureteral orifice, is especially in complex anatony-- for example, big prostrate. This is a most typical case.

So this is a graphic from Minac Mongo. And you can see here that using an access sheath, the internal pressure is significantly reduced. So if you consider that you don't want to have a retrograde by low nephritic reflex, that would be a thing to consider-- to use an access sheath. Now you have to think though that you have to dilate the ureter orifice.

It is very difficult, at least if you don't intend to do any dilation of the ureter, at least in 30% of your cases, you will not be able to advance the access sheath. Even if you do optical dilation, as we do optic dilation for example, you still may have even 44% chance of not being able to advance the access sheath.

So you need to think about that. And this is an interesting paper coming from Traxter in Paris. Using a digital scope, scope he was able to identify a bunch of injuries to the ureter when you use an access sheath. 50% of the patients didn't have injuries. But 35% had erosion of the ureter. 12% are real mucosa lesion, and 4% perforation.

This is the series that he found, and these are the images that eh were able to obtain with digital scopes. So 35% of the patients had this kind of tear in the ureter. About 15% of the patient had this kind of erosion of the mucosa, and even perforations. So again, the access sheath is probably not the usual thing for everyone, and it's not even sure if the access sheath is issue of the ureter.

If you see here this series from Minac Mongo again, you can see that there is no difference in the company produced in the access sheath, that the friction force is the same. The problem is the ureter. So you need to consider if you have a tight ureter, you will need to use the access sheath because you will remove a lot of stone fragments, probably what you want to do is stand the patient and come back for a second look in about a couple of weeks.

So stone migration is a problem-- probably for some of you, it is. And the thing is that it's not the same thing to work in a ureter, stone that in a kidney stone. So the increase of the operative time. If you push the stone back from the ureter to the kidney, you may increase the cost of the surgery because you will need to use a flexible ureteroscope, or you will need complimentary instrumentation that you were not expecting to use.

And potentially you will have a less chance to have a stone free patient if you try to remove stone from the kidney than from the ureter. So what is the incidents of that? This is the data come from the crows. This is a clinical research office of the Endourological Society. And all over the world probably, 10% of the cases when you are trying to work in the ureter, still you have migration of the stone.

If you really want to prevent this. How are you going to do this? You can use a basket to hold the stone. You'll need a trapped basket, the stone in the basket, and then you can laser-- there are some companies producing now the basket with the facility to advance the fiber through the basket. And then you can fragment the stone and at the same time remove the stone fragment.

The problem is that you may damage the basket very easily with the laser. And then you will have an increase in your cost. And probably if you don't notice that, probably you can have some light in the wires somewhere there lost in the ureter. Nice option is to use this gel based product. This is a thing called BackStop.

And this is an interesting technology. You use three French small open-ended catheter that is going to run through the ureter scope and that you will pass just like a guide wire, or even over the guide wire, a little open-ended stent above the stone that you will free the Back gel product. And you will leave it there and it will block completely the ureter.

You can laser the stone and this thing will block the migration of fragments. Whenever you are done with the case, you just inject 25 cc's of cold saline and then this thing will be washed out. Problem is that you will not be able to use a basket here to remove stone fragments. Or you can do it. You can dissolve the gel and then use a basket. Now you're using two different tools.

So you have to be very sure that you laser the whole stone completely before you dilute this thing. And then the stone fragments will just be washed out. So a couple of tips when you're using flexible scope. You are already there and what do you want to do? And this is something that I insist with the residents. You use your both hands and you don't have to do twist this way.

You get lost. You just keep moving straight. And what you do here is, right hand, you're going to hold the scope. And the right thumb, you want to deflect the scope. This is only what you're going to do with your right hand. How do I come back here? So I'm going to show you again. And the left hand, what you want to do with the left hand, you're going to move in between the index and the next finger of the scope forward, up backward, and move a little bit the scope whenever you're in the kidney.

So if you do this through simple manner, you don't get lost trying to do things differently with your hand. Something else that we do recommend, especially if you're not using access sheath, it's very useful to block to the scope a little three way connector. So you're going to put irrigation and suction at the same time.

And this will be clean in the field there. You will work much better. So a couple of things-- recommendation when you're working there. You want to reposition stones that are in the lower bowl. The thing is that if you work with the flex scope, your scope is going to last less time. So you want to do is you want to see the stone in the lower bowl. You want to rest the stone with whatever tool you want to use, and then move the stone from the lower bowl back into the pelvis, or preferably, go to the upper bowl.

And if you can place the patient a little bit in the reverse position and the stone will stay there in the upper bowl. And then you can start lazing. And the reason for doing this, again, is you will protect your scope better and you will be able to work in a nicer manner there than with deflection, with active deflection.

So a lot of things have been said about the different energy settings. What do you want to do is you want to use an energy setting that allows you to just start lazing the stone, not break the stone in many pieces, because you're going to have now many problems there. So what you want to do is to start with low energy.

And then as soon as you are getting the stone-- I mean, reducing the size of the stone-- then what I do is I increase the frequency. And there are some people, like in premiere, that really reduce the intensity almost to 0 and increase a lot of the frequency. This thing you can do if you're using the 100 watt unit. If you use the 20 watt unit, which is what we routinely use, you just need to reduce a little bit the energy, increase the frequency, and then you will get small fragments and the stone is not going to be moving all over the field.

Again, if you have the stone trapped in one calyx, especially the upper calyx, you are going to work easier. And again, as you can see here as you're getting control of the stone, you just increase the frequency and you're going to get less size fragments. So some companies are coming with this concept-- may be interesting-- this so-called long pulse mode.

So this is an interesting concept that apparently will allow you to create, with the same energy, more fragments with less migration of fragments, and in addition, you will protect the fiber to get burned. So this company and many other companies are going to come with these long pulse concept, and we want to hear about that and we want to work on this for sure and be able to prove that there is really an advantage.

Now how are you going to remove the stones? Just remember first that anything you use through the flexible scope is going to reduce the deflection capability. So what you want to do is you want to use small things. I think there are two types of devices to retrieve stones. One is what I call the grasper type accessories, which is this famous thing that residents love to use at the hospital.

And this is the basket type thing. The difference is, in one you're going to trap the stone and pull the stone back. In the other one, you're going to take the stone and pull it back. So sometimes I prefer this one because you just put it in the calyx and at some point, the stone is going to go in the basket, and just pull it even open.

So the thing is that you want to use small things. 1.5 to 2.4. No larger than that. And then the deflection capability of your flexible scope is going to keep shown here in the image. So there is something new in the field, I mean coming on-- still experimental, but it's coming. It's getting there. And how can you improve the removal of the stones?

And this group from the University of Southwest Texas, Texas in Dallas, they're working on this magnetic particles that will attract the stones and you will be able to pull the stone. What it is, is you will embed the stones in kind of a paramagnetic thing. There are some even commercially available paramagnetic things that will be able to use to cover the stone.

And then what you want to use is something that will attract these fragments out. They have done this experiment in bladders, and in the lab first and then in the bladders. And what you want to see here is the difference in the amount of stones that they were able to remove. When you compare magnetic removal against basket removal, you can see the big difference in the time. I mean, it's quite short a time.

Difference time is 47%. And you also can see here the next graphic, the amount of stones they were able to remove. 3.7 extractions. 2.7 stone per extractions, against 9.7 extractions, 1.1 stone per extraction. Compare this magnetic thing with the basket. So it seems interested to have something that will allow us to pull more stone fragments without using the basket device several times.

They have also done different studies comparing what is the effect of the urine or the blood, and apparently, it's nothing. I mean, it's the same urine or blood will not interfere. And this is a study I was telling you about-- this is where they are now. They are trying to use this with some magnetic thing that they would add to the flexible scope, to the tip of the flexible scope, and then they will be able to remove stone fragments from the kidney.

Now finally, I'm going to speak about the healing of the ureter. As Dr. Mead said before, stents are painful. Nobody wants stents. And you have here the chance to see what is the incidence of complication of stents. I think we're finally getting close to this concept of biodegradable stents. And this is Ben Chew from Canada presented this third edition of this biodegradable stents.

But finally, I think they're getting close. They have done this in the animals. And what they have seen is 100% of the biodegradations in four weeks. And what they have proved is that this biodegradable thing has less hydro nephrosis while it gets degraded. It get good adoption from the material to the body composition. So they don't have any effect, important effect, etiology-wise.

And I think we're getting close to improve the healing of the ureter. So my conclusion will be, we are changing paradigms. We do have best technology. We do have better instrumentation. Improved surgical techniques-- some of the new things to work, some not. But we do have improved surgical techniques, and we do have promising research coming with the possibility to have a better stone manipulation, stone removal, and a better way to heal the ureter. Thank you.

[APPLAUSE]