

Management of Bladder and Bowel Dysfunction

You can view this presentation at: youtu.be/ZVOjTk3n-9g

[00:00:05] **Dr. Philippines Cabahug:** Good afternoon, everyone. My name is Dr. Pines Cabahug. As Carlos says, I'm a spinal cord injury medicine specialist. I'm supposed to give this talk today with Ms. Janet Dean, who is our excellent pediatric nurse practitioner; however, she's unable to come to give this talk today with me, so I hope I do her justice today. All right, so let's start. I have no disclosures, but, dear gentle audience, I have to warn you: some of the things that I am discussing may offend your delicate sensibilities. So, as I said, you have been warned, okay?

[00:00:42] All right, we are going to proceed. So, for today, I'd like to discuss, in brief, what are the changes in your bladder and bowel function after you've had a disease that affects your spinal cord, and particularly what's the concept of spastic versus a flaccid bladder and bowel. And the reason why is because the general steps to manage your bowel and bladder will, in part, depend on what type of bowel and bladder that you will have.

[00:01:13] All right. So, in 2019, the community of individuals living with spinal cord injury sent out an online survey. What you see here is a graph of their responses with regards to what are the challenges that they were meeting on a day-to-day basis. Obviously, number one -- and I don't have a mouse -- but number one is pain. Number two and number three are bowel and bladder. They have significantly impacted quality of life for these patients.

[00:01:46] Now, on this screen, you'll see the connection between your brain and your bladder; that's on the left side of your screen. Then, on the right side of the screen is the connection between the brain and your intestines. So, we do know, in general, for both your bladder and bowel, that there are functions: they store waste and then they release waste at the appropriate times. Each system has muscular storage, and I just wanted to point out the bladder, the one on the left side.

[00:02:20] It's composed primarily of muscle, and then you'll have an outlet, or valve, or sphincter. For both bladder and bowel, it's under voluntary and involuntary control. Voluntary control is the one that takes human beings two years to be potty trained, okay? All right. So, what happens if any of the connections is cut along the way? It can be cut along the brain, it can be cut along down the spinal cord, or it can be cut along the part wherein the spinal cord connects to the end organ, that's either your bladder or your bowel.

[00:02:58] So, think of it as a backup along I-95, the main interstate on the East Coast, versus a backup along the regular highways when you get off I-95. What does that result in? You'll have either: you can feel you have problems feeling when you need to go to the bathroom, you can have problems expelling your urine or your poop, or you have no control, it just goes out. So, it's like an, "Oops, I did it again," kind of thing, right? Like the lady in the pink in the screen there.

[00:03:30] What it all boils down to is that, for a lot of the individuals, if you have problems with bowel or bladder control, you end up feeling tied to the toilet. Literally tied to the toilet. You can't go out; you have to figure out where the nearest bathroom is. You don't want to go out on a picnic because the public bathroom is either gross or it's always closed. So, in terms of when I talk with my patient, "What is your bladder and bowel program or bladder and bowel routine?" I spend a lot of time, a big chunk of time, discussing about what is a good bowel and bladder routine.

[00:04:10] We go over this because we want to prevent bowel accidents or involuntary bowel or bladder accidents. We want to make sure that we can make a routine that works for you and your family, so that you can go to the bathroom at a predictable time. The importance of this is that we want to prevent also the development of complications, and this can range, for example, in the bladder, a spastic bladder, which I will explain more in a little bit.

[00:04:41] So, the normal bladder is the little bladder there on the right side, that's a relaxed bladder. Again, if you can imagine, the bladder is like a thin red balloon made of thin, powerful red muscle: when the bladder is full, it will squeeze. The sphincter at the bottom, in that screen there, will open, and you will empty your bladder. Now, if your bladder contracts or spasms uncontrollably, over time, it will get thick. And if it gets thick, as you see in the picture of the bladder on the other side, there's less space for you to store your urine.

[00:05:17] It's like, if you can imagine there's less space, more pressure inside. The pressure will translate to the kidneys. It's not a good thing over time. The next picture is a cystoscopy -- a picture of a cystoscopy of what the normal lining of your bladder will look like. So, on the right side, it's nice and smooth, and then on the left side, it looks very thick and scarred, like an ugly Christmas tree pattern. Now, in terms of the bowel, if we don't make sure that you have a good, controlled bowel evacuation, what happens? Poops collect over time.

[00:05:58] You are going to be like this X-ray is showing: FOS, "Full of Stool." The problem is, with severe constipation, as Dr. Sadowsky had mentioned earlier, you're not going to have a good appetite; you're always going to feel bloated, gassy, and distended. I, for one, believe in the Church of Shrek: "Better out than in." So, it's a matter of just making sure that the out is in a controlled manner, and that you're not soiling yourself. And then, with both of the bowel and bladder problems, if you're not properly having a good bowel or bladder program, you're at the risk of getting skin breakdown because it gets icky down there.

[00:06:43] For those who have really high levels of injuries in their spinal cord, we always discuss about autonomic dysreflexia. It's basically out of the scope of the topic today, but it is a possible medical emergency if it's not recognized. So, if anything that's painful or uncomfortable, your blood pressure goes up, and up, and up, and you don't recognize it. In order to bring it down, you have to take off the offending trigger. So, in the world of the people that I see with high spinal cord injuries, it's number one: pee; number two: poop, and it still follows -- number one and number two, pee and poop.

[00:07:24] All right, this is, again, another picture just to emphasize what normal bladder function is. Your bladder is relaxed; it fills up with urine. You still have that sphincter holding on there, preventing the urine from leaking. But then, when you as a person decides it is a socially acceptable time to release the urine -- meaning you get to the toilet in time -- the sphincter relaxes, it opens, and you urinate. When you have anything that

interferes with the connection between down the brain, spinal cord, to the end organ, this normal dance, this normal coordination of control and sensation, that's all going to be affected.

[00:08:08] So, in our patient population, there's a, let's say, a thin red line that is pretty fixed, and it's not moving like other politicians' red lines, it's pretty constant. T-12. T-12 is a magic number. T-12 refers to your thoracic vertebrae, the 12th, the lowest thoracic vertebrae. So, basically, if you feel down there, that's like the middle of your back. At that level, that's where the end of your spinal cord, the cord is, and then you have the little tail ends, the roots come out, okay?

[00:08:45] So, anywhere above that level, we're going to have what's called a spastic bladder, and anywhere below that level, it's going to be called a flaccid or areflexive bladder. So, I'm just going to move forward. So, what is a spastic bladder? It's an overactive bladder. There's no control there. That normal control because it's above that T-12 level, along I-95, if you remember my analogy earlier. So, what happens is that your bladder is overactive. Like, if you just filled with urine, it's going to spasm like crazy. So, that's the spastic or reflexive bladder.

[00:09:32] So, what happens with that? Again, incontinence, accidents, you either have decreased sensation or no sensation at all, and if you do empty, it's either you empty incompletely or you need to reflexively empty. Because if I-95 is blocked, remember there's another pathway, the reflexes between the end of your cord to the end organ, your highways when you get off I-95, so that is still working. So, that reflex pathway, it's still working; that's why it's called reflexive. Just so simply put.

[00:10:06] When you have a spastic bladder, you have a problem storing your urine and releasing your urine. Now, below T-12, below your thin red line there, is a flaccid or areflexive bladder. So, that basically means that it will keep on filling, because it's affecting the exit ramp, the reflex pathway. Your bladder will fill, there's no reflex emptying, you can't empty your bladder. So, in comparison with the spastic bladder, where you have a problem storing and then releasing your urine, what happens with a flaccid bladder, it just fills, and fills, and fills, but because you don't have that reflex emptying or some part of reflex emptying, you don't empty your bladder.

[00:10:56] You have a problem releasing the urine. Don't worry. Even if your bladder fills, your bladder will not pop, I promise. It's just going to get really very uncomfortable. So, that's why it's important we know how to manage which types of bladder you'll have, so that we can manage this properly. So, when your bladder program or bladder routine, you've probably heard this from your other providers, you talk about fluids. How much fluid are you getting? The timing of the fluids. Is there a formula for knowing how much fluid that you're going to drink?

[00:11:30] You've probably heard your 2,000 liters a day. There is a formula -- I actually looked it up because one of my patients asked me before. So, if you get your 40 mls times your body weight in kilograms, and then you add another 500 ml. Why adding another 500 ml? Expert consensus says that people who've had a spinal cord injury, they usually need a little bit more fluid. So, that's why they're saying, 'add a little 500 ml more.' That being said, I just wanted to emphasize one of the problems and one of the fears of the patients that I see: they don't want to drink too much because they're afraid they're going to have a bladder accident.

[00:12:18] However, that's also quite dangerous, because the last thing we want to add, on top of everything else, is to make you dehydrated. And I don't want you guys passing out or having electrolyte abnormalities if you're going to really minimize or limit your fluid intake. So, limit caffeine and alcohol consumption. I drank a lot of coffee today, so you guess where I ended up a lot of the time throughout the day? So, you have to schedule your bladder emptying, and it's true for both spastic and flaccid bladders. Timing is everything.

[00:12:57] You have to make sure that you set aside time to do your catheterization, or, if you have the decreased sensation, if you need to go to the bathroom, make sure you go to the bathroom throughout the day. Let's see. I'm going to move forward. For individuals who have problems with doing catheterization -- so, we have some patients who have problems with their hand function. I have here a picture of an assistive device that is specially fitted so that they can hold a catheter.

[00:13:33] This will allow for independent catheterization for those who have weak hands. And then, for ladies who need to catheterize, it's a little bit challenging trying to be accurate if your target is small. So, there is a device where you can put in between your legs. It has a mirror that will help you catheterize, like finding the urethra. Let's go to spastic neurogenic bowel and bladder. I've mentioned it during the talk. So, for both, depending on how impaired your bladder function is, you'll need to catheterize.

[00:14:18] For spastic bladder, there are different medications that we can try, and it's to calm down. I tell my patients to calm down on overtly overactive or spastic bladder. Unfortunately, for the flaccid bladder, there is, as far as my experience is, there is no medication that will make your bladder contract. There has been one that is called bethanechol, but I really don't have that much good response in a lot of my patients. It may work for some, that has been recommended, but usually, as a rule, they're not that good in terms of making the bladder contract.

[00:15:01] We have more success in stopping the bladder from being overactive. Botulinum toxin injections have been used in order to address the increased spasticity of your bladder. And again, as I remind you, the bladder is a muscle, okay? And then, surgery: I'll talk more about surgery in a bit. Before I go and talk further about the management, as a spinal cord doctor, I like to work with urologists, or I try to find urologists who are comfortable in seeing patients with spinal cord injury.

[00:15:36] A little tip for everyone out there: it's going to be hard to find a urologist who has managed somebody with a rare neurologic disease. But if you tell them, "Oh, I have a spinal cord injury," yeah, you'll have better success. So, as a spinal cord specialist, one of the things I talk with my patients is to make sure that we order an annual kidney and bladder ultrasound. The reason is that I want to monitor what their bladder and what their kidneys look like. I search if there's any evidence of urinary, or kidney, or bladder stones, or if there's any evidence of the swelling of your kidneys, because that's what we're trying to prevent.

[00:16:20] Further down the line, Dr. Sadowsky does this. We have a specialized test called a urodynamic study. It gives us very helpful information: how much urine your bladder can hold, how spastic your bladder is, what the pressure is. It's not the most pleasant of tests, but there is a reason why we order it. It gives us a lot of information about how spastic your bladder is, and if it needs medication, or if it needs Botox. All right. So, bladder emptying methods: you can have your catheters. There are different types of catheters, anything from an external condom catheter to an indwelling catheter.

[00:16:57] Indwelling catheters can be through the urethra or through a surgical procedure, like the placement of a suprapubic tube. And there are, again, the different types of catheters. For those of you who might have seen this on certain news networks, they would advertise what's called an external female catheter system, the PureWick. It doesn't actually empty your bladder. Think of it as a vacuum device that will help keep you dry, because it's an external vacuum, really, that you place over the genital area, and that helps keep you dry overnight. But it is not going to drain the urine from inside your bladder, okay? But it can be helpful.

[00:17:46] I mean, you've seen this advertised for nursing homes. Now, these are a lot of bladder medications and they act at specific parts of your bladder, especially in the spastic bladder. I want to point out the top medicines in the box in the list. These are the classic ones. They belong to a group of medications that we

technically term as anticholinergics, and they, depending on which type, they can act on different receptors in your body. They try to calm or relax the overactive bladder. Then the newer ones down, the Myrbetriq and the Vibegron, they act on a different receptor, again, to help relax the bladder.

[00:18:27] The tamsulosin or Flomax, for men -- probably some men might be on it -- but it can be used for an overactive sphincter. The ones in the box are very important; it's because they are notorious for causing a lot of side effects. And, if you can see, these are anticholinergic side effects. You're calming the bladder, so you can't pee. Because they act on different receptors, not just in your gut or in your GI system, you can't see, it can act on the receptors in your eyes. So, can't pee, can't see, it can cause a lot of dry mouth, can't spit, and you can't go to the bathroom.

[00:19:13] Okay. All right. I will leave that to your powers of deduction. Bladder Botox, I've mentioned earlier. It's a surgical procedure. Actually, it can be done in outpatient or in an OR, really depends on the urology clinic. It lasts anywhere between six to nine months. The side effects would be bleeding, infections, there are small risk of distal spread to muscles that weren't injected. So, there's been documented cases of people who have felt weak after Bladder Botox injections.

[00:19:50] Neuromodulation: this is the new kid on the block, but not necessarily new kid on the block, because people have been studying how to use electrical stimulation since the 1950s to make your bladder work. So, on the left screen, you see what's called posterior tibial nerve stimulation. So, basically, that's you put a needle, you put it there in that area. In the picture I have a picture of the ankle with the needle inserted where the tibial nerve is, and then it stimulates the tibial nerve.

[00:20:23] The theory is -- and they're really not sure how it works -- but the theory is if you stimulate the tibial nerve, the impulses go up to your sacral plexus, and that helps sort of modulate or sort of control the inputs to your sacral nerves that help control your bladder, okay? This is good for those with an overactive bladder, an incomplete injury. In terms of the classic, like, true spinal cord injury, it doesn't work that well, but in people with multiple sclerosis, this can be helpful.

[00:21:04] The other one, the InterStim device. On the right side of the screen, so, you see it, there is something that's implanted at the back. So, you're implanting a small device with the leads that are attached to the back, to where your sacral nerves are. And it's pretty much the same, the theory behind it. It's, again, a form of neuromodulation. You are stimulating the nerves to help them try to modulate the impulses that control your bladder function.

[00:21:38] Now, it can help with overactive bladder. The studies have been inconsistent regarding bowel incontinence, so it can work for some in terms of decreasing the amount of bowel incontinence. What I don't have here is transcutaneous tibial nerve stimulation. One of our colleagues, and who was a former fellow of our program a couple of years ahead of me, Dr. Stampas -- so, basically, he was doing -- it's like the tibial nerve stimulation, but instead of putting a needle, it's transcutaneous.

[00:22:14] So, it's an electrode that is stuck over where we think your tibial nerve is, at that area of the ankle. And again, he's just in his preliminary studies, he's coming out with more data. It actually helps more in decreasing the amount of bladder medications that you take to manage an overactive bladder. All right, I'm going to go ahead. Surgical management: you could either make a stoma -- so, on the right, it's Mitrofanoff. They take a piece of your appendix, they insert it in your bladder, and they make a stoma.

[00:22:55] They insert it to the outside of your abdomen, and that's where you can catheterize yourself instead of catheterizing through the urethra; that's where you put the catheter in. Bladder augmentation: you get a

piece of your intestine, and then you augment the size of your bladder. And then, the urinary diversion: you just get another piece of your intestine, and then you just basically make a channel and then attach that to the abdominal wall, and that's where you can drain the urine.

[00:23:34] Urethral stents: in order to, again, drain the urine. And then, an artificial sphincter: the pump is placed in the scrotum, and if you inflate that cuff, where the pump is attached, you open up the sphincter, and that will allow you to drain the urine. I'm going to proceed. I'm sorry it took a long time with the bladder. For spastic bowels, pretty much the same concept. You have a very spastic bowel, you retain poop, so you have an inability to pass your stool. Below the thin red line is a flaccid or areflexive bowel. And it's, again, you still have constipation, but this time, because you don't have that really tight sphincter, any excessive movement or cough you can soil yourself.

[00:24:22] So, your bowel routine: you've probably heard this before, the diet, you have fiber, there's soluble and insoluble fiber. One tip for people out there is that: be mindful of the supplemental fiber that you take, because if your body's not used to fiber, and you take, all of a sudden, a lot of fiber, without taking good, adequate fluid intake, you're going to end up feeling gassy and distended.

[00:24:51] Now, water. A lot of medications, anywhere from oral stool softeners and laxatives to suppositories. And then, the whole point of doing the fiber and the fluid is to get this perfect consistency of stool. Human beings like to classify things, including stool. So, this is the Bristol Stool Chart. Type 1 is the rabbit-hard, constipated poop. Type 7 is the blowout diarrhea. For the bowel routine, we want a Type 3 and Type 4. If you have a flaccid bowel, we want it a little bit of Type 3 because we don't want you to suddenly soil yourself if it's too soft. And for the spastic bowel, we'd like it to be a Type 4.

[00:25:45] So, goal is Type 3, Type 4. This is the hierarchy of your bowel interventions, from the conservative measures. The minimally invasive one is the transanal irrigation system, and the more invasive one is surgery and a placement of a stoma, like a colostomy. Again, for spastic bowel, your goal is a Type 4 poop. You do your bowel program every one to three days. I tell my patients, "Do not let the sun set on day three without having a BM."

[00:26:20] It's going to be 'not pretty' after that. For flaccid bowels, ideally, we do it once or twice a day in terms of emptying your bowels. You could do a manual disimpaction, meaning you get the finger, little disimpact the stool. If it's a spastic bladder -- and I'm so sorry for being graphic -- if this was the anus: finger gloved, lubricated, you stimulate the inside so that it will trigger a reflex, so you can expel the stool. Bowel management positioning is important.

[00:26:54] SquattyPottys are good for positioning the lower part of your intestine, the rectum, so that it will be a straight shot when you do poop. The transanal irrigation system: I have a picture here of it there. It's a way for you to give yourself an enema. So, that's the next step after the conservative measures. Surgical management: again, you have the MACE or the antegrade continence enema. So, earlier in the transanal irrigation system, you were giving yourself an enema from below.

[00:27:27] With this procedure, you're giving yourself an enema from above, okay? So, you get a piece of your appendix, make a stoma where you can catheterize, and that's where you can flush your poop. A cecostomy: pretty much the same concept; however, you have little button there that the surgeon places, and that's also where you could give yourself an enema. Colostomy: it is not the end of the world. It may actually, for some of my patients, they have told me over time, why did they wait so long, because it has given them so much freedom and so much control.

[00:28:10] Last is this neuromodulation: the sacral anterior root stimulator. Full disclosure: I have not taken care of any patients who've had this surgery. So, this was first done around in the 1970s. It's a more invasive surgery that they will put a stimulator to the front -- the nerves that come from the front of your spinal cord -- and then it stimulates your bladder, or your bowels for that matter, to contract.

[00:28:44] Again, I've not taken care of anyone that's had this procedure done. I don't know if they're still doing this in Europe. This surgery, however, is more invasive because, aside from putting the electrodes to stimulate the sacral nerves in the front, you are cutting the sacral nerves at the back of the sensory nerves. If you had a reflexive bowel or bladder, you're going to make yourself areflexive.

[00:29:11] Checklists: Last but not least, these are the checklists that I follow and I go over with my patients for the bladder. Review if your bladder routine is working or not. Are your medications working? I always order for a yearly blood exam to check your kidney function test, your electrolytes, and ultrasound every one to two years. If you have UTIs, we keep track of what a UTI is, and if it's really a true UTI, I recommend establishing care with a urologist.

[00:29:44] And for men: consider PSA testing after age 50. For the bowels, pretty much the same thing -- review if the bowel management is working or not. And I would also recommend, because having an injury or a disease affecting your spinal cord does not prevent you from getting anything else, please follow the recommended cancer surveillance. And, yes, I am not over time this time around. Thank you so much for your kind attention, everyone.