

YCBS1E6 - Spine_V3

Thu, 5/19 8:17PM • 36:01

SUMMARY KEYWORDS

spinal cord, spinal cord injury, neural stem cell, neurosurgeon, surgery, patients, brain, degenerative, nurse, problems, Christopher Reeve, spine, DCM, Toronto

Dr. Fehlings 00:00

[Your Complex Brain theme music] What we've shown, with early surgical treatment, is we've essentially shifted the recovery profile. [music continues] So we have about one in three people walking away from an injury that they would not have been able to walk away from before. [theme music continues]

Heather 00:21

[Your Complex Brain theme music] This is Your Complex Brain, a podcast all about the brain, the diseases that impact it, and the path to finding cures. I'm your host, Heather Sherman, and I have the great pleasure of working alongside the team at the Krembil Brain Institute in Toronto, Canada, a leader in brain research and patient care. In each episode, we'll take you behind the scenes into our clinics and our research labs to meet the game changers of the future, and we'll empower you with the latest research to help you take charge of your own health. You'll also hear directly from patients who are living with brain disease and the care teams who support them. Join us on a journey to unravel the mystery of your complex brain. [theme music continues then fades out]

Analynne 01:10

[gentle electronic music] I thought I'm going to die at this time. I don't feel anything. My whole body became numb. When they finished the operation, I opened my eyes and I said, "Thanks, God. I'm alive."

Heather 01:19

[music continues] You've likely never heard of degenerative cervical myelopathy, or DCM, but this progressive condition is the most common cause of spinal cord injury in the world, and it just might be the cause of your mystery back or neck pain. If left untreated, DCM can lead to profound and permanent nerve damage, often resulting in paralysis and 1,000-fold increased chance of spinal cord injury later in life. Our guest today is on a mission to spread awareness about DCM and improve the quality of life for those living with spinal cord injuries. Dr. Michael Fehlings is a neurosurgeon and a senior scientist with Krembil Brain Institute. He's a pioneer in improving the diagnosis and treatment of spinal conditions, and one of the first clinician researchers to identify the benefits of early spinal decompression surgery for DCM and other spine-related conditions. [gentle electronic music fades out]

Heather 02:27

Dr. Fehlings, some people might be thinking, "This is a podcast about the brain, so why are we talking about spinal cord injuries?" Make that connection for us. [music fades out]

Dr. Fehlings 02:35

Well, the spinal cord connects the brain to the world, and imagine, if your brain were like a computer, and the computer didn't have a fibre optic cable connecting it to the internet or to an electrical outlet, you couldn't communicate. So, what happens is, if you have problems with the spinal cord, you can think about the messages, but the messages don't get out there, and so it has a huge impact on your independence and your quality of life.

Heather 03:03

And that's what you see with your patients?

Dr. Fehlings 03:04

Definitely. Yeah. So, people will lose the ability to walk, or they'll lose their hand control. They can't socialize, they have problems with bowel and bladder, and sexual function. Even the immune system and the cardiovascular systems can be affected.

Heather 03:21

Well, what are some of the most common causes of spinal cord injury that you see?

Dr. Fehlings 03:24

Well, the most common cause is one that you've just referred to, and this is a complication of degenerative arthritis that affects the cervical spine, and there's narrowing around the nerves in the spinal cord, and then, typically, this is written off. People have a bit of trouble with their walking, and they say, "Oh, well. You know, it's just because I'm getting a bit older," and so on. And then, people can get problems with their hands, and often it's misdiagnosed as carpal tunnel syndrome, and then it can affect balance and instability, and other issues. So, this condition is called degenerative cervical myelopathy, and this is the commonest cause of problems with the spinal cord in the world. And, importantly, as well, degenerative cervical myelopathy is now the most common underlying cause of traumatic spinal cord injury. And when people think about a spinal cord problem, they think about people such as Christopher Reeve, who fell off a horse and had severe trauma, and had a fracture of the spine, and that still occurs, but the most common cause of traumatic spinal cord injury is in middle-aged people, and they may just trip and fall and they don't even know that they have narrowing around the spinal cord. And the risk of getting a traumatic spinal cord injury when you have degenerative cervical myelopathy, or DCM, is about 1,000-fold higher. So, as you can imagine, it's extremely important to be aware of this condition and to have it diagnosed in an early fashion.

Heather 04:57

Why does it so often go misdiagnosed?

Dr. Fehlings 05:00

People, I think, are a bit afraid to talk about problems with the brain and with the spinal cord and with the nerves, and there's a bit of a stigma perhaps associated with this - there shouldn't be, but there is - and I think it's a situation where we need to raise public awareness, much like, many years ago, people weren't really aware of the symptoms and signs of a heart attack. But, there was a big education program and people are aware of that, and it's made a big impact in terms of the prevention of heart issues, and then, when you have a heart attack. And, similarly, with spinal cord problems, people need to be aware that this isn't just necessarily a benign thing that should be blown off. You may need to pay careful attention to this, and early intervention can make a big impact, can prevent big problems, and maintain, or restore, an excellent quality of life.

Heather 05:53

And so, just to be clear, what specifically are the symptoms that people should be most concerned about if they're experiencing them?

Dr. Fehlings 06:00

So, about half of people will get neck pain, and the neck pain may be referred into the arms. And so, if you have neck pain, it's important to be assessed by your physician, because it may not just be a sore neck, it may actually be the first sign of degenerative cervical neuropathy. But, in about a half of people, pain is not a predominant symptom, so it's a bit more silent. So, the things to watch out for is, one, if you have problems with your walking, if your gait, your walking, is unstable. If you're having to hang on to a banister when you're going up and down the stairs when you never used to, that could be an early symptom. And, if you have hand weakness, or hand numbness, particularly if it's in both hands, that's a cardinal symptom of degenerative cervical myelopathy.

Heather 06:49

You mentioned a little bit about it, but what happens if DCM is not treated? What are some of the potential outcomes, long term?

Dr. Fehlings 06:57

People can lose their independence. I've seen people end up in a nursing home because they can't feed themselves, they can't walk. I recently looked after a person in her mid-50s, who was in a complex continuing care facility because it had been missed. [pensive electronic music] It can cause severe pain and if there is damage done to the spinal cord, it may be irreversible, and the pain may not be relieved.

Analyne 07:25

My name is Analyne. I born and I raised in the Philippines. [pensive electronic music continues] Four years ago, I had a fall in the parking lot, and it caused me a back problem, like the compression of my spinal cord. So, I don't know what to do, but first, my partner called an ambulance and they sent me to the hospital. But the doctors in that hospital said they don't have a specialist in this case, so they sent me into Toronto Western that night and, from there, I met a lot of different doctors, and one of them is Dr. Fehlings. He was my neurosurgeon that night. [music fades out]

Analyne 08:25

[delicate electronic music] He explained to me what procedure I'm going to make the next day. I was so scared if I'm gonna still live because I have one-and-a-half-year-old that time, waiting at home. He doesn't know what's going on with me. And that night, I just pray that everything will going to be okay the following day. And then, six o'clock in the morning, I met Dr. Fehlings. He talked to the nurse that he wants to talk to me, so I gave him a little bit of message from my heart, and I said, "Dr. Fehlings, please do your best 'cause I have my son waiting for me at home," 'cause I don't know. I thought I'm gonna die that time 'cause I don't feel anything. Like, my whole body became numb. So, he told me, "I cannot promise to you, but one thing I can promise, I will do my best." When they finish the operation and when I opened my eyes and I said, "Thanks, God. I'm alive." [music fades out] I saw Dr. Fehlings again after six days from ICU, and he asked me to do something from my hand, to move. I said, "I cannot." Like, I can't move anything. Just my eyes are moving, that time. And then, the following day he came back again, and he asked me to move anything, just help your brain to move something from your body. And I managed to have a little movement from my finger. [uplifting electronic music] Right away, he called the nurse, the head nurse, and he said, "Send this lady to the rehab right away. She has a potential." It took me a month to move. For the whole month, I was all depending on the nurses and the doctors to help do everything to do for myself. Then, one thing I told to my doctor, I just asked him one thing, to motivate myself. I said, "Please don't take off my driver's license, and I promise you, I'm gonna stand up. That's my motivation for myself," because I was quadriplegia, right? [music fades out] I'm... "Oh, girl. How can you stand up?" But I told them, "Please, that's the only thing I want from now." So, from then, every day, I did whatever they want me to do, that my physiotherapist and my occupational therapist, they did everything, and I cooperate whatever they want me to do. And, February 2018, they said to me that I can go home, but they want to see the place where I live because they want to make sure that I'm secure. They want me to stay more, but I said, "I'm gonna do my therapy at home 'cause I miss my son very much." And now, I'm here, still alive. [gentle electronic music] I came back to almost normal. I have a restriction on my neck, but I am still blessed, and I'm still grateful that I can be with my family, especially with my little one. And now, he's seven. So, four years ago, I thought I'm not gonna be with him, but now? Yeah, I can see his milestone, and I'm so happy and I'm so glad because, the first time, I don't want to do the surgery, and now I cannot thank enough Dr. Fehlings on what he did to me. That's 100% sure. Yeah, so I'm so grateful that I had a very good doctor. I'm still in pain, but I don't care about the pain. I'm still alive. That's all that matters to me now. I'm still alive. I can be with my children and with my family. [music continues then fades out]

Heather 13:07

So, we just heard from Analyne Salas, one of your patients who was diagnosed with DCM. Analyne underwent a procedure called spinal decompression surgery. So, what does that involve, exactly?

Dr. Fehlings 13:17

So, spinal decompression surgery is where we take the pressure off the injured or compressed spinal cord. In Analyne's situation, she had a double diagnosis. She had an underlying condition called degenerative cervical myelopathy that had caused compression of her spinal cord, and she didn't realize that she had this, and she was unstable with her walking. Then, she tripped and she fell, and she badly bruised, or contused, her spinal cord. And so, what I did with Analyne was we took her to surgery - and this is an intervention that really has been pioneered at the Krembil Brain Institute - and we released the pressure off of her spinal cord, and we do this microsurgically, using very careful

techniques, after we've done an MRI to precisely diagnose where the compression is coming from. And then, we stabilize the damaged arthritic spine, and we use this, using special implants made out of a space-age, MRI-compatible metal called titanium, and then we repair the spine. And, what we have shown is that, both in traumatic injuries as the one Analyne has experienced, as well as non-traumatic injuries from conditions like degenerative cervical myelopathy, decompression surgery, which is usually associated with a reconstruction of the cervical spine, has a dramatically beneficial impact. And, in Analyne's case, as you heard, it's been a game changer for her. A relatively young woman came in, essentially quadriplegic, and she's now had a major improvement, and she has very minimal neurological impairment and, importantly, she has an excellent quality of life. She's gone back to her family, she's enjoying her social activities, and without the surgical procedure, she could very well have been institutionalized with a permanent quadriplegia.

Heather 15:11

That's incredible And she's obviously very grateful to you and your team.

Dr. Fehlings 15:15

Well, she's a very special person and, as you know, she's a very brave person. And it's really, you know, tremendously gratifying for myself, and for our team, to take care of people like Analyne, and to see the impact that the care that we provide makes on a person's quality of life.

Heather 15:35

What has your research shown about the benefits of early spinal decompression surgery, in terms of how quickly it needs to be done to be able to realize those benefits?

Dr. Fehlings 15:43

So, we've published a number of major clinical trials and, just in the past year, we published a very large clinical trial in a very prestigious journal called The Lancet. It's one of the top journals in the field, and we have published both in the area of traumatic spinal cord injury, as well as non-traumatic spinal cord injury or degenerative cervical myelopathy. So, The Lancet neurology article last year was in traumatic spinal cord injury, very similar to Analyne's case, and what we found was that, if decompression surgery is done as soon as possible, but certainly within the first 24 hours after a major traumatic injury, that it has a dramatically positive impact on neurological recovery. And then, in parallel with this, we've also led both a North American trial, as well as a large, international trial in the setting of degenerative cervical myelopathy, and we found, here, that decompression surgery has a dramatically positive impact on people's quality of life and on their outcomes. Now, this is a more slowly progressive injury, so the 24-hour timeframe doesn't play into consideration here, but it is still important to diagnose this promptly, and if intervention is taken, let's say within the first few months after diagnosis, the outcomes are even better than if it's done in a delayed fashion. When I first came on staff at the Toronto Western Hospital, University Health Network, in the Krembil Brain Institute, in the early 1990s, the typical management for traumatic spinal cord injury was non-operative. Surgery was rarely done. It was felt that it wasn't time critical, and it was felt that there really wasn't a role for decompression. It didn't really make a difference. That never made sense to me. So, I did my PhD work here as a young neurosurgeon with Dr. Charles Tator, who was my mentor, and is still is my mentor and my friend.

Heather 17:39

Many people's mentor. [laughs]

Dr. Fehlings 17:42

And we made an important discovery, which has been known as the secondary injury, and this is, after an initial trauma to the spinal cord, because of the ongoing compression, that there was a reduction of blood flow to the spinal cord. And I always thought, "Well, okay. Then, why aren't we operating on people? And why are we taking the pressure off the spinal cord?" and part of it is that we didn't have the techniques to do this safely. So, when I came back to Toronto Western Hospital, I had learned in my fellowship in New York, techniques that were just on the cusp of coming into the forefront, and I was Canada's first fellowship-trained spinal neurosurgeon. And I introduced techniques to Canada, and we implemented these for spinal cord injury, and we were really the first centre in the world that led the way for traumatic spinal cord injury management. [uplifting electronic music] So surgery, based largely on the work at the Krembil Brain Institute, has now been established as a standard of care for both degenerative cervical myelopathy and traumatic spinal cord injury right across the world. And, five years ago, I led an international effort to develop guidelines that verified that these protocols are the standard of care.

Heather 19:05

That's incredible. So, when we talk about the quality of life, because obviously, when we talk about spinal cord injuries, you know, it's very confusing for people in terms of what can actually be achieved. So, when you talk about improving the quality of life, potentially with this procedure, what are you really talking about in terms of the quality of life for the patient? [music continues]

Dr. Fehlings 19:23

So, having a spinal cord injury is one of the most horrific events that can occur to a human being. Your brain is working, but your body no longer works. So, one of the important lessons that I've learned, from speaking with my patients, is that even small benefits can have a big impact. So, we certainly don't always get an outcome, unfortunately, like we saw in Analyne, but even small improvements can make a difference. So, let's say we can restore someone's hand function. That's a game changer because now you can feed yourself, drink a cup of coffee, you could work a computer, you're going to have better independence. Or, perhaps, you have less pain, or perhaps you have better cardiovascular control, a better immune function. These are all things that can occur, and so, in terms of the quality of life for an individual, and further independence, essentially what we've shown with early surgical treatment is we've essentially shifted the recovery profile, so we have about one in three people walking away from an injury that they would not have been able to walk away from before. But, even in the people that still have a very major impairment - and surgery is not a cure for spinal cord injury, by any stretch of the imagination - but even in those individuals, the outcomes are better, so even if we don't, let's say, completely restore neurological function, if, say, we can restore hand function, or bowel and bladder function, or cardiovascular control, it has a big deal for people's quality of life. And then, when they go to a rehabilitation centre, such as The Lyndhurst, which is part of the University Health Network, one of the largest spinal cord injury units in the world, then the rehabilitation team at

Lyndhurst is able to do so much more to enhance the quality of life. So, if we can give people even a bit more function back, then often that can be further amplified with advanced rehabilitation technologies.

Heather 21:13

That's amazing. Well, it's got to be a frightening time for patients and their families when they're coming in for spinal surgery. [gentle electronic music] Your staff go a long way to ensuring their comfort before and after the procedure. So, we spoke to Rosalie Magtoto, who works closely with the patients that you treat, and their families. Here's what she had to say. [music continues]

Rosalie 21:36

My name is Rosalie Magtoto. I work as an advanced practice nurse in the Krembil Brain Institute. As an Advanced Practice Nurse, I have specialized knowledge and I have a Master in Nursing degree. I work directly with Dr. Michael Fehlings, taking care of our patients, as well as with another neurosurgeon, who is Dr. Eric Massicotte. I'm a foreign-trained nurse. I came from the Philippines. How I got my job at Toronto Western Hospital, I took my mom, at that time, for an eye checkup. I told my mom after our ophthalmology visit, and I said, "I'm just going to go to HR and see if they have a job for me [chuckles] as a nurse." [music continues] That was in '80s. They really need nurses, and I think they liked my resume and, since then, I'm still here. And, in the last 18 years, I've been in the spine service program. [music fades out] [pensive electronic music] So, under the Advanced Practice Nurse in a specialized type of care, in the area of nursing, you attend and care, in the clinical setting, patients with a spinal cord or spine condition, or diseases like degenerative cervical myelopathy, degenerative diseases, spinal tumours, and spinal cord injury where they sustain an acute injury related to the fall, or any motor vehicular accident. [music continues] I am involved in caring for spinal patients. When the patient come, during consultation, if the patients are going to have surgery, I provide them with pre-admission care knowledge and, when you're in the in-patient setting role, you help collaborate and coordinate the care of the patients together with a member of the team. The spine team consists of the residents, spine fellows, the staff like Dr. Michael Fehlings, and also the Allied Health professionals, the therapist, the social worker, the pharmacist, and, of course, the nurses who currently are involved in the care of the patient. [music fades out] [upbeat electronic music] Analyne Salas came to us, if I remember, through emergency department. At that time, Dr. Michael Fehlings was on-call, and being on-call, of course, he is the assigned neurosurgeon that will deal with the spinal cord injury. So, Dr. Fehlings, at one point, when we did rounds, saw an improvement in her function which gave us hope. I think, from the time that she had surgery to the time that we sent her to the rehab, everything was positive in a way that there is a good surgical outcome. She has a young family, and I think her kids are still young, and being in that type of illness where you sustain a spinal cord injury, where the outcome is unknown whether you can go back to work, where you can be back to your normal way, it's very alarming to her at that moment. [music fades out] [upbeat electronic music] My philosophy of care, I think, is what sustained me in this job, as well as my faith. Because I've always believed if you had the knowledge, the skills, you need to share it. What really inspires me is to make a difference in my own way. Because what I believe is that each one of us have a role to play. And I think, in my opinion, my role is to try to provide the best care, as much as I can, that I can provide to the patients. And when I think of the patients, I also think about the families. Because when you take care of the patient, you also take care of the families. In addition to that, you also have a role to the nurses that you're working with, particularly the bedside nurses, where you can share and be mentored to them. It's very fulfilling, being in spine

service. It's a testament that I love what I'm doing. Yes, there are challenges. But the end of the day, if there's collaboration, if there's a support from the neurosurgeons you're working with, I think you can say to yourself that as an Advanced Practice Nurse, I did my part. [music swells then fades out]

Dr. Fehlings 25:45

Rosalie is like an angel. [Heather laughs] She exemplifies the best qualities in nursing, and we have an amazing nursing team in the Krembil Brain Institute, and Rosalie exemplifies these characteristics. And the nurses provide the TLC, they provide the emotional support, as well as the caring and the practical supports that individuals and their families need, and health professionals such as a Rosalie are such a critical part of the patient care experience as provided at the Krembil Brain Institute.

Heather 26:23

Agreed. I wanted to ask you also about the future of research. I know your portfolio is not only surgery, but also research, so tell us what you're working on.

Dr. Fehlings 26:33

Oh, thank you. I'm honored to hold the Robert Campeau-Charles Tator Chair in Brain and Spinal Cord Injury Research, and in addition to my work as a clinical spinal neurosurgeon, I work in research at the Krembil Brain Institute in parallel. The idea here is to advance new treatments, so we're very much interested in defining methods to enhance the ability of the nervous system to repair itself after initial injury or degenerative conditions such as Alzheimer's disease, Parkinson's disease, and so on. And so, some of the strategies we're working on include a unique type of bioengineered neural stem cell, and we can create a neural stem cell that is specific for that person, from any cell in their body, so you just take a little piece of skin or bone marrow cell and, using a technique called induced pluripotency of potential stem cell reprogramming, we can reprogram these to create a customized neural stem cell. And now, we're using genetic engineering to make those stem cells specific for the area of the body that we want to regenerate, and then we're engineering these cells to express certain growth factors or molecules that will modify the environment around the damaged central nervous system to enhance the repair and regeneration. And we're very keenly involved in a process called translational research so that's where we're translating the discoveries from the laboratory into the clinic. So, we just talked about decompression surgery. That's an example of something that first was a research idea, and now it's gone into a clinic. And now, the next step will be to do similar types of clinical trials with regenerative technologies such as neural stem cells.

Heather 28:31

It almost sounds like science fiction.

Dr. Fehlings 28:32

Well, in a way it does. It's really quite remarkable what the future holds, but I think, you know, the public has seen the impact of molecular science, say, in tackling the COVID pandemic, right, the remarkable advances with mRNA vaccines? That kind of technology can be applied to figuring out how to repair and regenerate the injured nervous system or when you lose nerve cells. Let's say you're losing your memory and you're developing Alzheimer's disease. What if you could replace those nerve cells and you could restore function? That would be a game changer, and that's really where I see the future

going. And what the public may not be aware of is that, in the international sphere of science, Toronto is known as "Stem Cell City", and this is the city where stem cells were discovered.

Heather 29:26

You're right. I think a lot of people probably don't know that.

Dr. Fehlings 29:28

Indeed.

Heather 29:29

You mentioned Christopher Reeve, and I think you're right; he's probably the most recognizable person when people think of spinal cord injury. In terms of your work with stem cells and with regeneration, the foundation that he started with his wife, Dana, is actually funding some of your work, aren't they?

Dr. Fehlings 29:44

Well, that's correct. Well, I miss Chris Reeve very much, and he and I actually developed a special friendship. Many years ago, during one of the initial fundraising campaigns at the Toronto Western Hospital, both Christopher Reeve and Rick Hansen, another very dear friend and a Canadian icon, both came to Toronto Western, in support of myself and Dr. Tator, of course, and were instrumental in helping kind of the fundraising move along. Christopher Reeve and Rick Hansen - I want to also recognize him - really, were big champions for advancing research in the area of spinal cord injury, and I've had the privilege of working with the Christopher & Dana Reeve Foundation since its inception, and many of the clinical studies that we have done, including the work on decompression surgery, was at least in part supported by the Christopher & Dana Reeve Foundation.

Heather 30:45

[gentle electronic music] That's amazing. I didn't realize that you had a chance to meet him.

Dr. Fehlings 30:48

Oh, yes, we became very dear friends, and if you were in my office, there's a photograph of Chris Reeve, and it's one of my favorite photographs. Before his injury, he was a very avid sailor. I love that photograph. [music continues]

Heather 31:04

Well, are there other advancements in spinal cord research, as well, that you're excited about right now? I mean, how far have we come since Christopher Reeve's accident in 1995?

Dr. Fehlings 31:12

Probably about 90% of what we now know about the treatment of spinal cord injury has been learned in the last generation, so the last 25 years.

Heather 31:21

Wow. [music continues]

Dr. Fehlings 31:21

So, in addition to decompression surgery, we've learned to take much better care of people in the intensive care unit. We've learned that we need to maintain the blood supply to the spinal cord through perfusion treatments. There also have been some advances that have occurred with what are called neuroprotective drugs and I'm very excited about a drug that we've pioneered at our centre called Riluzole. Riluzole is a drug that blocks sodium, the salt coming into the nerve cells and, believe it or not, after the nerve cells are damaged, the salts cause a damage and, if you block the influx of sodium into the cells with Riluzole, you can protect these. And we published on a trial with Riluzole in degenerative cervical myelopathy and we've shown that people have much less pain when they're treated with this, and we're now just analyzing the results of the big trial we've completed with Riluzole in traumatic spinal cord injury. So, fingers crossed because we're going to be announcing that. And there's also clinical trials that are emerging with drugs that will block inhibitory factors in the nervous system that prevent plasticity, repair, and regeneration, and we're now collaborating with other groups in the world to study some of these factors that are blocking molecules such as our RGMa, which is an inhibitory molecule. And I've mentioned stem cells. And then, in addition, there are very advanced rehabilitation techniques that are being developed, some of which we're studying in our laboratory, some of which are being examined up at Lyndhurst. And so, what we're finding is that robotically driven rehabilitation strategies where we focus on particular movements, coupled with stem cells, results in dramatically improved regeneration. So, we're super excited about this because, when we start launching our clinical trials with neural stem cells, in people, we will have advanced rehabilitation strategies that we'll be able to move forward to further enhance the ability of the stem cells to recreate loss to neural circuits.

Heather 33:23

It's an exciting time.

Dr. Fehlings 33:25

Yeah, it really is. And I would say that - you called it magic earlier - it was something that I saw as a young medical student in the area of neuroscience, and I would say that the advancements that are occurring and the potential for the future is extremely inspiring.

Heather 33:43

Well, we think you're inspiring and, for those who are listening right now who may have a spinal cord injury themselves, or a family member or a friend who might be living with one, what do you want them to know about the work that we do here and about your commitment to finding answers?

Dr. Fehlings 33:56

Well, Toronto is viewed as one of the key centres in the world in spinal cord injury, and a recent assessment of the world's literature has indicated that Toronto is the most important centre in the world in the area of spinal cord research. We collaborate widely with other top centres to bring state-of-the-art care to patients. So, I think what people need to understand is that, if you or your loved one have a problem with your spinal cord, please come to Toronto Western Hospital, Krembil Brain Institute. We are here to try to help you, to try to take care of this the best we can, and we offer a comprehensive

range of services. And, you can also be assured that we're providing the cutting-edge technologies to try to optimize the outcome.

Heather 34:45

Well, thank you, Dr. Fehlings. I think we have plenty of material here for a part two when all of the results come in.

Dr. Fehlings 34:50

[Your Complex Brain theme music] Thank you. Pleasure speaking with you.

Heather 34:52

Thanks so much. [theme music continues]

Heather 34:56

Thank you to Dr. Michael Fehlings for being our guest on today's episode, and thank you as well to Rosalie Magtoto, and to Analyne Salas for sharing their stories. If you'd like to hear more about Analyne's journey to recovery, head to our website, uhn.ca/krembil and click on the show notes for today's episode. [theme music continues]

Heather 35:23

This episode of Your Complex Brain was produced by Jessica Schmidt. Executive Producers are Carly MacPherson and Tobin Dalrymple, with production assistance from Dr. Amy Ma, Twayne Pereira, Sara Yuan, and Suzanne Wice. If you enjoyed what you heard, please tell your family and friends, and leave us a rating and review on your favourite podcast listening app. Thanks for listening. We'll be back in two weeks with another exciting episode. Have a great day. [Your Complex Brain theme music fades out]