Episode 1: Surgery

Brenda Coulter: It was Friday. I'm up, I'm on my way to work. I'm just going along, passing through Mississauga. I'd been on the phone — Michael and I were Bluetoothing, having a chit chat.

Within about a half an hour, a leaf spring off a truck was flying through the air. It boomeranged, it came through, and it hit me in the face.

I managed to stop my car. And people came around, and I don't remember anything else.

Michael Coulter: At around 11 o'clock I got a call from her work saying "Brenda's not here for work" and I said, "That's odd, I just spoke to her at 9:30." So I knew something was wrong.

I left where I was immediately and went back to the house to make phone calls to family saying, 'Have you heard from Brenda?' And it was at that time the police showed up at our house. So from there I knew something had gone on.

Alexis Dobranowski: That's Brenda and her husband Michael Coulter recalling June 20, 2014. Michael was right — something had gone on. As he spoke to police, he saw Brenda's car flash onto the all-day-news channel on TV. Brenda was taken by ambulance to a nearby hospital, stabilized and flown by helicopter to Sunnybrook Health Sciences Centre in Toronto.

I'm Alexis Dobranowski.

Sybil Millar: And I'm Sybil Millar. And this is "If these hospital walls could talk".

Today, we go into surgery. About 17,000 surgeries happen at Sunnybrook each year, from your standard gall bladder removal to common joint replacements to absolutely heart-wrenching, life-saving surgery like Brenda Coulter's.

But the operating room isn't someplace we usually remember going as a patient - and that's probably a good thing. Today's episode will shine a bit of light on what happens during surgery inside the operating room, how surgeons learn their techniques and how patients are affected. We are a huge place, so just a caveat here - we are only scratching the surface in this episode!

Alexis: When it comes to traumatic injury like Brenda's, even the surgeon — 4 years later — remembers that day. Here's craniofacial and plastic surgeon Dr. Oleh Antonyshyn picking up the story.

Dr. Antonyshyn: She is an exceptional case in that the degree of trauma she had was exceptional. She would have been travelling at 100 km/h in one direction and presumably this was a part off a truck that was travelling 100 km/h in the other direction. So it would be a very high velocity, massive impact of whatever it was that came through the windshield to strike her in the face. The primary effort is to make sure we can keep her alive and stabilized.

She sustained immediate loss of an eye. A very major disruption of both the soft tissues and the bone of the entire face.

Sybil: Brenda required facial reconstruction surgery immediately. The goal that first day was to reconstruct the bone anatomy as accurately as possible. Dr. Antonyshyn said that by moving the brain and the soft tissues around the eye out of the way, they can make sure the brain and eye will continue working.

Dr. Antonyshyn: And we now have all the technology we need to do that – both in terms of imaging so we can see how bad the injury is and also the surgical techniques to expose those bones and move them around, and the hardware to be able to put the pieces back together and know with a lot of confidence that you can put them where you want them to be and have them stay there. Screws that are precise and small enough, titanium plates that allow us to hold all those tiny fragments of bone in relationship to each other, all of that facilitates us outing all these bits of bone back together again into a stable framework.

Alexis: Dr. Antonyshyn said that doing the surgery is much like piecing together a puzzle.

Dr. Antonyshyn: She had CAT scans done and the facilitates a lot of our reference because we can see the degree of disruption to the bone in three dimensions, it gives us an idea of where and how to start and how we are going to piece things together.

And then we spent the better part of a day. I mean this was a 12- to 14-hour operation putting all the bits and pieces of the bone together.

Alexis: Meanwhile, Michael still hadn't seen his wife Brenda. He waited anxiously in the waiting room for those agonizing hours.

Michael: At about 10-10:30 at night Dr. Anytonyshyn came out and said he was involved in the surgery but that there'd be much more going forward. I think more or less he just wanted to prepare me because what he had seen was extensive damage.

Sybil: Here's Dr. Antonyshyn.

Oleh: That's always a difficult conversation, especially when there's this amount of destruction because that injury is a life-changing injury. And no matter how much time we spend reconstructing an injury of that severity and degree, she will never look the same. And potentially some of the things she enjoyed doing or the family relied on her doing she won't be able to do anymore. Because she's lost one eye. We don't know how good the vision is in her remaining eye. She can't breathe through her nose. Her bite is not quite the same, we don't know if it ever will be. Will she be able to enjoy a meal with her family? We just don't know of that.

Sybil: Here's Michael.

Michael: At 5 o'clock in the morning we were allowed to go in – Brenda's mother, her daughter and myself — and although her face and head was extremely enlarged, I knew it was her. I knew that once all that subsided, it would be Brenda. Even at that phase, I knew.

Alexis: Brenda's life was saved that day, but her journey was far from over. We'll catch up with Brenda and Michael later in the episode.

Sybil: But first, we want to switch gears and talk about another kind of surgery we do a lot of here at Sunnybrook. And that's minimally invasive, or laparoscopic, surgery. Dr. Shady Ashamalla, who is a cancer surgeon in Sunnybrook's Odette Cancer Program, invited Alexis into one of the operating room to learn more.

Alexis: I am outside of the OR, OR#1, just heading in, and we will get a little glimpse of what it's like to have minimally invasive surgery and what it's like for the surgeons to use this technique, rather than open surgery.

Dr. Shady Ashamalla: This is a patient with colon cancer. So we're bringing him to the operating room. The plan is to resect the sigmoid colon, we're going to remove that piece which has the cancer in it. We're going to remove all the lymph glands, and then we're going to put the two ends back together. And the goal is for him to have it all done laparoscopically and just remove that one foot or so of diseased colon.

SA: Basically, there's a small metal tube that goes into his abdomen. And through that metal tube, a machine blows in carbon dioxide and fills the abdomen with air. There's a working space that we can then insert our instruments into. One of the instruments is a camera, and so there's a big monitor in the room and we're all looking at the monitor. The camera is inside the abdomen, and we're using that camera to guide our surgery. And then our hands are basically very long instruments that we've put in through the tiny metal ports that enter into the abdomen, and that's how we're manipulating the tissues.

SA: One of the things that actually takes getting used to is basically the skill, and you don't really know you're doing it as your brain adjusts and gets used to it, of translating two dimensions into three dimensions. You know, that's definitely something that takes practice, something that, you know – video games, kids these days are very good at that kind of thing.

Alexis: Dr. Ashamalla says colon cancer surgery has come along way.

SA: Even just a few years ago this operation would be done with a big incision, a big up and down cut, a good sort of 20 to 30 cm incision up and down in the middle of the abdomen. The patient experience is very different in that they have this very large incision to recover from. And that recovery isn't just pain or isn't just a shorter hospital stay. That recovery is also a significant amount of scar tissue that occurs inside the abdomen. And that scar tissue can lead to bowel obstructions, can lead to other complications long-term.

SA: It's interesting because laparoscopy as a technique has been around for a very long time. When I was a resident we didn't necessarily use it for colon or rectal cancer surgery very often, but we did use it for gallbladder and other sort of smaller operations. The actual technique of using these long instruments and blowing the abdomen up with air and using this foot pedal, that was taught – that's been taught – for a very long time. Utilizing these techniques to take out colon and rectal cancers is what's fairly new. And I say fairly because it's been around a long time, but the uptake has been fairly slow. The techniques, what we're doing with our hands and the instruments, is something I learned as a resident.

Alexis: As Dr. Ashamalla is talking to me, he's also explaining step by step what he is doing to two other people in the room. He says the way surgery is taught it changing.

SA: The old adage of "see one, do one, teach one," is how surgery used to be taught. I don't think we should be teaching surgery in that way anymore. I think there needs to be a base level of competence with these instruments prior to ever being in an operating room. You can get that base level of skill in the Simulation Centre. Historically,

it's been very difficult to simulate open surgery, and so teaching people how to operate in an open fashion, using simulators, was very challenging. It really required either biologic tissue or cadavers. Whereas laparoscopy, you can really start to figure out basic laparoscopic skills.

Alexis: The surgery I went to lasted a little while longer, but I wasn't able to stay the whole time.

Sybil: And what was it like in there?

Alexis: Well, it was dark, because they have to look up at the screen and they have to be able to see it. Also, they had some music on pretty loud – I had to get them to turn it down so I could do the recording. And the other thing that always strikes me is how calm it is in there, despite how many people are in the room, including learners.

Sybil: Dr. Ashamalla did mention how the Simulation Centre is becoming a really important part in surgical skills education and how people can go learn some of these skills before ever setting foot in any operating room.

Alexis: Yea, I've always wondered, how do you learn how to do some of that stuff?

Sybil: So, Dr. Grace Liu and a group of residents were actually in the Simulation Centre doing a gynecological surgical skills lab, so we went to check it out to find out more.

Dr. Grace Liu: We do teaching, of course, in the OR, but it's a little bit of a more stressful situation when that happens. Sometimes it's a little bit more relaxed and easier when you can go into the Sim Lab and do it, so we try to be here about once a week.

Dr. Megan Brown: So if I had a suture in my hand, you're going to take your needle and go through the middle, pick it up, lock your needle, and then you want to tie in the front first. And you want to actually just throw a single tie and cinch it down.

Sybil: So all the residents were huddled around a table practicing their suturing skills on fleshy pieces of plastic that apparently simulates human skin pretty well.

Dr. Liu: They're just trying to simulate what it would be like to do open suturing, open knot tying, rather than laparoscopic.

Sybil: They were practicing knots that they might use in surgery, so single ties and double ties.

Dr. Kinshuk Kumar: The reality is, once you've got the hand movements down, it's a lot easier to do it. And it's good to practice in different environments, because when we need to do it in case of emergency, you've done it in so many different ways in so many different places.

Sybil: Once Dr. Liu was satisfied with the level of skill they were displaying with the surgical knots, they could graduate onto the laparoscopic simulator.

GL: This actually simulates suturing from the patient's right side. You change the angle of the camera.

MB: That is cool.

GL: Yeah I know, very cool.

MB: Because I always find the hardest part is suturing backwards.

Sybil: The simulator looks like a big silver briefcase out of Deal or No Deal. But instead of being filled with money, it's filled with a peg board and little green pegs. And it has a screen on top. The goal of the simulation is that the residents use the laparoscopic tools which are like long pincers and they go into the briefcase. And they pick up a green peg and they move it from one side of the board to another. But the real challenge here is that the screen is actually flipped. So the surgeon's hands are reversed from what they are doing in real

life. So it's really a challenge to look at a screen and see your hand is doing the complete opposite of what your brain is telling it to do.

MB: It's a moving target. I love it. Ohh this is so crazy. Ok.

Dr. Melissa Walker: Yeah don't look at your hands. I think that you have to not look here, just look up there.

MB: Yeah. This is good, because I find the hardest part – it's one thing to do this when it's directly in front of you, you know. But when you're on the different side of a patient, I find that hard to simulate.

Sybil: While a lot of teaching happens at Sunnybrook – both in the operating rooms and the Simulation Centre – a lot of people take these skills they've learned overseas to train people in other countries. Dr. Oleh Antonyshyn, who you might remember from earlier in this episode, he was Brenda's craniofacial surgeon, he is one of those people. He's been going to Ukraine every six months since 2014 when the war broke out, to do craniofacial surgeries on solders there who have been wounded in the conflict.

Dr. Antonyshyn: They are young guys. 18, 19, 20 years old. Many of them, not all of them. Young people who go out to war, just because they are called to war or because they are very patriotic and they have a cause that they are fighting for, and maybe don't have a clear appreciation of what they are getting into. All of a sudden, they are blind. Or they have one eye missing. Or a big segment of their skull missing and they are grossly disfigured and they can't chew and they can't eat and they can't breathe through their nose. They come back, and they have the primary surgery, and that's great. It saves their lives. But trying to establish a relationship with friends or a girlfriend or a wife when they get back can be difficult because of all those things. Trying to find a job or get back to school and relate normally to people, college mates in a normal way when you can't speak properly or you can't see, is difficult to do. Our goal is to try to ease some of the hardship by doing the necessary reconstructions.

To be successful at that, we are travelling to a foreign country, so I bring every single instrument, power supply, and everything else we

might need to do that, irrespective of what they may have available. And I also bring people who I can rely on. So there will be Sunnybrook nurse, anesthetist and surgeons who I know very well who I know can function safely and effectively anywhere. And I know they care exceptionally well for patients here so it's logical for me to bring them along on a trip like this.

Sybil: So up until now, these injured soldiers would actually have to leave the country for the secondary craniofacial reconstruction surgeries. Dr. Antonyshyn and his team have ben able to provide the healthcare teams in Ukraine at these military hospitals with the supplies and the training they need to be able to do these surgeries within the country.

Dr. Antonyshyn: I'm hoping to continue with a more formal collaboration between Sunnybrook and surgical education.

Alexis: Let's get back to Brenda. It's been a long haul. She's been back to Sunnybrook countless times for surgeries, procedures and appointments. We caught up with her to see how she's doing today.

Brenda: I've had 12 facial reconstructions to rebuild the face. My face is rebuilt with titanium. Titanium mesh. Screws and chains. Two-thirds to three-quarters of it. I have titanium across the skull too because I had three bleeds on the brain, so that would have been the neurosurgeon.

I'm partially sighted, so that restricts a lot of what I do visually. I was very visual in my career. So I don't do that anymore. I find other ways. I'm creative and artistic by nature, so I like to paint. I've done watercolours but that's a bit less user friendly for my impairment, so I paint with acrylics. We go to concerts Blue Jays games and I read a lot. I'm looking for other interests. I contact community organizations. I like to play cards. Euchre is one of my favourite games. We suffer through Crib. I think I skunked him the other night. (laughing).

I've never once had like, "Poor me" or "Why did this happen to me?" or even distress when I look at myself in the mirror. It just never enters into my mind in any way. You just look forward each day. I'm

Ok. I’m happy. I’m alive. I want to be alive. I’m glad to be around to still enjoy all the things I do.

Alexis: A very big thank you to Brenda and Michael Coulter, the craniofacial prosthetics unit, Dr. Shady Ashamalla and his team, Dr. Grace Liu and the medical residents, and Dr. Oleh Antonyshyn.

Sybil: Music was by Lee Rosevere. Interviewing, scripting, recording, editing, and production was by us — Sybil and Alexis.

Alexis: So let us know what you think. Visit our feedback form at sunnybrook.ca/podcast

Sybil: You can also visit that webpage to learn more about Brenda’s story and for some other extras from this podcast episode.

Alexis: We’ll see you next time. Thank you!

Sybil: Thanks for listening.