

OBSTACLE COURSE

THE POINTE CAMPUS

KATHERINE BIRD '18 | Page Editor

POP! That was the sound Logan MacLean '18 heard as he was tackled by an opposing player during a football game his freshman year.

THE MOMENT

"My leg snapped," MacLean said. "It sounded like a loud cracking. You could hear it all the way across the field."

MacLean, after playing sports since he was three, remembers walking off the field as if the fall didn't phase him. And yet, it wasn't a surprise to MacLean when he found out that he had torn his anterior cruciate ligament, or ACL.

Every year, about 250,000 to 300,000 people sustain injuries to the ACL, according to Orthopedic Specialists of North Carolina (OSNC). A fraction of this number is present in high school athletes.

The ACL is the tissue in the middle of the knee that prevents the shin bone from sliding out in front of the thigh bone, according to government sponsored organization, Medline Plus.

"They're (ACL tears) most commonly caused by sports injuries and they're significantly more common in females than males," Dr. Terrence Lock, orthopaedic surgeon at Henry Ford Hospital, said. "There are a number of different theories as to why that happens. Some of it we think that females tend to land kind of differently from jumps than what males do."

To be exact, females sustain ACL injuries at a five times higher rate than their male counterparts, according to OSNC.

Lock said that due to female hips being wider, they're more knock knees. This is a situation in which the body is coming down from a jump and the legs tend to collapse or buckle inward, according to Lock. This is a mechanism to tear the ACL.

An ACL tear can be caused by one of two things: a noncontact tear or a contact tear. Noncontact tears are perhaps more common, being present 70 percent of the time as opposed to contact being 30 percent of injuries, according to OSNC.

"Most ACL injuries are what we call non-contact," Derek Chan, a physical therapist at the Center for Athletic Medicine, said. "So you cut and your body wasn't ready and you just turned the wrong way and your ACL just tears. It could be a lack of not necessarily strength, but of neuromuscular controls, so the body's ability to fine tune the muscles to keep your joints in a good alignment."

A contact tear is where the foot is usually planted and the hit from an oncoming person causes knee hyperextension, according to eMedicine Health. Nine times out of 10, this results in a torn ACL.

Usually, people that tear their ACLs are active, but people who aren't active can tear it too, Chan said.

THE INCISION

According to MacLean, once he was diagnosed with an ACL tear, he asked Lock what was next. The answer was surgery.

"Studies have suggested that patients that get their ACL repaired sooner have somewhat better outcomes," Lock said. "In particular for young people that tear their ACL, most people recommend surgery sooner."

Early surgery wasn't even an option for MacLean, he said.

His MRI showed that his growth plates were wide open, which would postpone the surgery until they were closed. Surgery would require doctors to drill through his growth plates, and in return, stunting his growth, MacLean said.

It took two years, but the MacLeans finally heard the relieving news that Logan's growth plates had closed and he could finally have surgery.

"The surgery is done while we look at the inside of the knee on a TV monitor, which is arthroscopic surgery, and again, we have to take other tissue from the knee to make the new ligament," Lock said. "The most popular grafts are the patellar tendon. There's no real consensus as to which one's superior. I think it tends toward a higher level athlete getting patellar tendon."

Knee arthroscopy is a surgical procedure allowing doctors to view the knee joint without making a large incision, according to American Academy of Orthopaedic Surgeons. The surgeon will insert a small camera, called an arthroscope, into the knee joint through a small opening. The images from the camera guide the surgeon in using small surgical instruments to repair the damage to the knee joint. The long term effects of this type of surgery result in less pain, less joint stiffness and often shorter recovery times for patients.

Prior to surgery, an MRI is issued to determine the extent of the injury.

MacLean's MRI also showed a partial tear to his medial meniscus.

The medial meniscus is a half-moon-shaped piece of cartilage that lies between the thigh bone (femur) and the shin bone (tibia). The medial meniscus stabilizes the knee during movement.

"Incidence of meniscal tears with ACL tears varies widely from 40 to 80 percent in the literature based on age and activity level," Mark Bergin, an orthopedic surgeon at St. Clair Orthopaedics and Sports Medicine P.C., said. "MCL and PCL tears are much less common."

MCL stands for medial collateral ligament, and functions as a stabilizer for the knee joint. PCL stands for posterior cruciate ligament, and along with the MCL, stabilizes the knee.

Chan calls the combination of an ACL, meniscus and MCL "the terrible triad". A combination of all three of these would require an extensive recovery period.

For Eileen Janes '18, this was the case.

Due to the tear of these three ligaments, she had an extensive recovery, according to Janes. Post-surgery was the most painful part of the entire process, Janes said.

"When I was laying in bed, I'd get really sharp pains in my knee and wake up in the middle of the night screaming because of the pain," Janes said.

THE REHABILITATION

To MacLean, the most painful part of the entire process wasn't the surgery, but the recovery.

"Right after the surgery, that was pretty bad," MacLean said. "The most frustrating part was sleeping. I hated sleeping. I had to have my leg up all the time."

Typically, after surgery, there will be a six to 12 month recovery time depending on if the tear was complete or not, and if it was accompanied by any other injuries.

"I tell people on day one there's three priorities: get your swelling down, get your knee straight and get the quad firing,"

Chan said. "I also tell them they're probably going to be in therapy three to six months, depending on what they need to do."

Janes didn't mind physical therapy, considering it wasn't nearly as painful as post-surgery was she said.

"With full strength and range of motion, performance should

return to previous level after ACL reconstruction," Bergin said.

Full range of motion is a main goal of rehab and can be defined as the expected mobility of the knee when fully healed.

"The last thing is all about if they have good range and good strength," Chan said. "It's how they're moving. Are they moving with good mechanics? Are they walking with good mechanics? Are they firing the right muscles?"

Chan said that three things are important in fully recovering: perseverance, patience and desire. In order to fully and successfully recover, one has to want it.

THE AVOIDANCE

After all was said and done, MacLean wondered, could this have been prevented?

"There's probably no way to completely prevent it from happening, but there are a number of specific training programs which work on strengthening and give technique to try to teach people how to land better from jumps," Lock said. "These programs have shown to decrease the incidence of ACL injuries. But again, there's no way to completely take the risk out of ACL injuries."

Chan agreed with Lock that to a certain extent, they can be prevented, but not entirely.

Locally, Henry Ford Health System's Sports Medicine program offers an ACL injury preven-

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DR. MARK BERGIN M.D.
Orthopaedic Surgeon

tion course. This program focuses on improving body position and muscle control to reduce the risk of injury, according to the Henry Ford Health System.

Rarely do ACL surgeries ever fail. They have a 90 percent success rate, according to Bergin. Suffering another injury after being fully recovered is a different story.

"The chance of tearing opposite knee ACL after surgery is actually greater than re-injuring the surgically repaired knee," Bergin said.

There is a three to six percent chance of re-tearing the reconstructed ACL, while there's a nine to 12 percent chance of tearing the opposite knee, studies have shown according to OSNC.

"It's not as bad as you think," MacLean said. "People think that when you tear your ACL, you can't walk or do anything, but I had a torn ACL for two years. It was frustrating. That's why I was only allowed to play baseball."

Taking a look at the causes, surgery and recovery process of tearing the Anterior Cruciate Ligament

IN THE E.R.
This is an x-ray taken of Katherine Bird's knee in the emergency room at Beaumont Hospital.

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