Surgery Helps Young Athlete with Spinal Fractures Get Back in the Game

A surgeon at the University of Miami Health System has pioneered a new, minimally invasive spinal surgery technique for treating pars fractures, a painful and debilitating back injury that can stop adolescent athletes in their tracks.

A pars fracture is a break in a small connecting bone in the lumbar spine caused by repetitive stress on the lower back, the pars interarticularis. It occurs most often in
young, physically active patients.

Once doctors confirm that it is a pars fracture, most physicians recommend that patients stop playing sports and, to promote healing, they prescribe conservative therapies such as targeted physical therapy or bracing. Patients in severe pain who show to be resistant to traditional treatment require open back surgery comprising the fusion of a vertebra to another, which often entails a longer and more difficult recovery.

**Minimally invasive spinal surgery**

“If bracing or casting will heal the fracture, patients can heal on their own,” said Dr. Allan D. Levi, a neurological surgeon at UHealth. “However, if they don’t show improvement after four to six months, physicians and patients can consider surgical options.”
The **new technique** developed by Dr. Levi helps pars fractures heal by placing two screws across the break in the bone. According to Dr. Levi, this minimally invasive approach uses imaging to confirm placement and increase the precision of the screw position. Dr. Levi and his colleagues have made this surgery even less invasive by preventing the need to take bone grafts from the hip.

In a **2017 study** of nine patients published in the Journal of Neurosurgery, Dr. Levi and his colleagues showed the efficacy of their surgical technique.

“All but one participant reported fully improved back pain, and fusion was confirmed by imaging for six of nine patients more than one-year post-procedure,” Dr. Levi said.

**Back on the ice**

Nick Mucerino, 24, was an avid hockey player in high school when he first started having physical problems. He recalls not knowing what was wrong as he quickly went from playing hockey six days a week to being in so much pain that some days he couldn’t even get out of bed.

Nick Mucerino celebrating a
win with his mother, Suzanne Zuckerman.

Four different orthopedic physicians could not confirm a diagnosis, and a series of X-rays and MRI scans offered no conclusive answers. Despite wearing a back brace and going through physical therapy, Mucerino’s back pain returned, and the hockey team benched him during his freshman year in college.

Because of this, his mother took him to see Dr. Levi. Thanks to the innovative surgery, followed by physical therapy, Mucerino was back on the ice in just five months. Seven years later, he’s now in law school at Barry University and plays in the Junior Hockey League for the Palm Beach Hawks.

“When you get to play the sport you love, it’s like getting back to normal,” he said.

UHealth is a leader in using the technique to repair pars fractures, according to Dr. Levi.

“We’re the only ones doing this—it’s not being done anywhere else,” he said. “People now come to Miami from across the country and around the world for this treatment.”

**Traveled from California**

One such patient is Aiden Tu, a soccer and volleyball player in California who started to experience back pain in ninth grade. It worsened over time and his father, Dr. Mark Tu, a radiologist, took his son to 11 different spine specialists in a search for answers.
Aiden Tu hiking with his father following a new minimally invasive spinal surgery for repairing pars fractures developed by Dr. Allan D. Levi.

Dr. Tu realized open back surgery would likely leave a large scar, so he researched other treatments and learned of Dr. Levi’s minimally invasive approach for a pars fracture. After that, he interviewed several parents whose children had had success with the surgery and flew to Miami to meet with Dr. Levi.

Dr. Levi performed Aiden Tu’s surgery in April 2017. After three months of initial recovery, Dr. Tu took his son hiking. By five months, Aiden was playing soccer again.

“He had no pain at all,” Dr. Tu said. “We saw a CT scan of the area that was operated on, and it showed a complete fusion of the pars defect.”

A minimally invasive approach to pars defects is both feasible and favorable, according to Dr. Levi.
“Direct pars repairs with placement of intralaminar instrumentation across the defect with rhBMP-2 supplementation offers an alternative methodology with equivalent fusion and pain-free success rates,” Dr. Levi said. “This is particularly true in young patients with a high desire to return to competitive sports and activity.”

Written by a contributor to Inventum.