

BEAM US UP, DR. SCOTT!



Photos: Brent Bingham Photography

The Future Always Arrives Before You're Ready to Accept It

by Diane Tauber Schultz

Garrett Piepel, president, Collaborative Marketing Group, Wheaton, Ill, and Beaver Creek resident, walked into ThriveMD in Edwards, Colorado this past July for stem cell injections on his left degenerated hip and lumbar vertebrae L4 and L5 discs. He walked out three hours later with what some call 'magic little cells' at work. Seems more like a Star Trek episode where Dr. McCoy waves a non-invasive scanner above a severely injured man's body and minutes later he gets up and walks out healed.

Yet, innovative procedures like Piepel had, which fall under the Regenerative Medicine umbrella, are happening today and every day at ThriveMD. Piepel's initial relief results are promising, with continued healing effects expected over the next three to 12 months. Time will tell.

Regenerative Medicine is a comprehensive term for pioneering medical therapies that enable the body to repair and regenerate diseased or damaged cells, tissues and organs. According to a leading-edge practicing surgeon and researcher in this field, Dr. Anthony Atala, MD, Director of the Wake Forest Institute for Regenerative Medicine, it "has the promise to have the most pervasive influences on public health in the modern era."

"Regenerative Medicine today is already becoming a reality. It is science fiction becoming science fact," Atala says during an MDTV online interview. Atala adds that Regenerative Medicine is in its beginning stages and needs what he calls many more indications,

(research data) demonstrating its effectiveness and reach. "We're just at the beginning of this road," Atala says. "We don't know where it will take us, but one thing is for sure, patients should benefit."*

Dr. Scott Brandt, M.D., owner of ThriveMD, who performed the stem cell procedure on Piepel, received his medical degree from Wake Forest University in Winston-Salem, North Carolina, and initially began his practice as an anesthesiologist. He segued into the sub-specialties of Interventional Pain Management and within a couple of years followed the wave into Regenerative Medicine, what he calls the new horizon of pain management.

"Much safety work has already been well established," Brandt explains. "As far as efficacy, we're still looking for the best answers. It's in its infancy more than it's experimental. And it's not 50 years away, it's handfuls of years away."

Like many of Brandt's patients, Piepel had previously seen a couple of orthopedic doctors, who had informed him that he was indeed a candidate for hip replacement. He's had steroid injections in both his hip and back without any success or sustained pain relief. Piepel read an article about ThriveMD and began his research into Regenerative Medicine and how it might help him.

"I wasn't ready to give up my hip yet," Piepel says. "Part of me wants to keep my own parts."

Piepel is a skier, golfer, exercise enthusiast and enjoys playing

baseball and basketball, yet the inflammation in his hip and back has limited his mobility and activities and causes him significant pain even while sitting for extended periods.

THUMBS UP OR DOWN

Brandt's initial determination with Piepel, as with all his patients, is to consider if he is a candidate for stem cell injections. If a patient is bone-on-bone, and the joint doesn't have enough mobility or cartilage, the growth environment for cells to reproduce and regenerate doesn't exist. Around 30 to 40 percent of patients who come into Brandt's office are not candidates. Getting in during the early stages of degeneration increases a patient's chances of being a candidate for this process.

"Dr. Brandt said I'm a good candidate for the procedure," Piepel says, "because the stage of my deterioration isn't past the point of no return."

Piepel is instructed by Brandt to take one day of prescription antibiotics prior to the procedure with a continuing dose for two weeks after the procedure. Additional homeopathic medicine is also prescribed by Brandt to encourage cell regeneration.

DAY OF PROCEDURE

Piepel takes a valium prescribed by Brandt. He puts on a patient gown and is escorted into a procedure room.

Brandt begins by extracting fat cells (liposuction) from Piepel's lower abdomen. Fat cells hold the highest count of adult stem cells and Brandt uses these cells as the source to regenerate Piepel's own tissues and cartilage.

"The liposuction didn't hurt at all," Piepel says.

Stem cells are believed to hold the keys to almost every disease in the body. Depending upon the type of stem cell, they are capable of indefinite renewal through cell division, while also giving rise to daughter cells. The type of stem cells that Brandt extracted from Piepel's fat cells are adult stem cells. Adult stem cells have more limited cell division, which is why Brandt's measure of success for this procedure is three to 12 months or what he calls "the end of the cascade as far as new growth."

"It's one of the reasons the adult cell is so safe," he says. "It will only divide a certain number of times and a year seems to be that time."

After Brandt obtains the fat cells from Piepel's abdomen, he extracts bone marrow from his back. Piepel is informed by Brandt's nurse that the bone marrow procedure might hurt a little.

"Again, it didn't hurt; it was like a pinch," Piepel says. "I'm assuming he went away for a while to mix it all up."

Brandt retreats to his laboratory, where he begins separating stem cells from Piepel's fat cells and bone marrow using a centrifuge.

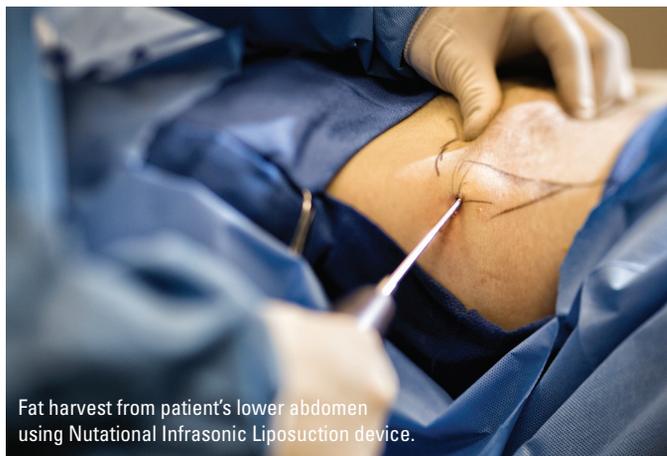
While Brandt works in his lab, Piepel rests.

STEM CELL INJECTIONS

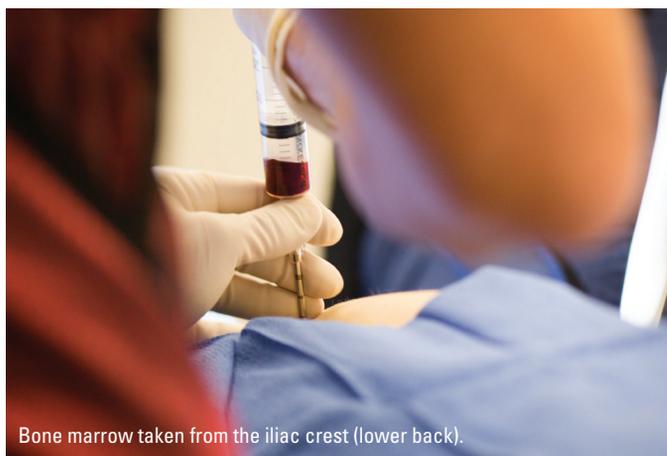
Piepel is taken into the procedural room to begin his hip and back stem-cell injections by x-ray image guidance. Piepel hardly even notices that the hip injection has occurred.

"I remember thinking, oh wow, you shot something in there," he says. "It was a little pressure, but nothing really painful."

Brandt later explains that there isn't a lot of conformity in this field procedure-wise, to date. "There are only a handful of places I'd go myself," Brandt says. "I wouldn't inject cells without image guidance, and the way I separate cells is different than some purely automated process."



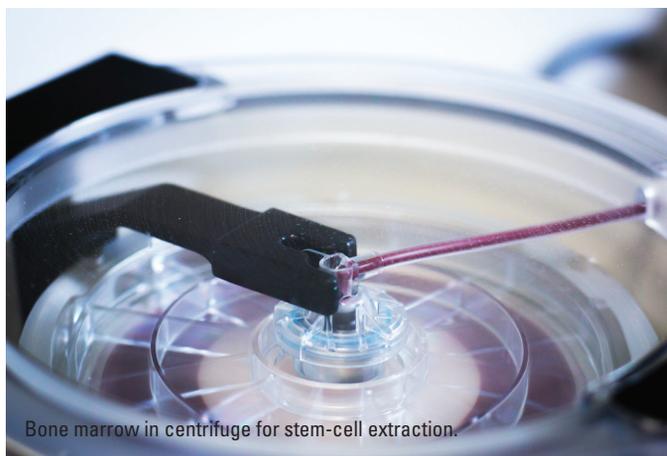
Fat harvest from patient's lower abdomen using Nutational Infrasonic Liposuction device.



Bone marrow taken from the iliac crest (lower back).



Fat placed in centrifuge conicals for stem cell extraction.



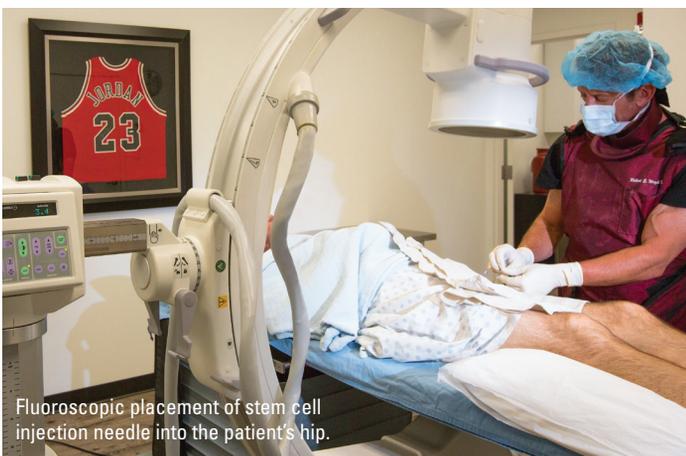
Bone marrow in centrifuge for stem-cell extraction.



Fat harvest separation after several washes and centrifuge cycles.



Final bone marrow concentrate after filtering.



Fluoroscopic placement of stem cell injection needle into the patient's hip.

DINNER AND WINE

In about three hours start to finish, Piepel's procedure is completed. He leaves Brandt's office at 4:30 p.m., and has dinner and wine with his wife at the Beaver Creek Golf Club at 7 p.m.

"I was very nervous going into this, especially with back injections; I'm kind of a control freak," Piepel adds. "But it was such a great experience. If I had been working, I might have taken the next day off, maybe not."

A COUPLE WEEKS LATER

For the first two weeks following the procedure, Piepel wears a six-inch elastic waist band to ensure optimal healing from the liposuction. He has been instructed to reduce his activity—no pounding, no swimming pools. However, he is walking a lot.

"It could be my mind taking over but I feel better already and I never had to take a pain pill, not even Advil," Piepel says. Although he admits his activity level has been significantly less over the past two weeks, his leg and back pain is reduced by half.

Piepel is telling family and friends that if he is completely cured, it will be a miracle. "If I'm 50 or 80 percent better I'll be as happy as can be," he says. He's hoping to delay the need for a hip replacement five to seven years when hip replacement procedures are more advanced. To him, that means success.

"I've had some patients say they've felt tremendously better after a month," Brandt says, explaining that short-term pain reduction is more of a chemical response. "It's a big change in the joint environment that can cause the pain to settle down right away," he adds. "The long-term effects of his body laying down new tissue and cartilage is three to 12 months."

BOOSTER SHOT

Six weeks later Brandt injects Piepel with what he calls a booster shot from bone marrow. Stem cell injections from bone marrow extractions are common in hospitals today, such as Vail Valley Medical Center. However, Brandt says there are approximately 1,000 times less stem cells in bone marrow than in fat.

THE FUTURE

Brandt says more research dollars are going into Regenerative Medicine right now than any other area of medicine. According to the National Institutes of Health (NIH), 'Research on adult stem cells has generated a great deal of excitement. Scientists have found adult stem cells in many more tissues than they once thought possible.' Some of the diseases that the NIH cites could benefit from stem-cell research and treatment include, spinal cord injury, stroke, macular degeneration, heart disease, diabetes, burns, rheumatoid arthritis, and osteoarthritis.**

"At one point, we thought the earth was flat, until we found out that it wasn't," Brandt says. "We don't have some of the finer nuances yet, but we're seeing excellent results."

Piepel's friends are anxious to see the final outcome. "Let's say I'm 80 percent better after this," Piepel says. "Then \$12,000 is nothing for me to be able to move, walk, play golf, and ski again."

Call Brandt a progressive or a visionary, it's all the same. "I'm intrigued to see how far we can continue to push the ball. Either you're fine with the status quo or always looking for innovative solutions that are less painful, less damaging to the body and still get excellent results," Brandt explains. "We're always looking for ways for people to live healthier and longer lives."

Or as Mr. Spock on *Star Trek* would say, 'Live long and prosper.'* ©

*www.wakehealth.edu/WFIRM/ **stemcells.nih.gov/info/basics/pages/basics6.aspx