

THE FUTURE OF BEAUTY AND ANTI-AGING

NEW YOU

Issue 5 Spring 2011

STEM CELLS NOW

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NEW YOU

THE FUTURE OF BEAUTY AND ANTI-AGING

THE STEM CELL REVOLUTION

By: J.P. Faber

From fantastic face and breast lifts to stunning success with repairing muscles, bones and cartilage, adult stem cells promise to revolutionize modern medicine. The good news: They are available right now. The better news: You already have them inside you.

In Tampa, a man who was told that not even surgery could restore his knee to full use is now playing baseball without pain. A woman in California no longer needs the hip operation she was scheduled for. Another man in New York has recovered completely from the rheumatoid arthritis in his hands that plagued him for years. A middle-aged woman in Texas whose face looked ravaged from aging now looks buoyantly youthful.

What do these people have in common, besides seemingly miraculous cures for their various complaints? All have benefited from the use of stem cells.

Stem cells, those magical, mystery bullets that were officially frowned on during the Bush Administration, are back—and this time they are launching a healing revolution that could change medicine forever. Already they are changing the face of cosmetic surgery, with scores of therapeutic applications not far behind.

A Fat-Astic Find

So what exactly are stem cells, and why are they so important? Stem cells are found in all multi-cellular organisms, humans included. They are a kind of undifferentiated prototype cell that can take on the identity of other cells. The ones most people are familiar with are embryonic stem cells, found in the unborn fetus, which become all the different organs of the body. It was the use of these controversial embryonic stem cells in research that enraged the pro-life community.

There is another kind, however—the adult stem cell—and this is what all the excitement is about. It's been known for decades that all human organs have stem cells in them, and that these stem cells can act in the same chameleon way as embryonic stem cells. The problem was that the only way to acquire any of these cells was from bone marrow, a painful process that did not yield an abundance of them.

Then, around ten years ago, a team of plastic surgeons at the University of Pittsburgh Medical Center discovered that there were a huge amount of stem cells in fat. With liposuction already popular at the time, it didn't take long to figure out that, if you could just extract those stem cells from the fat, you could probably find a lot of good uses for them.

The discovery of all those fat or 'adipose' stem cells answered another question, which came from cosmetic surgeons who for years had been transplanting fat. The early advocates of what is called an 'autologous fat graft'—meaning the fat comes from you—were reporting great success with breast augmentations, butt lifts and even facelifts. More incredibly, they were reporting improvements in the skin itself.

Sydney R. Coleman, MD, one of the early pioneers of the fat transfers, said he first began noticing the effect of fat grafts on skin in the 1980s. "Early on I noticed that the overall quality of the skin would improve—its volume and its color—with wrinkling decreased, and pores decreased in size."

Nor was Dr. Coleman alone in his observations, shared by an increasing number of doctors today. "The long term effects on the skin are remarkable," says Todd Malan, MD, who practices stem-cell fat transfers in Scottsdale, Ariz. "There is thickening of the skin, repair of solar damage and repair from aging—even the disappearance of stretch marks.... We are seeing remarkable healing capacity."

Rejuvenate, Repair, Rebuild

At the time Dr. Coleman first observed the phenomenon, however, he and other doctors could not explain it. "We thought it was the volume increase [from the fat] that reduced the wrinkles, or that the fat provided a physical barrier between the muscle and the skin," he says. "But in fact it appears that the stem cells were the reason."

After it was revealed that the fat was loaded with adult stem cells, doctors began figuring out ways to extract them, or at least concentrate them. Dr. Coleman developed a simple technique using a centrifuge, where the fat was spun around in a tube until it separated into layers. One layer of thick white fat was extremely rich in stem cells.

"I found I could exponentially increase the predictability of the results with the dense fat, because there were far more stem cells and growth factors," says Dr. Coleman, which is another way of saying that this was the stuff that really worked.

That was about seven years ago. Flash forward to the present, and voilá, you have a whole cadre of pioneering doctors who are using stem-cell rich fat for facelifts, breast lifts and now, the more serious business of repairing broken and diseased body parts.

"Prior to 2001 we thought the only source of stem cells was bone marrow," says [R. Craig Saunders, MD](#), who practices outside of Dallas, Texas. "Since then [the discovery of 'adipose'

stem cells] there has been a tendency to use fat as a volumizing agent, because the stem cells are reparative and regenerative.”

Even knowing that stem cells can repair and rebuild, Dr. Saunders says that when he first heard that adult stem cells could help restore heart muscles and other types of tissue, “I thought it was nonsense,” he says. Today his clinic uses stem cells for both cosmetic and therapeutic purposes. In particular he uses stem cells to repair sports related injuries, in which the stem cells regenerate the cartilage and bone damage.

WITH A LITTLE HELP FROM OUR FAT
Cosmetic applications are leading the stem cell charge

OLD YOU



Stem cell rich fat can restore aged hands...

NEW YOU



OLD YOU



NEW YOU



...and bring back a youthful look to the face.

Before and after hand, courtesy of Dr. Sydney Coleman
Before and after face fat graft, courtesy of Dr. R. Craig Saunders

Fat=Beauty

While using stem cells for orthopedics is now gaining acceptability in the U.S., however, the real splash has been its use in cosmetic surgery. Fat is fast becoming an in-vogue filler for the new concept of volumizing, wherein a youthful appearance is restored by replacing—what else—the fat you lost as you aged.

“In terms of the cosmetic part of this, to use it [the stem-cell rich fat] in the breasts, hands or face, is changing the whole concept of plastic surgery,” says [Nathan Newman, MD](#), a cosmetic surgeon in Beverly Hills who dubs his fat-transfer procedures a ‘stem cell facelift.’

“In the old days we only had the knife as a tool, not even the laser. All we could do was cut and pull... it made [patients] look smoother but not necessarily younger,” he says. “The idea with fat grafting is that it’s the volume that makes you look younger.”

And while fat transfers have been around for a long time, their results were irregular, with around 50 percent of the transferred fat being lost. But that was before the fat was enriched with stem cells.

“The concept that has changed with stem cells is that the skin texture can be much better, the fat can take much better, we can improve the whole thing by improving the ratio of stem cells to fat,” says Dr. Newman. “I really see a difference. It’s not just a matter of volume. This is live tissue, this is a graft, and it becomes incorporated into your tissue so that it looks natural. It grows and ages with you over time. My patients look better over time, because the stem cells are building blood vessels and the collagen matrix. It’s truly the closest thing we have to a fountain of youth.”



From Gaunt to Glamorous

Eva Campbell-Morales went for a stem-cell face lift to Beverly Hills cosmetic surgeon Dr. Nathan Newman five years ago. At the time she felt she had grown gaunt and tired looking. “I looked like death,” she says. “It’s how your face ages with fat loss.” Now 49, Eva works in advertising, both as a copywriter and on camera talent. She says the best part of the process is that she did not look different, only younger.

Flexing Medical Muscle

Dr. Saunders has become such an ardent believer in stem cells that he’s now certain they can be used for almost any damage to bone or muscle, and can differentiate into skeletal or even heart muscle. “Assuming you had a heart attack, you could inject stem cells and they will repair the heart,” he says.

That is also the conclusion of Sharon McQuillan, MD, who practices anti-aging and cosmetic medicine in South Florida. She works with a hospital in Mexico where stem cells are being tested on everything from heart damage to Parkinson’s disease. In Florida she uses stem cells for cosmetic procedures, but also works with an orthopedic surgeon to treat patients with cartilage damage to the knee.

One of her patients, Tampa resident Bob Carmella, had Dr. McQuillan inject his damaged knee with stem cells; Dr. McQuillan had already given his wife a facelift using stem-cell rich fat.

Carmella was in constant pain from the knee, and considered an operation. "My orthopedic surgeon said most of my damage was from arthritis, and that even if it gets fixed, it will probably continue to tear. I'm 65 so I wasn't really anxious to have surgery under the knife anyway," he says. "I knew about the stem-cell procedure and decided to try it."

That was early summer 2010, when Dr. McQuillan injected Carmella's knee with his own stem cells. When he spoke to us, in early 2011, he had just been playing softball with his team over the weekend. "The horrific pain that I had is gone. In terms of functionality, I have no limitations at all. I'm one hundred percent for movement and flexibility."

Mark Berman, MD, a Brentwood, CA-based physician and the immediate past president of the American Academy of Cosmetic Surgery, is another practicing pioneer of facial fat grafts and a strong proponent of therapeutic stem cell applications. He and several other doctors have launched a center in Rancho Mirage, CA, to hold privately funded clinical trials for stem cell applications, particularly cartilage repair and joint damage.

"We inject patients knees and they call back in a few weeks and say they are out of pain for the first time in years," says Dr. Berman, who also practices what he preaches. "My wife was going to need total hip surgery replacement. She was in pain for three years. Last August we injected her (with stem cells), and she has been pain free since December."