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New Hope for Young Hearts

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Means Better Options for Cardiac
Surgery Patients

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New Hope for Young Hearts

EXTRACELLULAR MATRIX TECHNOLOGY MEANS BETTER OPTIONS FOR CARDIAC SURGERY PATIENTS

By Stacy Schwan

BILLY JOE SANCHEZ WAS COUGHING — HARD AND FREQUENTLY. BUT HE WAS ONLY 22 YEARS OLD AND HAD SEEMED TO BE A NORMAL, HEALTHY YOUNG MAN, SO HE AND HIS MOTHER DONNA DIDN'T WORRY TOO MUCH. AFTER WEEKS WITHOUT IMPROVEMENT, HOWEVER, EVEN AFTER TREATMENT WITH MULTIPLE ANTIBIOTICS, DONNA WAS BECOMING INCREASINGLY CONCERNED. THEN SUDDENLY, WITHOUT WARNING, BILLY JOE'S CONDITION BECAME MUCH, MUCH WORSE.

“I STARTED COUGHING EVEN harder and developed symptoms like a really bad case of the flu,” Billy recalls. “Then, I guess I suddenly turned white, kind of like a walking t-shirt. At least that’s what my mom says. I don’t really remember much about that day. I was pretty much out of it at the time.”

Donna immediately transported him to a nearby hospital. Over the next month and a half, Billy Joe underwent a grueling series of treatments for conditions ranging from swine flu to pneumonia to massive infections. Subsequently, the lung infection was found to have been caused by a nearly egg-sized, medication-resistant infection that was destroying one of the young man’s heart valves and extending into other areas of his heart. A heart defect, a small hole, was also found. Ramzi Deeik, M.D., an area specialist in heart valve reconstruction, was called in, and Billy Joe was transferred to Queen of the Valley Medical Center for advanced valvular surgery.

“Billy Joe’s valve infection was unusually severe and complex. The hole, which had no doubt been there since his birth, complicated his case even further,” Dr. Deeik explains. “We knew we had to remove all the infected tissue in order for the young man to have even a chance to fight the infection, but we also had to repair his damaged valve and close the hole.”

Several options were considered, including installation of an artificial heart valve. However, a newer procedure, less likely to cause further infection, was available at the Queen of the Valley Medical Center. An advanced, biologically derived extracellular matrix (ECM) material was used to reconstruct the destroyed valve and seal the hole.

“Because this new type of implant is composed of a biological substance, rather than an artificial device, it is much less likely to cause infection or rejection, a very important advantage in the case of a young man like Billy Joe,” Dr. Deeik explains. “Once the matrix is in place, the patient’s own heart tissue grows over and into it. The matrix is eventually ‘resorbed’ by the patient, leaving an essentially normal, reconstructed valve in its place.”

A ‘Scaffold’ for Natural Tissue Repair

ECM, the material Dr. Deeik used to repair Billy’s valve, is a complex matrix of collagen derived from porcine small intestine submucosa. It is what provides strength to the intestine and also serves as a reservoir for cytokines that support the growth and differentiation of intestinal epithelial cells. To prepare the ECM material for use in cardiovascular surgery, it is processed to remove cells, effectively eliminating any immune rejection, and terminally sterilized to render it

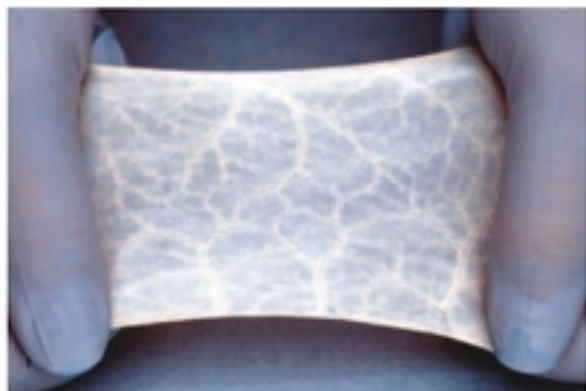


Ramzi Deek, M.D.

safe for use. At only 80-100 microns thick, ECM material is nonetheless extremely strong and resistant to tears.

When implanted, ECM material acts as a scaffold into which the patient's cells migrate and integrate, stimulating the patient's natural wound-healing mechanisms. As the patient's cells become active, they lay down their own collagen, which matures over time to form strong and permanent tissue repair without leaving behind permanent foreign material. Because the ECM contains primarily collagen, the material is eventually replaced as the patient's tissue gradually turns over in a natural state of self-renewal.

CorMatrix Cardiovascular, Inc. holds the exclusive worldwide license on the development of ECM products for cardiovascular applications, including cardiac tissue repair and pericardial closure. Since gaining U.S. Food and Drug Administration clearance in 2005, CorMatrix ECM



“From a clinical standpoint, it allows surgeons like myself to have a live material to work with that will turn into the patient’s own tissue, which is a great advantage,” he says. “We can use the same reconstruction techniques, but use a better quality material that will actually be long-lasting for patients.”



→ Elevator 100
Nursing Unit 100-101

EXIT

→ Patient Rooms 200-209
Patient Rooms 200-209

technology has been used at more than 300 United States hospitals and has been implanted in nearly 20,000 cardiac procedures.

Extracellular matrix technology is also used in other medical specialties such as orthopedics and urology, and for soft tissue repair and wound management.

A Long-Lasting Advantage for Patients

"Cardiac surgery patients now have better options than they had four years ago," says Dr. Deeik, a surgeon of 10 years. A member of Napa Valley Cardiac and Thoracic Surgery, Dr. Deeik operates at Queen of the Valley Medical Center, Santa Rosa Memorial Hospital and Northbay Medical Center. To date, he has implanted ECM material in about 110 patients, ages 87-22.

Dr. Deeik is enthusiastic about how the ECM material has enabled him to benefit his patients. "From a clinical standpoint, it allows surgeons like myself to have a live material to work with that will turn into the patient's own tissue, which is a great advantage," he says. "We can use the same reconstruction techniques, but use a better quality material that will actually be long-lasting for patients."

In addition to its ability to repair and remodel tissue within the heart, one of the greatest advantages of the ECM material is that it can be used for closure of the pericardium, the protective sack surrounding the heart. This advantage is particularly important for young patients who need to have a valve replaced.

"There are two options for valve replacement, a mechanical valve or a tissue valve," explains Dr. Deeik. "In the past, if somebody was young, they would select a mechanical valve because it will last a lot longer than a tissue valve, which can last them only 10-15 years. They want to avoid another operation down the line, because every time you operate on patients, the risk of surgery goes up."

"One thing that surgeons worry about when they go in the second time is that it will cause damage to the heart, which may be adhering to the backside of the breastbone. Using this material to reconstruct the pericardium makes reoperation in the future less risky because it forms the patient's own pericardial tissue around it; thus there's less scar tissue in the layer that covers the heart. So, people can go ahead and have a tissue valve."

"But that's only when we cannot repair the valve, because now I am able to repair the mitral valve 99% of the time," Dr. Deeik adds. "This material helps me to accomplish that."

Getting Back to Life

Today, Billy Joe Sanchez is doing well and preparing to return to school. "It was a pretty scary experience," he recalls.



"I was in the hospital for months. Now I feel pretty much back to normal. The experience is always kind of there, of course, in the back of your mind, but I'm looking forward to getting back to my old, active life."

Billy Joe's father Randall and Mother Donna recall the special attention the Queen's nursing staff showed to their son. Randall recalls, "There were times when we thought he'd never be up and active again." Donna says, "I'm just very grateful that the Queen and Dr. Deeik were there when we needed them." ■