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Chandler boy makes history with spine surgery

By Mary Reinhart
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Registered nurse Dennis Kennedy, right, begins the process of transferring bone marrow into a machine that will separate out stem cells during a surgery Tuesday for Matthew Baremore at Banner Desert Children's Hospital in Mesa.

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Matthew Baremore woke up Tuesday morning, finished his book report on a Tom Clancy novel and prepared to make medical history. The 14-year-old Chandler boy, who has scoliosis, became the first in the state to undergo spinal fusion surgery using a concentrated cocktail of his own stem cells and donated bone.

GRAPHIC: [View the steps of the new spinal surgery procedure](#)

The stem cell technology speeds healing and helps Matthew's body to grow new bone along his curving spine. It also averts the need for a second procedure to harvest a piece of Matthew's bone.

"Right now he has a fairly large bump on his back (and) his rib cage is being forced out of position," Matthew's mother, Becky, said as she ran her hand along his back.

Left untreated, the 50 percent curvature would likely worsen as he grows and potentially interfere with Matthew's breathing. And it would surely interfere with his favorite pastime, basketball.

During the four-hour operation at Banner Desert Children's Hospital, Dr. Mark Flood, a pediatric spine surgeon, harvested bone marrow from the teen's pelvic bones. Stem cells were extracted from the marrow and using centrifuge technology patented by

an Austin, Texas, firm.

Flood straightened and bolstered Matthew's spine with a series of rods and pins – a typical surgical treatment for severe scoliosis. Then, the surgeon combined Matthew's own stem cells, which had been concentrated to pack about 10 times more cells than the traditional method, with crushed bone from the hospital bone bank.

He injected the putty-like mixture into the upper-middle section of Matthew's spine, between the rods, where it will grow into bone and protect the spine against further curvature.

"What's revolutionary is the use of the concentrated stem cells," Flood said before the surgery. "We can avoid the pain of taking bone, and increase fusion."

Scoliosis, where the spine curves from side to side in an "s" shape, affects 2 to 3 percent of the population. There is no cure and, for the most part, no known reason for it.

Most people with scoliosis don't require treatment, but adults and children with curvatures of 25 to 40 degrees may wear a back brace. Surgery is recommended if the back brace doesn't correct the problem or if the curve is more severe.

Until now, the surgical option usually required a bone graft – a second surgery and longer recovery.

Scoliosis can develop gradually and often is caught between the ages of 10 and 14.

Matthew's scoliosis developed fairly quickly, as he hit puberty and shot up to 6-foot-1. It was first noticed during a physical exam in advance of basketball camp last spring.

Before surgery Tuesday, the eighth-grader said he was nervous about the procedure and looking forward to getting it over with. The boy and his twin brother, Jordan, also may have been a bit nervous about the TV cameras following them around the hospital.

Matthew knows that without the surgery his scoliosis would one day slow him down, but right now he doesn't feel a thing. He bends over to show the hump on the right side of his back.

Banner Desert spokeswoman Hollie Costello called the surgery a success Tuesday evening.

"Everything went exactly how they planned," Costello said.

Matthew will recover in the hospital for four or five days and then return to school at

Villa Montessori in Phoenix. And, as soon as possible, he'll return to the basketball court.

But his doctor said that won't happen for about nine months.



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