

Quick action, endograft saves Rutland teen's life after crash

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RUTLAND — It's been five months, but Neal Reardon still hasn't been able to bring himself to drive that local road in Andover where, going around a curve, his Toyota Tacoma truck suddenly shot across the wet pavement and smashed into a tree.

"I've driven that road a thousand times before," said Reardon, who still can't figure out what caused the accident that brought his 14-year-old son, Tommy, close to dying, a death held off only by an alignment of EMTs, doctors, nurses, radiologists and anesthesiologists who marshaled all their skills and knowledge to save the boy.

It was a little before 3 p.m. on Christmas Eve last year, and Reardon and his two sons were on their way from their Rutland home to his brother's home in Lawrence for traditional family festivities. Eleven-year-old Patrick was in the front passenger seat; his mother, Nancy Reardon, a nurse on the Memorial campus of UMass Memorial Medical Center, was not with them because she was working the 3 to 11 p.m. shift. In the rear of the double cab, Tommy had fallen asleep.

Both Reardon and the boys had seat belts on. In addition, there were air bags in the front, which deployed, saving Reardon from nothing worse than a painful sprained left wrist. Patrick, however, was left bleeding profusely from a gash in his forehead that occurred when the truck's rearview mirror was sent flying by the explosion of one of the air bags.

Reardon got out of the truck, telling Patrick to stay put, but the boy scrambled

out anyways. As they stood beside the truck, they could hear Tommy screaming for help, but there was nothing they could do to free him from the wreckage.

Before Reardon could make a call on his cellphone, a motorist coming from the opposite direction called 911, a call that prompted an immediate response from a fire station that was fortunately only about 300 yards down the road.

It took the responders about five minutes to free Tommy with the “jaws of life” equipment, according to his father, and slide him carefully onto a board and into the ambulance that took him to Lawrence General Hospital.

At the hospital, doctors could see bruises on Tommy’s body, conforming to the pattern of the boy’s seat belt that had restrained his body and, in doing so, saved his life. However, abdominal and pelvic scans revealed that the velocity of the crash — the rapid acceleration and deceleration — had caused some internal organs to move, leaving Tommy with a bruised kidney and spleen.

Tommy also had a broken collarbone and broken ribs as well as a broken sternum.

He was in enormous pain.

By a little after 4 p.m., Nancy Reardon arrived at Lawrence General, where physicians tending to Tommy wanted to send the boy to Boston for further care.

His mother decided otherwise: Tommy would be referred to UMass Memorial’s Level Two Trauma Center for Children, where he would come under the aegis of Dr. Michael Hirsh, director of the pediatric trauma program at UMass Memorial.

Notified by Care Connect Services, a group of communication specialists who facilitate hospital transfers, Dr. Daniel Hethermen, chief resident on the service, immediately upon Tommy’s arrival physically examined the boy and performed a FAST ultrasound (Focused Abdominal Sonogram for Trauma).

Conferring with Dr. Hirsh, who, after being alerted to Tommy’s impending arrival, was driving in from home, Dr. Hethermen expressed worry that the severity of the pain Tommy was experiencing was out of proportion to the kidney and spleen injuries.

The two doctors decided to order more abdominal and pelvic scans to see if anything had changed in the approximate three hours since the first ones had been done at Lawrence General. And they decided to add a chest scan, which had not been done, to the order.

In reading those scans at home, over a secure line, Dr. Christine Wallace, a pediatric radiologist on call Christmas Eve, found something that eclipsed other findings. The chest scan showed blood in Tommy's chest, not on the right side, where he had the broken collarbone, but on the left side.

"There was this small aneurysm of the aorta," said Dr. Hirsh, who, upon arrival, went right to the radiology suite where Tommy was just being moved off the table.

An aneurysm is a bulge in the main artery that carries blood from the heart to the rest of the body. However, Tommy's aneurysm had ruptured, sending blood spilling out. When that happens, death can be a matter of a few minutes or a few hours away, as it was for Britain's Princess Diana, who suffered the same injury as Tommy in that Paris crash.

"I've taken care of a couple of patients with an aortic rupture, but I had never seen a patient this young," said Dr. Hirsh, who was happy to find that Dr. Andres Schanzer, chief of the Department of Vascular Surgery, was also on call that night.

Dr. Schanzer, an endovascular surgeon, specializes in repairing aneurysms or bulges in the wall of the aorta, usually before they get a chance to rip or burst. However, emergency situations do occur so UMass Memorial keeps on duty at all times an aortic team of an anesthesiologist and nurses. It was this team that Dr. Schanzer, on the way to the hospital from a Christmas Eve party in Westboro, activated with a "Code Rupture" call, directing the team to get an operating room ready for a patient who had to be treated "superfast."

It was that speed in getting Tommy to the operating room that both Dr. Hirsh and Dr. Schanzer later credited as a major reason for Tommy's survival. It was practically a miracle Tommy even made it to the hospital.

"Most people, if they have a ruptured aorta from trauma, don't make it to the

hospital,” said Dr. Schanzer. “I must have been involved in pediatric cases like this one maybe 10 times in my career. Tommy is the only one who made it to the hospital.”

Here’s where Tommy had had some good luck.

Remember all that blood around the aorta and chest that Dr. Wallace had seen on the scans? That turned out to be a good thing because it was temporarily walling off the tear, which was just a couple of inches south of where the aorta leaves the heart. Of course, that could change at any moment, spilling out more and more blood, resulting in death.

In the operating room, Dr. Schanzer punctured a groin artery and, with X-ray guidance, threaded a fabric-encased stent up and into the aorta, thereby reinforcing the area from above the tear to below the tear. That would seal off the torn area as well as provide Tommy with a “tube” that would channel the flow of his aortic blood from his heart to the rest of his body. It took only 45 minutes for Dr. Schanzer to save Tommy’s life.

“For me and my team, it really was the highest privilege to be able to be involved with a case like this that ends well,” said Dr. Schanzer.

It’s unlikely that Tommy will have to have anything else done in the future, according to Dr. Schanzer. “At age 14, his aorta is fully developed and the stent graft we put in was a bit on the larger size for his aorta, which will accommodate any growth he will have over his lifetime.”

The availability of that stent was another bit of luck. Because most patients are scheduled for this type of surgery, hospitals don’t usually keep many stents on hand but order the proper size to be delivered just in time for the procedure. On Christmas Eve, UMass Memorial had only one stent near the proper size for Tommy on hand. The nearest place where there would have been that size stent available? The Cleveland Clinic in Ohio.

“I saw Tommy Christmas morning in the ICU (Intensive Care Unit) and he looked like a million bucks,” said Dr. Hirsh. On New Year’s Eve, Tommy was discharged and went home to Rutland with his family, who pretty much got their normal lives back, although Tommy was initially able to only return

part-time to his eighth-grade class at Central Tree Middle School in Rutland.

Flash forward to Jan. 11.

Tommy's back to UMass Memorial for a follow-up when, walking down a hallway with his mother, he suddenly pales and slumps to the floor. People come running, someone grabs a wheelchair and rushes Tommy into the Emergency Department, where a physician orders up a battery of tests, including both an echocardiogram, and an electrocardiogram and another CT scan of Tommy's chest.

Now, you're probably thinking something bad has happened with the aorta? No, it's just fine, but something had changed since Tommy had been discharged.

His heart had moved.

And that finding brings Tommy a few days later to the clinic of Dr. David Kane, a pediatric cardiologist. Now Tommy's no stranger to Dr. Kane, who had been asked to keep an eye on him, when Tommy was a patient a couple of weeks earlier in the ICU.

"There was a change in the way the heart was oriented in the chest, the way the heart sits in the chest, in a sac called the pericardium," said Dr. Kane.

"Your heart faces to the left side and it usually points a little bit towards the front of the chest rather than towards the back. Tommy's heart was still in the left side of his chest, but had rotated more towards his back in terms of the way it was pointing," said Dr. Kane.

"There's a little fluid in it (the sac) that lubricates and that allows the heart to expand, to pump and then contract over and over in a lifetime. And the way the orientation of the heart changed, there was concern that the sac might have been ruptured.

"It's an extremely unusual scenario, not one that I had never seen before," said Dr. Kane. Neither had any of his cardiology colleagues at UMass Memorial, with whom Dr. Kane discussed Tommy's condition. "No one had ever dealt with this kind of injury before," said Dr. Kane. "And the medical literature indicated this injury wasn't typically one that doctors saw in a patient that survived and made it

to the hospital.”

With the possibility of pediatric cardiac surgery hanging in the air — not a specialty available at UMass Memorial — Dr. Kane made a call, then a referral, to Boston Children’s Hospital. At Boston Children’s, Dr. Francis Fynn-Thompson, a pediatric cardiac surgeon, first did an exploratory procedure, implanting a camera in Tommy’s chest. Looking at the images sent back, there was no doubt that Tommy’s heart was protruding out that opening in the pericardium sac.

While Tommy’s heart was functioning normally, “there was just too much unknown about the longer-term effects,” said Dr. Fynn-Thompson. So, the decision was made to operate, to gain access through the left chest wall, to carefully close up the sac while slowly and gradually move the heart back to a more normal position.

“The sac was torn extensively so we had to work to get it reattached behind the heart while taking care to avoid injuring the other organs in the chest,” Dr. Fynn-Thompson said. And the sac was torn so badly that it had to be patched by using tissue from a cow’s pericardium sac, a commercially available product that is “routinely used for repairs in the heart.”

And it all worked out.

Flash forward to spring.

There’s an article for a medical journal being written and we have a feeling that Tommy’s sojourn through the medical world is going to generate a lot of buzz wherever trauma specialists, pediatric cardiologists and surgeons gather.

As for Tommy, he was cleared to play sports in April and has played in several games so far. And even though he missed some schooling, he’s set to move on in June with his classmates to the ninth grade.