

Harper's hope: How Mayo Clinic made breathing easier

INTRODUCTION: It's sometimes called "Darth Vader breathing." And it's created by a condition in the windpipe called tracheal rings. The rings constrict airflow and make breathing noisy and labored.

Three-year-old Harper Reed was born with the condition. Her family worried as they watched Harper struggle to simply get air in and out of her tiny body. Then, they came to Mayo Clinic Children's Center, and breathing got easier.

In this Mayo Clinic News Network story, see how a Mayo team used a cutting-edge treatment called slide tracheoplasty to give Harper and her family hope. Jeff Olsen reports.

VIDEO	AUDIO
Harper Reed	"A ..."
Jeff Olsen	In this story...
Harper Reed	"B ..."
Jeff Olsen	... "B" is for breathing ...
Jeff Olsen	... and making breathing easier for Harper Reed.
Ellie Reed	"We went in for our 20-week appointment."
Jeff Olsen	Harper's mom, Ellie, says the challenges started even before Harper was born.
Ellie Reed	"They knew <i>in utero</i> that she had some heart issues."
Title: Ellie Reed Harper's mom	"But they didn't know how extensive they were going to be because some kids have holes in their heart that close on their own."
Jeff Olsen	Doctors at the hospital where Harper was born also didn't know she had a problem with her windpipe ...
Ellie Reed	"It was an outpatient procedure .."
Jeff Olsen	... until trouble surfaced ...
Ellie Reed	"They couldn't pull it out."

Jeff Olsen	... during what was supposed to be a routine procedure requiring a breathing tube.
Ellie Reed	“Her trachea was so small, it had closed around the tube. So they couldn’t pull it out. And, so, she was in the hospital for 29 days.”
Jeff Olsen	Even after the breathing tube was eventually removed, Harper struggled to breathe.
	<i>Sound of Harper’s raspy breathing</i>
Ellie Reed	“After they took out the tube, she had this rasp.”
	<i>Sound of Harper’s raspy breathing</i>
Ellie Reed	“And we had had a family friend that had been at Mayo, and he had said, ‘you need to get her there.’”
Jeff Olsen	At Mayo Clinic, doctors quickly diagnosed the cause of Harper’s labored breathing.
Ellie Reed	“Complete tracheal rings, I believe, is what he called it.”
Dr. Karthik Balakrishnan	“The cartilage that made the walls of Harper’s windpipe was the wrong shape.”
Jeff Olsen	Otolaryngologist Dr. Karthik Balakrishnan is Harper’s pediatric airway specialist.
Title Karthik Balakrishnan, M.D. Pediatric Otolaryngology Mayo Clinic Children’s Center	“You and I have cartilage rings that form the wall of our windpipe, and they are shaped like horseshoes. And the back part is flexible muscle and soft tissue. In Harper’s case, she, instead, had full circles of cartilage and didn’t have any of that flexible area ...”
Dr. Karthik Balakrishnan	“... which leads to narrowing of the windpipe.”
Jeff Olsen	That was part of what was causing this noisy, labored breathing.
.	<i>Sound of Harper’s raspy breathing</i>
Jeff Olsen	Dr. Balakrishnan says the location of Harper’s windpipe – seen on this CT scan in pink – was also part of her problem.
Dr. Karthik Balakrishnan	“Instead of being a nice, relatively straight shot, it’s got a big, almost S-curve to it.”

Jeff Olsen	Harper's tracheal rings, the shape of her windpipe and its proximity to major blood vessels made fixing her problem very complicated.
Dr. Karthik Balakrishnan	"So I described it to them as the Mount Everest of airway surgery."
Jeff Olsen	It would be an invasive, intense operation. But Dr. Balakrishnan assured the Reeds a Mayo Clinic team could do it.
Dr. Karthik Balakrishnan	"The nice thing about a procedure like this and a patient like Harper is that they fit very well into the Mayo work style. This is a place that really values teamwork, and coordination and communication."
Jeff Olsen	This is Dr. Balakrishnan with heart surgeon Dr. Joe Dearani. Working with pulmonologist Dr. Paul Boesch and otolaryngologist Dr. Shelagh Cofer, they led of a large interdisciplinary team that prepped for surgery to fix one of Harper's heart issues and her tracheal rings.
Jeff Olsen	It's a group that's come to be known by Ellie and her husband, Nick, as "Team Harper."
Ellie Reed	"And they all collectively decide what her care is going to be going forward. And, then, one person will contact me and say, 'This is what the team decided.'"
Jeff Olsen	In the case of Harper's breathing, ...
Dr. Karthik Balakrishnan	"The two sides kind of come together."
Jeff Olsen	... the team recommended something called slide tracheoplasty.
Jeff Olsen	A procedure so intricate that a 3-D model of Harper's trachea would be created before the surgery to give everyone involved a closer look.
Dr. Karthik Balakrishnan	"... the anesthesiology team, the nurses, the surgical technicians and so forth. If they can hold that model and look and visualize the anatomy, then they can help us better."
Jeff Olsen	Dr. Balakrishnan planned a surgery that would make Harper's windpipe half as long and twice as wide.

Dr. Karthik Balakrishnan	“The length of the trachea doesn’t really matter. Whereas, the width of the trachea is critically important for airway flow.”
Dr. Karthik Balakrishnan	“So we divide the windpipe in the middle. And, then, we fillet the front side of one half and the back side of the other half and slide them over each other.”
Jeff Olsen	Then, Dr. Balakrishnan uses one, single, continuous stitch to bring together Harper’s widened windpipe.
Dr. Karthik Balakrishnan	“And, so, you get a trachea that’s twice as wide and half as long.”
Ellie Reed	“My whole family was around me, and I was the one that took the call. And I just – I guess I was quiet. I didn’t say anything. And I got off the phone, and they were all terrified that something had happened. And I was just so in shock that I just couldn’t even; and my husband went up to me, and I just said, ‘She made it. She’s alive.’ And I just – oh, it’s going to make me cry. I just – it was – it was a good moment.”
Dr. Karthik Balakrishnan	“It went great. You know – all the planning paid off.”
Jeff Olsen	Harper’s surgery went well. And so have a series of checkups ...
Harper Reed	“Say, ‘Hi camera?’ Hi, camera.”
Jeff Olsen	... that require Harper be sedated, so Dr. Balakrishnan can measure her windpipe.
Dr. Karthik Balakrishnan	“Her trachea, her reconstruction looks great. It is wide open. And each time we measure it, it’s a little bit bigger. It’s growing. That’s what we like to see.”
Harper Reed	“Twinkle, twinkle, little star ...”
Jeff Olsen	Harper is growing too. And so is the guest list for the annual party that Ellie and Nick hold on July 31 – a celebration to remember the date of the surgery ...
Jeff Olsen	... that changed Harper’s life.
Jenny Agnew	“You’re pretty amazing, aren’t you?”

Jeff Olsen	The date Grandma Jenny got her wish.
Jenny Agnew	" ... a happy, happy little girl."
	<i>Sounds of people laughing at a child playing in a bathtub</i>
Ellie Reed	"She loves to go swimming."
Ellie Reed	"She likes to go down slides."
Ellie Reed	"She loves movement."
Ellie Reed	"Wee!"
Ellie Reed	"She's strong."
Harper Reed and Dr. Karthik Balakrishnan	"You got a hat on your head." "I do have a hat on my head."
Ellie Reed	"Each time we come here, it's like, I'm slowly starting to – to picture a future."
Title: Jenny Agnew Harper's grandmother	"It's taught us all about faith, and love and family. But Mayo gave us hope, and we didn't have that until we got here."
Harper Reed	"G ..."
Jeff Olsen	Yes, in this story ...
Harper Reed	"H ..."
Jeff Olsen	... "H" is for hope
Harper Reed	"I ..."
Jeff Olsen	... and Harper.
Harper Reed	"J ..."
Jeff Olsen	For the Mayo Clinic News Network, I'm Jeff Olsen.

TAG: Harper will continue to have regular checkups at Mayo Clinic. If all goes well, her windpipe will continue to grow with her body, providing easy breathing for an active little girl.

