

## Living Without Lungs for 6 Days Saves a Mom's Life



In a challenging procedure never done before, thoracic surgeons at Toronto General Hospital, University Health Network removed severely infected lungs from a dying mom, keeping her alive without lungs for six days, so that she could recover enough to receive a life-saving lung transplant. A report of this case is published online in *The Journal of Thoracic Cardiovascular Surgery*.

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"This was bold and very challenging, but Melissa was dying before our eyes," recalls Dr. Shaf Keshavjee, Surgeon-in-Chief, Sprott Department of Surgery at University Health Network (UHN), one of three thoracic surgeons who operated together on Melissa to remove both her lungs. "We had to make a decision because Melissa was going to die that night. Melissa gave us the courage to go ahead."

Melissa Benoit, then 32, was brought into Toronto General Hospital's Medical Surgical Intensive Care Unit in early April 2016, sedated and on a ventilator to help her laboured breathing. For the past three years, Melissa, who has cystic fibrosis, had been prescribed antibiotics to fight off increasingly frequent chest infections.

A recent bout of influenza just before her hospital admission had left Melissa gasping for air, with coughing fits so harsh that she fractured her ribs. Her inflamed lungs began to fill with blood, pus and mucous, decreasing the amount of air entering her lungs. Melissa's oxygen levels dipped so low, conventional ventilation was no longer enough. To help her breathe, and to gain more time until donor lungs became available, physicians placed her on Extra-Corporeal Lung Support (ECLS), a temporary life-support medical device that supports the work of the lungs and heart.

Melissa's condition continued to worsen until she slid into septic shock. One by one, her organs began to shut down. She had to have kidney dialysis. The team was still waiting for donor lungs but, by this time, Melissa was too sick to have a lung transplant.

The surgical team had been discussing the concept of this procedure for several years. Assessing that Melissa likely still had enough strength to withstand the procedure and get better afterwards, the team – with consent from the patient's family – agreed to perform the operation. At 9 pm that Sunday evening in mid-April, a team of 13 operating room staff, including three thoracic surgeons, removed Melissa's lungs, one at a time, in a nine-hour procedure. Her lungs had become so engorged with mucous and pus that they were as hard as footballs, recalls Dr. Keshavjee. "Technically, it was difficult to get them out of her chest."

Within hours of removing her lungs, Melissa improved dramatically. She did not need blood pressure medication, and most of her organs began to improve. To keep Melissa alive, she was placed on the most sophisticated support possible for her heart and lungs. Two external life support circuits were connected to her heart via tubes placed through her chest.

Six days later, a pair of donor lungs became available and Melissa was stable enough to receive a lung transplant in late April 2016. Following the operation, she has been steadily improving. Her previously thick hair is growing back, she can play with her daughter for whole days without getting tired, and she has not needed a walker or cane for the past month. She is still on kidney dialysis.

The medical team is developing criteria for the select types of patients who could be candidates for this novel procedure while waiting for a lung transplantation.

Source & Image: [University Health Network \(UHN\)](#)

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