

The game-changer

Dr. Kazu Yasufuku has changed the way doctors around the world view endoscopy.

By Anna Sharratt

Dr. Kazuhiro Yasufuku likens joining the Sprott Department of Surgery in 2008 to the Japanese baseball players who joined Major League Baseball (MLB) in the 1990s. Back then, doctors didn't travel nearly as much as they do now to work at other institutions, and only the top medical professionals were lucky enough to join a place like Toronto General Hospital.

"In the '90s, so few professional Japanese players came to MLB," says Dr. Yasufuku, better known as Kazu among his colleagues. "As proud as they were to join the major leagues, it was an honour for me to be part of Toronto General."

It turns out, the honour belongs to the Sprott Department of Surgery, where Dr. Yasufuku quickly established himself as a medical superstar. When the mild-mannered doctor arrived in Toronto 14 years ago, he had only planned on staying for a year. A brilliant thoracic surgeon who had studied in Japan and the U.S., he joined University Health Network (UHN) as a fellow to train in lung transplant surgeries, with the intention of launching a lung transplant program in Chiba, Japan, where he's from, once his fellowship was up.

But while in Canada, Dr. Yasufuku, who is the Deputy Head of the Division of Surgical Oncology in the Sprott Department of Surgery, the William Coco Chair in Surgical Innovation for Lung Cancer and Director of Endoscopy and the Interventional Thoracic Surgery Program at UHN, pioneered an innovative way of performing lung biopsies that profoundly transformed how lung cancer is diagnosed and treated. The procedure, the endobronchial ultrasound-guided transbronchial needle aspiration (EBUS-TBNA), was heralded around the world for its non-invasive approach and became the gold standard for sampling lymph nodes in the chest and, in some cases, even doing lung biopsies.

The EBUS-TBNA procedure involves inserting a long, flexible scope down a patient's throat, deep into the lungs. The scope is then guided to the tumour, where it grabs a part of it and pulls it out for testing. The whole process takes 30 minutes, and patients can go home hours after the procedure.

Dr. Yasufuku developed this technique because he wanted to create a better, minimally invasive way to conduct a lung tumour biopsy. Until the EBUS-TBNA, doctors used a process called a mediastinoscopy (it was also developed at Toronto General and was a revolutionary procedure at the time), which involved making an incision in the neck and inserting a rigid steel rod to sample tissue. It required general anesthetic and carried the risk of bleeding, nerve injury and infection.

Dr. Yasufuku's invention made him an endoscopic hero - in 2020 he received the prestigious Medical Research and Development Grand Prize Award from Japanese Prime Minister Shinzō Abe - and it has inspired others to incorporate minimally invasive techniques into their work. Dr. Eran Shlomovitz, a general surgeon in the Sprott Department of Surgery who works alongside Dr. Yasufuku, says the techniques he uses build on similar principles as the surgeon's pioneering work. Dr. Shlomovitz performs minimally invasive endoscopic procedures to treat esophageal conditions, as well as early stomach and colon cancers. "The risk of complications is very low, and patients can return to normal activity quickly with less pain," he says about minimally

NON-INVASIVE APPROACH

650,000

Lung cancer cases diagnosed globally by the EBUS-TBNA since its introduction

SOURCE: UHN

COMBATTING CANCER

29,800

Estimated number of Canadians who will be diagnosed with lung cancer in 2020

SOURCE: CANADIAN CANCER SOCIETY

invasive endoscopic operations. "The idea is to reduce the morbidity of these interventions."

In 2010, Dr. Yasufuku created the Interventional Thoracic Surgery Program at UHN, which provides leading-edge thoracic interventional procedures, such as airway stenting, chest procedures and diagnostic bronchoscopies. That year he also opened the state-of-the-art Menkes Family Interventional Thoracic Surgery Suite, which is outfitted with high-end, world-leading endoscopic technology with the capability to provide general anesthetic that enables endoscopists to perform tests and surgical treatments in the same place. Now about 800 EBUS-TBNA procedures are performed annually at Toronto General Hospital, versus the 200 mediastinoscopies that used to be undertaken. "This really has changed the diagnostic workup of cancer patients," says Dr. Yasufuku.

TRANSFORMATIONAL APPROACH

These days, people from all over the world come to learn from Dr. Yasufuku. When Dr. Kasia Czarnecka-Kujawa, an interventional respirologist cross-appointed to the Department of Medicine and the Sprott Department of Surgery, discovered in 2011 that he was teaching at UHN, she decided to further her study in interventional pulmonology and apply to work with him. "I stood observing Kazu's endoscopies for 60 hours," she recalls. "I remember saying to him, 'I want you to teach me what you know.'"

She was also impressed with how Dr. Yasufuku's hand-picked team embraced the collaborative spirit he embodies. "The whole department, they

Continued on page 27

**DR.
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YASUFUKU'S**
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Continued from page 25

all think: 'How do we move things forward?'" she explains. A year later, he hired Dr. Czarnecka-Kujawa as his first fellow in pulmonary intervention. "He is a great mentor," she says.

Dr. Yasufuku's visionary approach to endoscopy has transformed the way the specialty is handled at Sprott Surgery. Like Dr. Czarnecka-Kujawa, who brings a unique respirology background to her role, he selects surgeons who have diverse experience and bring one-of-a-kind approaches to their practice. Dr. Shlomovitz is cross-trained in radiology and surgery. Another team member, Dr. Paul James, is an advanced endoscopist and gastroenterologist.

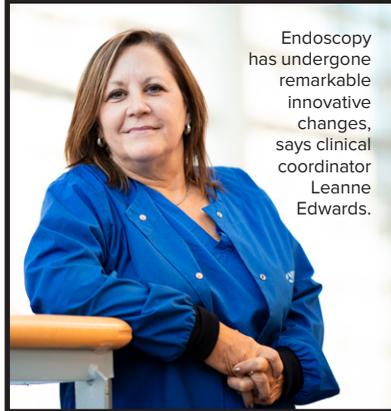
There's also a sense of partnership that permeates the endoscopic suite, says Leanne Edwards, clinical coordinator of endoscopy at Toronto General. She says she's watched Dr. Yasufuku transform the division by breaking down silos and allowing other divisions to merge and share learnings. "He is an excellent teacher," adds Edwards. "He has really improved the whole flow of the endoscopy unit," which encompasses liver, gastrointestinal, thoracic surgery and respirology.

Dr. Yasufuku isn't afraid to go to bat for patients, she says. He recently lobbied senior hospital administrators to have endoscopic retrograde cholangiography (ERCP) return to Toronto General. For almost two decades, the procedure, which helps treat gallstone disease, pancreatitis and cancers, was done off-site. Dr. Yasufuku decided that ferrying patients to appointments outside the hospital was taking too much time and impeding care. "For more than 20 years, people had this done at St. Michael's Hospital," explains Dr. James. "Now, due to Kazu's leadership, they are doing ERCP at Toronto General." The hospital now performs 350 procedures in-house annually, which has dramatically improved the quality of patient care.

DOING MORE WITH ROBOTICS

Dr. Yasufuku now focuses more of his attention on robotics – he started UHN's Thoracic Robotic Surgery Program in 2011, which, he says, will bring even more minimally invasive operations to the hospital. By using small robots to perform surgeries, procedures can be more precise and done with less risk to patients. He trains surgeons on how to robotically remove lung tumours in the operating room, and also tests new technologies for minimally invasive diagnosis and treatment of lung cancer in the Latner Thoracic Surgery Research Laboratories at UHN. "This brings us a lot of ideas," he notes. "Once we prove it works and that it is safe, we can translate that to our patients."

Dr. Yasufuku is also working toward the development of a second interventional endoscopy suite for gastrointestinal and urology-related surgeries, as the first suite is at capacity. His goal is to move as many minimally invasive endoscopic procedures as possible into one centralized space with cross-trained physicians skilled in the most up-to-the-minute endoscopic surgeries. "We continue to advance things," he says. "We're doing a great job as a hospital." ■



Endoscopy has undergone remarkable innovative changes, says clinical coordinator Leanne Edwards.

MINIMALLY INVASIVE

The robots are coming

"Robotic surgery is a critical part of the future of surgery. It will further enhance the capabilities of master surgeons," says Dr. Shaf Keshavjee, Surgeon-in-Chief, Sprott Surgery.

A number of sophisticated machines are increasingly being used in complex surgeries that require a high level of precision and control that can't be done by hand. Surgeons are using robots to perform minimally invasive surgeries – procedures that involve smaller incisions, less pain and better surgical outcomes – which makes a dramatic difference in patient recoveries. Surgeons in the Sprott Department of Surgery are employing a number of innovative technologies in many procedures, from nipple-sparing mastectomies to minimally invasive gastrointestinal (GI), lung, prostate, gynecological and kidney cancer surgeries. The result is a world-class surgical centre that's pioneering new robotic techniques that are revolutionizing patient care.