



Plastic & Reconstructive Surgery

David W. Chang, MD | Professor of Surgery | Chief, Section of Plastic & Reconstructive Surgery
Director, Microsurgery Fellowship

Architecture, Art and Medicine: Dr. Summer Hanson Builds Patient Education and Collaborative Decision-Making into Her Clinical Practice

Summer E. Hanson, MD, PhD, specializes in plastic and reconstructive surgery. Dr. Hanson is adept in treating a wide range of conditions, offering everything from complex breast reconstruction, aesthetic reconstruction, trunk reconstruction and extremity reconstruction to skin cancer treatment and lymphedema surgery.

Constructing the foundation

Like many surgeons, Dr. Hanson's inquisitive, altruistic and creative nature led to the path of surgery. As a child, she dreamt of being an architect, and she has always been drawn to structural objects (and their internal components) such as buildings and bridges, which are both functional and attractive. "My mom was a hairstylist and my dad worked for a cable company, and we would travel around a lot," she said. "I would go on work trips with my dad and excitedly look at where different wires and cables were relative to the TV stations, things that aren't really obvious to most people."

While Dr. Hanson was intrigued by the components that make up structures in the outside world, she was still fascinated by medicine, so she set out to satiate her interests entirely. When she discovered the field of plastic and reconstructive surgery, she realized that she was able to combine her interests. During college, Dr. Hanson was given the opportunity to shadow a plastic surgeon and was amazed by the breadth of his practice. "He showed me how he uses anatomy, physiology, engineering and, again, architecture in a way," said Dr. Hanson. "It really struck me—this is clearly what I want to do." To her, plastic and reconstructive surgery was the perfect concoction of structural and engineering components, anatomy, physiology and biology. Her discovery seemed serendipitous, and she knew that this was a field that she would commit to for many years to come.

Plastic and reconstructive surgery comprises an extensive scope of procedures, including cosmetic, congenital deformity repairs, and breast reconstruction—which is Dr. Hanson's area of expertise.

Breast reconstruction: Education and options

Dr. Hanson joined the University of Chicago Department of Surgery amidst the COVID-19 pandemic. For her, the timing was advantageous, as elective surgeries had just begun to resume.

The common misconception about plastic surgery is that it primarily focuses on cosmetic procedures; however, the specialty's offerings are extensive. Dr. Hanson treats a wide range of patients, including those with congenital and developmental deformities, while the bulk of her practice is cancer-related, patients who have a diagnosis of breast cancer or who are at high risk due to their family/genetic history, or who require breast reconstruction.

Due to COVID-19, there was a backlog of breast cancer patients who were waiting for treatment and reconstructive surgery. "Starting my practice was probably the easiest transition, just because I think that the case volumes were really high," she said. "Everyone was eager to get their treatment underway, especially with the cancer population; the delay, I think, was very mentally draining on them." Being immunocompromised, many of Dr. Hanson's patients were apprehensive to be in the hospital, but relieved to be moving forward in their journey to recovery.

After arriving at the University of Chicago Medicine, Dr. Hanson had a keen focus on patient education and building rapport as well as collaborative decision making into her clinical practice. From the start, she has always been very intentional about establishing personal connections and constructing individualized plans of care for each of her patients. "I wasn't necessarily part of their team before, whereas they might have been seeing the breast surgeon or



the medical oncologist for months in advance," said Dr. Hanson. "Taking that extra time, while my practice was getting started, to build relationships and individualized plans of care was extremely helpful."

Dr. Hanson's dynamic approach meshed seamlessly with UChicago Medicine's unique style of personalized medicine, and her brilliant efforts have enhanced the Section of Plastic & Reconstructive Surgery tremendously. While the actual procedural activity may be consistent, the treatment plans and individual connections will vary from patient to patient. To that end, it is critical to digest each individual's circumstances, educate them and provide a buffet of treatment options. For Dr. Hanson, it's imperative to discuss with the patient what their expectations are, what their goals are and what their recovery will be like—as many patients are worried about their jobs and having ample time to heal.

While Dr. Hanson is an esteemed expert in breast reconstruction and will know what the best type of reconstruction is from an anatomical standpoint, she provides her patients with an assortment of options for them to pick the most fitting choice, as their individual situations are oftentimes dissimilar. "What I didn't appreciate as much until I got here—which my patients pointed out to me—was how their treatment and recovery impacts their social network," she said.

Some options require minimal downtime but include multiple procedures, while others may be a larger complex reconstruction but then require very little upkeep. The stage of life of patients, their

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Department of Surgery

jobs and their support system all weigh heavily into the decision-making process. It's key to understand what kind of impact the procedure will have on their lives. "I incorporate that discussion on what their goals are, what their social support is and what they're responsible for," said Dr. Hanson. "What are the things that they're worried about outside of just the recovery process?"

Tissue engineering

Due to the restrictions that were in place, it took a bit of time before Dr. Hanson got her lab up and running. Not only were there hard limitations on lab personnel, but at the same time, there was a lot she had to go through to get protocols off the ground. After bundles of paperwork, countless approvals and restrictions were lifted, Dr. Hanson's clinical and translational research programs began to take off. "With COVID, everything has sort of been on hold or has been delayed," she said. "I'm very excited that things are starting to come around now."

Like all of our surgical sections, the Section of Plastic & Reconstructive Surgery is committed to innovation and discovery. Dr. Hanson's latest research has been focused on new ways to improve breast reconstruction using a patient's fat tissue for engineering purposes. The hope is that they can utilize these tissue grafts to deliver a targeted therapy, or treatment.

"If we're moving fat tissue to a specific site like the breast or the axilla, are there ways that we can optimize that graft so that it's helping to improve the healing process or the skin quality," said Dr. Hanson. "Thinking longer term, can we use it as a delivery mechanism for specific chemotherapeutics or medications?"

In order to achieve this, Dr. Hanson and her team are looking specifically at the different components of adipose tissue grafts and the ways in which they can manipulate the structure with either cells, growth factors or genetic modification. Additionally, she and her team are reevaluating the current methods for reconstruction from an outcome standpoint. How can they optimize those methods to improve tissue healing and reduce radiation injuries that can occur after cancer treatment? "The big picture will have a novel application through the FDA to do engineered tissue grafts in a clinical trial," said Dr. Hanson. "A few years out, but that's the big picture."

Dreams coming to fruition

Dr. Hanson's research is entrenched in the deep commitment to unrelentingly seek out advancements that will improve the quality of life for her patients. Her move to the University of Chicago represents a huge opportunity to take her research, as well as her clinical practice, to new heights. She met Chief of Plastic & Reconstructive

Surgery David W. Chang, MD, when she was a fellow. Dr. Chang became a lifelong mentor and fully supported her groundbreaking research; moreover, he encouraged her move to Chicago, where he knew her research would flourish. "Dr. Chang called me on a random Saturday and said, 'We're working on expanding our research, and I know that this was something that you were interested in, and I know you're from the Midwest. Do you think you would ever make a move?' It just happened to me at a time when we were actually looking," said Dr. Hanson.

The timing was fortuitous. "It all kind of worked out to come up here," said Dr. Hanson.

In addition to Dr. Chang, other senior faculty like Executive Vice Chair John C. Alverdy, MD, immediately realized Dr. Hanson's research was ripe for development and encouraged her to push forward. "I met with Dr. Alverdy and felt like I had more mentoring from a research perspective in a 30-minute interview than I had in a while," she said.

The Department of Surgery provides a supportive bionetwork of renowned surgeons and researchers who are enthusiastic to explore novel ideas in a collaborative environment. "This is something that I'm very grateful for, and I really look forward to expanding these collaborations and expanding these research programs," said Dr. Hanson.

Through Dr. Hanson's journey, she's been able to adequately feed her (in-built) architectural, procedural and artistic interests, all while formulating innovative techniques that will enhance the overall well-being of her patients. "Obviously I'm biased, but I think plastic and reconstructive surgery is one of the most fascinating fields, and I think that the directions that things are going in—from not only a technical and surgical standpoint, but from a biomechanical and bioengineering standpoint—will produce successful outcomes," said Dr. Hanson. "I think that because of what we do with tissue manipulation and tissue architecture just has so much influence and impact that can directly affect patients' quality of life, and their long-term quality of life is so important."



Julian T. Owens
Department of Surgery Core
Operations Manager
The University of Chicago Medicine