



Craniofacial Reconstruction

Restoring Appearance for Children with Facial and Skull Deformities

By Scott P. Edwards

Cassidy is a vibrant, energetic 18-month-old. Her life, however, didn't start out that way.

Cassidy and her fraternal twin brother, Killian, were born two months premature. While Killian went home soon after delivery, Cassidy spent 28 days in the Neonatal Intensive Care Unit (NICU) at Baystate Children's Hospital due to low birth weight, failure to thrive, reflux, and a bowel infection. At two weeks of age, Cassidy's doctors diagnosed her with a unilateral coronal craniosynostosis.

With craniosynostosis, the fibrous sutures in the skull close prematurely, forming a solid skull and causing problems with brain and skull growth. Intracranial pressure increases and the skull and facial bones form abnormally and asymmetrically. This condition occurs in about 1 out of 2,200 births.

In Cassidy's case, a portion of the front of her skull was misshapen by the craniosynostosis and her eye sockets were sunken. But using advanced surgical techniques beginning with Dr. Paul Tessier in France and developed over the last 50 years, surgeons at Baystate Medical Center were able to reshape her skull and advance her orbital bones to give her face and head a near-normal appearance.

"The waiting and wondering were the worst," says Cassidy's mom, Sarah Leshure, of the weeks and months following the surgery, "but there have been no other medical concerns. She's doing well."

Comprehensive Program

Craniofacial reconstruction surgery like Cassidy's is not new, says Joseph Shin, MD, chief of Plastic Surgery at Baystate, who performed the procedure on Cassidy, along with Baystate neurosurgeon Robert Schapiro, MD. "However, the idea that we could do both the head and face simultaneously was quite revolutionary," says Dr. Shin.

Along with pediatricians, geneticists, pediatric intensivists, plastic surgeons, and neurosurgeons, Drs. Shin and Schapiro developed the craniofacial reconstruction surgery program at Baystate two years ago, in collabora-

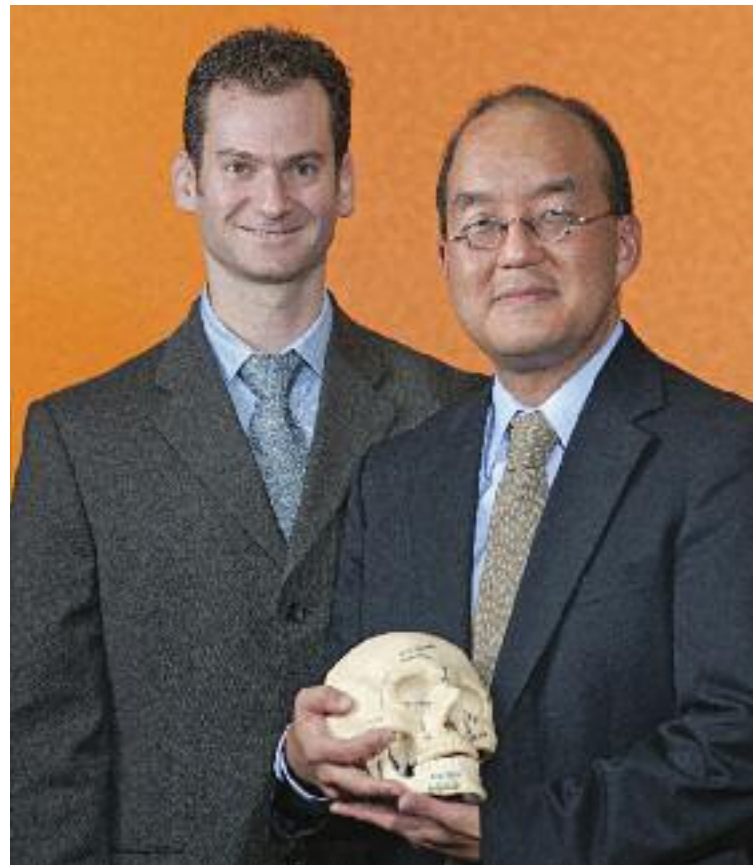
tion with Shriners Hospital for Children in Springfield, which specializes in cleft lip and palate repairs.

"Our goal," says Dr. Shin, "is to provide holistic care to our patients and their families." That care includes a team of social workers and mental health specialists to help deal with any psychological issues confronting patients and families.

The Procedure

The surgical procedure typically involves opening the entire skull, peeling back the skin to expose the skull and facial bones, cutting and reshaping the bones, and inserting resorbable plates and screws to hold the reshaped bones together.

Drs. Joseph Shin (right) and Robert Schapiro (left) agree that coordination between the plastic surgeon and neurosurgeon is essential for successful craniofacial reconstruction.



Coordination between the plastic surgeon and neurosurgeon is essential for successful craniofacial reconstruction. The plastic surgeon's role is to reshape the facial deformities, including restoring the function of

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the patient's mouth and jaw, as well as improving his or her appearance. The neurosurgeon focuses on assessing the patient's brain function and ensuring that enough of the skull is preserved to protect the brain as it grows, while safeguarding the brain, spinal cord, eyes, and other sensory organs during the procedure. The surgery

is challenging, often taking eight to ten hours to complete, says Dr. Shin.

Children who have craniofacial reconstruction surgery typically recover in the Pediatric Intensive Care Unit at Baystate Children's Hospital for one to three days of close monitoring. They then transfer to the general medical/surgical pediatric unit for a few days before going home. Some children, depending on the severity of their deformities or if they are syndromic, require additional surgery.

The surgery can also benefit patients with relatively rare developmental anomalies such as Crouzon Syndrome and Apert Syndrome, which have similar features as craniosynostosis, including misshapen heads and a sunken-in appearance to the face, as well as breathing difficulties and malpositioned teeth caused by deformed facial bones. Craniofacial reconstruction is also used following the removal of tumors from the head and face.



Refer a Patient

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Dr. Shin, who as the former director of the Yale Craniofacial Surgery Center has been performing such craniofacial surgery for more than a decade, says craniofacial reconstruction is typically performed on young children—ideally before they are four months old—because it is easier to cut and manipulate their softer bones. By age three, nearly 85 percent of the brain has developed, says Dr. Schapiro, but the skull is not well solidified until the teen years and often into the 20s.

“Once the deformity solidifies,” says Dr. Schapiro, “it’s difficult to address with surgery.” Cassidy was originally scheduled for surgery at age five months; however, because of her difficulty gaining weight, the procedure was postponed until she was eight months old.

Outcomes

Outcomes at Baystate, say Drs. Shin and Schapiro, are so far “terrific,” adding that the Baystate surgical team

provides the best framework for ensuring the safest procedures with the best outcomes. “The best outcome,” says Dr. Shin, “is restoration of the shape of the skull and face as best we can for that particular patient.”

Children do better following facial reconstruction surgery than adults, who typically take longer to recover. “Children are so resilient,” says Dr. Shin, “that their recovery time is relatively fast.”

Cassidy is a case in point, as she and Killian tromp around a Baystate exam room during an interview session with her parents and surgeons. She’s also taller than her brother now, an encouraging sign. “After her surgery,” says her mother, “she’s happier, more interested in things, and gaining weight.”

Mom Sarah Leshure reports that both Cassidy and Killian are now happy and energetic toddlers.

