

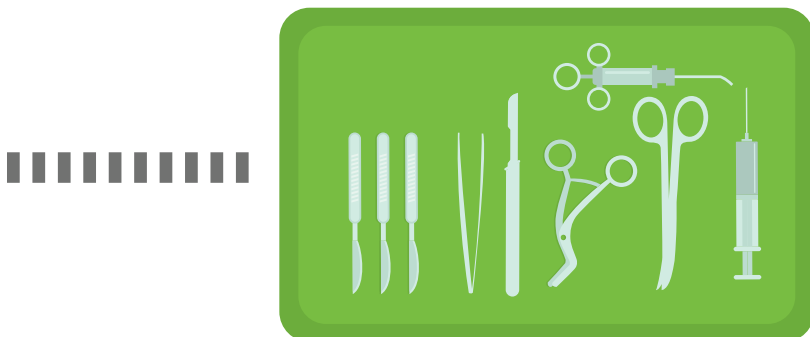


NEUROSURGERY AND PRECISION MACHINED PEEK COME TOGETHER REDUCING THE NEED FOR BRAIN SURGERIES

Situation

Strokes and other traumatic brain injuries affect several million patients every year in the United States alone. According to the Centers for Disease Control and Prevention (CDC), as many as 2.5 million emergency room visits, hospital stays and deaths were connected to traumatic brain injuries in 2010.

Of these emergencies, patients must often undergo multiple neurological surgeries where doctors repeatedly open the brain to relieve swelling—and every time a patient undergoes brain surgery, there is a **35 to 50 percent chance they will have a medical complication, or even death.**



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Dr. Rohit Khanna, Halifax Medical Center

“The **TECHNICAL EXPERTISE**, along with **PERSONAL ATTENTION** and **PROMPT RESPONSES** make AIP a valuable company to work with.”

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Challenge

Neurosurgeon Rohit Khanna of Halifax Health Medical Center—which houses a Level II trauma center and comprehensive stroke center—is very experienced with these types of cases and has been working over the past five years to address this issue.

“In order to reduce the risks of subjecting these patients to repeat surgeries and obviously affecting their overall mortality and morbidity, I tried to figure out what could we do to reduce this need for surgeries,” says Dr. Khanna.

His findings? A device that allows the brain to expand without another operation. This technique—called **Dynamic Telescopic Craniotomy**—holds a portion of the skull (the “bone flap”) and the rest of the skull together while also having the ability to expand with swelling of the brain.

Solution

Dr. Khanna, who was referred by a colleague, contacted AIP Precision Machining (AIP) to develop a prototype for this device. Together, the precision plastics machining company and the neurosurgeon created a plate-like thermoplastic device that holds the bone flap together and flexes in different directions when the brain swells.

AIP, priding themselves on their craftsmanship and PEEK medical component machining expertise, worked

diligently with Dr. Khanna to recommend something that would be flexible, strong and sensitive enough to swell with the brain but also keep the bone flap and skull together.

Deciding on PEEK, which is known for its ductility and biocompatibility, AIP machined the device through close cooperation with Dr. Khanna.

“I have been very impressed by the team at AIP,” noted Dr. Khanna. “They are very knowledgeable and took the time to work with me to develop our device with great insight into the most efficient and cost-effective method possible. **The technical expertise, along with personal attention and prompt responses make AIP a valuable company to work with.**”

Resolution

Performing cadaver tests with the device and publishing studies on its effectiveness in neurosurgical peer-reviewed journals, Dr. Khanna is in the process of obtaining FDA clearance and plans to conduct clinical trials.

“There’s a lot of enthusiasm for these plates,” says Khanna. “We just need FDA approval to start reducing the need for surgeries and improving the lives affected by brain injuries and strokes.”

From concept to completion,
AIP can help find the solution to your challenge.

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