Success Spotlight

EMS 3D Scans Custom Cranial Implants

Custom cranial and maxillofacial implants are used to replace missing or damaging cranium and facial bone material. There can be many reasons a custom implant is needed including a birth defect, after neurosurgery or a serious accident.

The Problem

Because everyone's cranium and facial area is different there is no "off the shelf" implant available for these types of implants. Unlike knees and hips where surgeon typically use an implant based on a library of sizes, craniums have different shapes and the opening is always different. This means a custom implant needs to be made and many times very quickly. Cranial and maxillofacial implants can be designed completely digitally using CT scan data and a product like SensAble Technologies or a surgeon can use a material to actually mold the shape in the opening and send this mold to the implant manufacturer.

The Solution

When a major implant manufacturer needs custom implants made they send these hand molded pieces to EMS for 3D scanning and modeling. EMS 3D scans the molded piece and delivers back a high resolution polygon model using one of their many high resolution 3D scanners. Because these cases are often very serious, for example in a trauma case, EMS typically scans and delivers the data in the same day. This data goes directly to the implant manufacture to create the actual implant.

Another benefit in creating these implants using digital technologies like 3D scanning allows the manufacture to quickly edit the scan data to compensation for issues in the manufacturing process like machining, shrinkage during molding, and sterilization. This insures a proper fit during surgery and reduces patient open time. The surgeon isn't required to manually manipulate the implant to fit properly as required years ago.

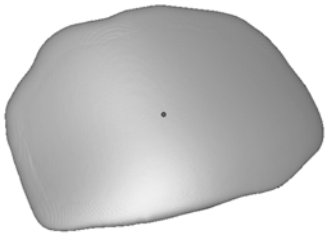
In addition, EMS often 3D prints the new implant CAD file and CT scan data of the cranium to check fit and for the surgeon to use as the model as a visual aid during surgery.

Conclusion

Custom cranial and maxillofacial implants have saved many lives because of technologies like 3D scanning. It allows the manufacturer to build an implant in a matter of days and deliver an accurate implant to a surgeon for implantation.

Visit www.ems-usa.com to learn more.

3D Scanning a hand made cranial implant



3D Scan data of cranial implant read for manufacturing

3D Printed implant & cranium to check fit and use as a visual aid during surgery