2230 - Initial Experience With The Use of Bioresorbable Polycaprolactone Material (Osteomesh) for Cranioplasty: A Case Report

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Disclosure

- Nothing to disclose
Introduction

- Large defects in the skull exposes the brain to atmosphere pressure and alter physiologic brain perfusion, cerebrospinal fluid flow, and exposes patient to infection and further trauma.

- Syndrome of the Trephined is a significant complication post craniectomy characterized by neurological dysfunction. Grant and Norcross found that in patients with severe headache, dizziness, vague discomfort at site of defect, and mental depression, cranioplasty is indicated.
Introduction

- Byung et al presented a retrospective study in 2016 showing there is significant difference in the cognitive and functional outcome of patients who underwent early cranioplasty.

- AIM OF THE STUDY: To present the use of biologic implant material, a customized osteomesh polycaprolactone in a trauma patient who underwent decompressive craniectomy, then eventually cranioplasty.
Case Report

- A 20/M from Guam who suffered Severe TBI with ICH secondary to a motor vehicular accident. Patient underwent decompressive craniectomy with evacuation of hematoma last September 16, 2015, in Guam.
- Patient recovered post operatively and was discharged stable.
- 5 months after, patient was noted to have decreased verbal output, changes in mood and behavior, and increased sensitivity in post op site. Hence, patient was referred to St. Luke’s Medical Center (SLMC) for continuation of care.
Case Report

- A thin cut cranial CT was sent to a company then a 3D reconstruction of the osteomesh was done to fill in the cranial defect measuring 7.5 x 6 cm.

- Patient underwent cranioplasty using the customized osteomesh (polycaprolactone) scaffold bone filler.
Case Report

- Patient tolerated the procedure without intraoperative complications then eventually discharged stable.

- Patient had his follow-up after 8 months and there was noted improvement in mood and behavior.
The osteomesh PCL (Polycaprolactone) scaffold bone filler conforms to the cranial defect, thus maximizing direct contact with viable host bone. It is used to restore the bony contour to the cranium.

Chen et al described osteomesh as a bioresorbable implant of polycaprolactone that can be used in craniofacial surgery to aid in restoration of bony contour and fill surgical defects. It is made to allow growth of new bone and integration of blood marrow and nutrients thereby promoting regeneration.

Low and Chen et al have showed long-term clinical trials providing significant bone regeneration due to the resorption of the material by the body and eventual replacement of autologous bone.
Conclusion

- Currently, the most widely used implant is autologous bone. However, there are instances wherein there is bone resorption and inability to retrieve the bone from bone banks.

- We therefore present a case with successful use of osteomesh during cranioplasty. This biologic implant promotes bone regeneration hence its material is close to the actual human cortical bone.

- In our patient, we achieved excellent cosmetic results and mechanical strength.
References

8. Long, Grady; Schmidek Sweet Operative Neurosurgical Techniques 6th ed. Surgical Management of Major Skull Defectsand Potential Complications