Corneal Applanation Scleral Buckling Model (C.A.S.B.M)

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Scleral Buckling Surgery is a common eye procedure ophthalmic surgery residents need to master. However, they lack low-cost, quality training models. Surgical simulators are one way to practice suturing, but they range from $100,000-200,000. Consequently, limited residents in 41 ACGME Ophthalmology Resident Programs can use them; the Investigative Ophthalmology of Investigative Science reported price prevented 89% of those schools from having simulators (Ahmed, Scott). The C.A.S.B.M is a better training apparatus due to its affordability, accessibility, and ability to train ophthalmic surgery residents to suture properly. The model was designed with the engineering goal of constructing an accurate eye model containing a clear silicone sclera (2mm and 3mm) and silicone cornea (1mm) fitting properly in the resin printed eye. The 3mm sclera was created for beginners and 2mm for advanced residents. Upon mastering the 3mm thickness, residents proceed to 2mm. The expected outcome is that the unique model allows residents to suture properly, particularly for scleral buckling surgery. While the the silicone is clear, it lacks optical clarity. Seventeen local eye doctors were given the model to test its effectiveness: 100% deemed the C.A.S.B.M as useful and twelve doctors reported they would recommend the model over surgical simulators. The positive results indicate the model is successful in training residents suturing techniques, not just Scleral Buckling Surgery.

Awards Won: