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Abstract Title
Comparison of Suprachoroidal and Intravitreal Injection Flow Mechanics Analyzed via Multimodal Imaging

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Purpose
Suprachoroidal (SC) delivery via an in-office injection procedure has been performed in multiple clinical trials with various therapeutics. Optical coherence tomography (OCT) imaging demonstrates acute, transient opening of the suprachoroidal space (SCS) in preclinical and clinical studies. This study assessed the biomechanical response in SC and intravitreal (IVT) injections.

Methods
SC and IVT injections were performed in *ex vivo* porcine eyes and the biomechanical response was visualized using spread visualization via ultraviolet (UV) with fluorescence, internal endoscopy, and cryogenic sectioning under microscopy. SC injections were performed with the SCS Microinjector® and IVT injections were performed with a 1-mL syringe and standard 30-G needle. Tissue changes, injectate spread, and globe dynamics were characterized.

Results
Imaging modalities demonstrated differences between SC and IVT injections in distribution of injectate, tissue change, and globe behavior. When evaluated under UV light, SC injection of fluorescing particles showed circumferential and posterior spread. No injectate spread was visible with IVT injection, as fluorescence was muted by the overlying pigmented choroid and retinal pigment epithelium. Cryo-frozen sections showed injectate via SC delivery to be spread posteriorly toward the macula, between sclera and choroidal tissues. IVT injection showed a bolus of injectate located in the vitreous near the injection site. Endoscopic visualization of an *ex vivo* porcine SC injection showed a localized depression of the choroidal tissues when the procedure initiated, followed by SCS expansion as fluid spread posteriorly. Corresponding imaging during IVT delivery demonstrated localized and limited spread within the globe.

Conclusions
Suprachoroidal drug delivery results in an expansion of the SCS allowing for posterior and circumferential fluid spread unlike IVT injection. These findings support the potential to target affected tissue layers in chorioretinal disorders.