

**Purpose:** Intraocular injections raise intraocular pressure (IOP). Our hypotheses: elevated IOP may limit subretinal bleb creation; IOP will return to baseline faster in an eye with complete vitrectomy including around the infusion port compared to one with more limited vitrectomy. We tested the impact of vitrectomy technique on IOP during and after intravitreal injections.

**Methods:** We created 4 groups with 3 postmortem porcine eyes per group based on level of vitrectomy: (1) no vitrectomy; (2) core vitrectomy; (3) complete vitrectomy under wide-field view without indentation and without attention to vitrectomy around the infusion port (3); and (4) complete vitrectomy under wide-field view with indentation and attention to vitrectomy around the infusion port.

Infusion IOP was set to 25 mmHg via the Constellation vitrectomy system, and actual IOP values were recorded from a pressure transducer connected to the anterior chamber. Following assigned vitrectomy, we injected 0.1mL of fluid into the vitreous cavity while recording: baseline IOP, IOP at peak and at 1 minute after injection, and time interval until return to baseline IOP. Each injection test was repeated 2 additional times per eye.

We compared differences between and among means of continuous variables for these groups with generalized estimating equation used to account for multiple measurements on the same eye.

**Results:** Mean peak change in IOP was > 60 mmHg in groups 1-3 but < 5 mmHg in group 4. Mean time for IOP to return to baseline was > 5 mins in groups 1 and 2 (SD: 191, 137 secs), 42 secs in group 3 (SD, 35), and just over 7 secs (SD, 1.7) in group 4.

Compared to mean peak IOPs for each of groups 1, 2, or 3, that for group 4 was different ( $p < 0.001$  for all); similarly, group 4's mean time to return to baseline (7.2 sec) was also lower from that of groups 1, 2 ( $p < 0.001$ ), and 3 ( $p = 0.015$ ). Among all four groups, mean time to return to baseline IOP differed ( $p = 0.020$ ).

**Conclusions:** Compared to limited vitrectomy, complete vitrectomy with indentation and attention to vitrectomy around the infusion port decreases both the pressure spike that occurs with intravitreal injections as well as the time to return to baseline IOP. This suggests that thorough vitrectomy around the infusion port may have a notable impact on stability of set IOP during and after intraocular injections, especially in pediatric eyes, which have dense vitreous comparable to our model. We are studying this impact on subretinal injections.