Traumatic Retinal Break From a Viscoelastic Cannula During Cataract Surgery

In their interesting case report, Prenner et al[1] illustrate the importance of secure connections between syringes and cannulas, especially those used in intraocular surgery. Serious complications can occur if these cannulas act as flying objects. We described a patient who suffered intraocular damage from a flying cannula that got dislodged from the syringe attached to it.[2] This happened when the surgeon was performing stromal hydration of the corneal wound at the end of phacoemulsification. The flying cannula caused posterior capsular rupture, vitreous loss, and vitreous hemorrhage.

Firmly securing and holding the hub of the cannula should reduce the risk of its accidental dislodgement. However, to make the attachment absolutely secure, we have modified our practice since the above incident and now use Luer-lock syringes to hold cannulas. This step should effectively eliminate the risk of accidental dislodgement of cannulas. These 2 case reports should warn ophthalmologists about the dangers of loosely fitted cannulas.

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The Benefit of Repeated Intraocular Pressure Measurements in Clinical Trials

When evaluating a new ocular hypotensive agent the intraocular pressure (IOP), as measured by the Goldmann applanation tonometer, is used as the primary efficacy variable. Although Goldmann applanation tonometry is the standard for measuring IOP, there is an intraobserver variability.[1] Dielemans et al[2] noted that both the average intraobserver and interobserver variation in IOP was 1.6 mm Hg. Accordingly, to limit intraobserver variation, Kass[3] has suggested measuring the IOP at least twice, and a third time if the first 2 measurements differed by more than 2 mm Hg. Further, some designers of pharmaceuticals have specified that the IOP should be measured 3 successive times at each time point to increase the reliability of the primary efficacy variable. However, performing repeated IOP measurements consumes extra time for the technician, may potentially increase iatrogenic adverse events due to repeated corneal contact by the tonometer, and falsely reduces the IOP after the first measurement.[3] Unfortunately, little information exists that indicates whether repeated measurements influence the IOP reading beyond the first measurement.

We reviewed all previous records from a double-masked, prospective, clinical trial including all patients treated by Atlanta (Georgia) and Charleston (South Carolina) research companies. We chose to review the baseline untreated IOP and the final efficacy measurements. One eye was randomly chosen to be evaluated. We determined whether the mean of the 3 IOPs would differ from the first measurement, as well as the percentage of patients who were within 1 to 3 mm Hg of the initial measurement.

The results of this study are given in the **Table**. This study found that there was no significant difference at any

Three IOP Measurements, Mean IOP, and Significance Between IOP Measurements

	IOP 1	IOP 2	IOP 3	Average	*P* Value	% of Eyes With an IOP ≤1 mm Hg	% of Eyes With an IOP ≤2 mm Hg
Baseline							
8 AM	24.9 (2.7)	25.0 (2.8)	24.9 (2.8)	24.9 (2.8)	.99	100	100
Noon	23.1 (3.8)	23.2 (3.7)	23.1 (3.9)	23.1 (3.8)	.99	100	100
4 PM	22.0 (3.3)	22.1 (3.2)	21.9 (3.3)	22.0 (3.8)	.98	100	100
8 PM	20.9 (3.7)	20.9 (3.7)	20.9 (3.8)	20.9 (3.7)	.99	100	100
Final							
8 AM	16.3 (2.9)	16.1 (3.0)	16.3 (2.9)	16.2 (2.9)	.96	100	100
Noon	15.7 (3.0)	15.9 (3.0)	15.7 (3.0)	15.8 (2.9)	.94	96	97
4 PM	15.8 (3.1)	15.9 (3.0)	16.0 (3.1)	15.9 (3.1)	.99	100	100
8 PM	16.1 (3.0)	16.3 (3.1)	16.1 (3.3)	16.2 (3.2)	.96	100	100

Abbreviation: IOP, intraocular pressure.
*Data are given as mean (SD) unless otherwise indicated. Thirty-three measurements were obtained.

time point from the first measurement compared with the mean of the 3 measurements for the baseline or efficacy visit ($P>.05$). In addition, in only 3 patients, at 1 time point, did the average of the 3 IOPs differ (2 mm Hg) from the initial measurement. There were no adverse events when measuring the IOP more than once.

The results of this study may be useful in designing protocols to assess whether more than 1 IOP measurement should be used to analyze the IOP at any time point. This study suggests that extra measurements, on average, may not alter the IOP from the initial reading. More research is required, however, to fully evaluate how the IOP can be most appropriately measured in clinical trials. In addition, other techniques such as having a separate technician read the IOP, apart from the technician who adjusts the applanation mires, could potentially provide more accurate IOPs than a single IOP measured by a single reader.

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A lead colour round the eyes, denotes in general weakness, cacochymy and cachexia, or obstructions in the bowels; in hysteria, spasms; those who yield themselves up to the habit of the detestable vice of onanism; libertines, debauchees, those subject to frequent pollutions of the gonorrhoea; in chronic diarrhoea, enfeebling the system; among females, the effect of the superabundance of the menstrual discharge, excess of venereal pleasures or pregnancy; in the plethoric, a hemorrhage: in the cachectic, a fluor albus.

Reference: Lobstein JFD. *A Treatise upon the Semeiology of the Eye, for the Use of Physicians; and of the Contenance for Criminal Jurisprudence.* 1830: 21.