

# Effects of Intracameral epi-“Shugarcaine” on Heart Rate and Blood Pressure during Cataract Surgery in patients at risk for Intraoperative Floppy Iris Syndrome



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## Background

Intraoperative floppy iris syndrome (IFIS) is a well-known phenomenon in patients taking tamsulosin (Flomax), doxazosin, or terazosin (all of which are alpha-1 receptor antagonists). A significant proportion of patients presenting for cataract surgery have taken these medications for treatment of benign prostatic hypertrophy. The syndrome is characterized by a floppy, billowing iris that exhibits progressive miosis during cataract surgery, has a propensity to prolapse through all surgical incisions and into the phaco port, and is unresponsive to pupillary stretching [1]. The use of intracameral epinephrine, the natural agonist of alpha-1 adrenergic receptors, theoretically allows for overcoming the blockade of the alpha-1 adrenergic receptors of the iris dilator muscle induced by tamsulosin, doxazosin, or terazosin and allows for pupillary dilation. The systemic effects on blood pressure and heart rate, if any, are a subject of debate. Given the prevalence of cardiovascular disease in our patient population, we designed this study to investigate the effect of intracameral epinephrine injection on blood pressure and heart rate.

Previous studies have investigated the effects of different alpha agonists (phenylephrine) on cardiovascular parameters administered via different routes (subconjunctival, topical, and continuous infusion). No study has investigated the effect on heart rate and blood pressure of this ubiquitously used mixture (epi-“Shugarcaine”) in patients at risk for IFIS.

## Purpose

To determine if the injection of intracameral epinephrine/lidocaine (epi-“Shugarcaine”) has any statistically significant effect on heart rate or blood pressure during cataract surgery in patients at risk for intraoperative floppy iris syndrome (IFIS)

### References:

- 1.Chang DF, Campbell JR. Intraoperative floppy iris syndrome associated with tamsulosin. J Cataract Refract Surg 2005; 31: 664-673
- 2.Shugar JK. Intracameral epinephrine for IFIS syndrome. Cataract and Refractive Surgery. 72-74. September 2006

## Methods

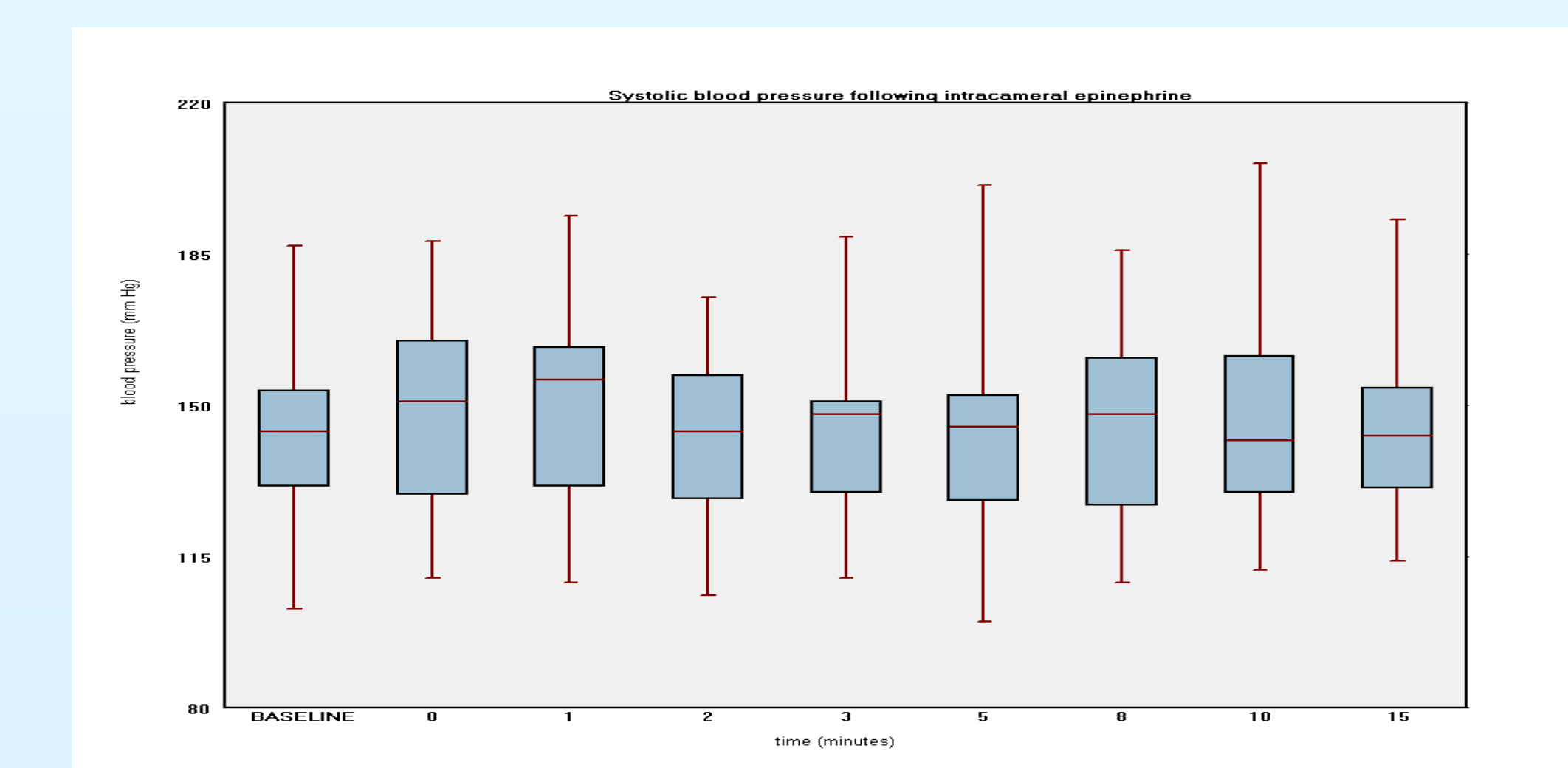
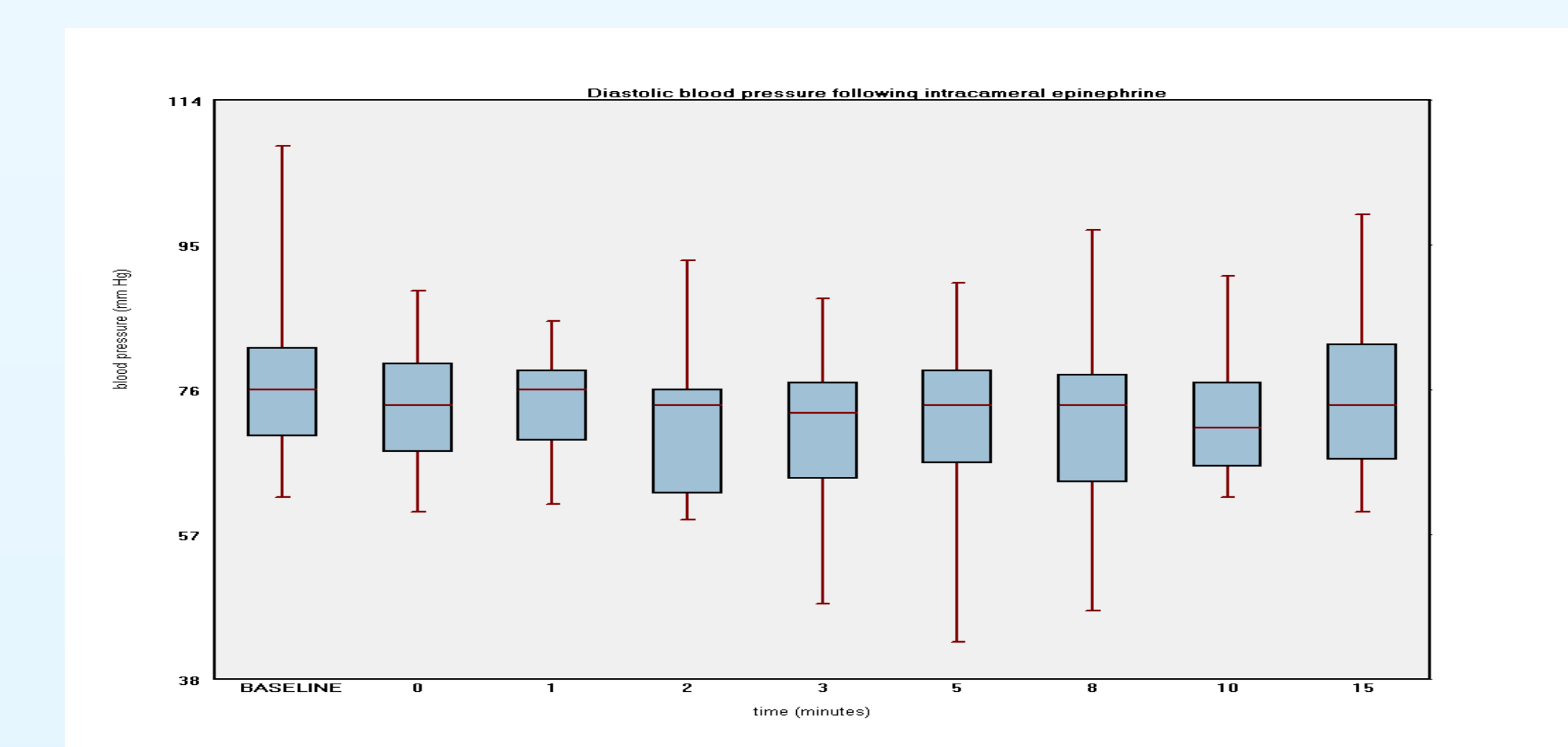
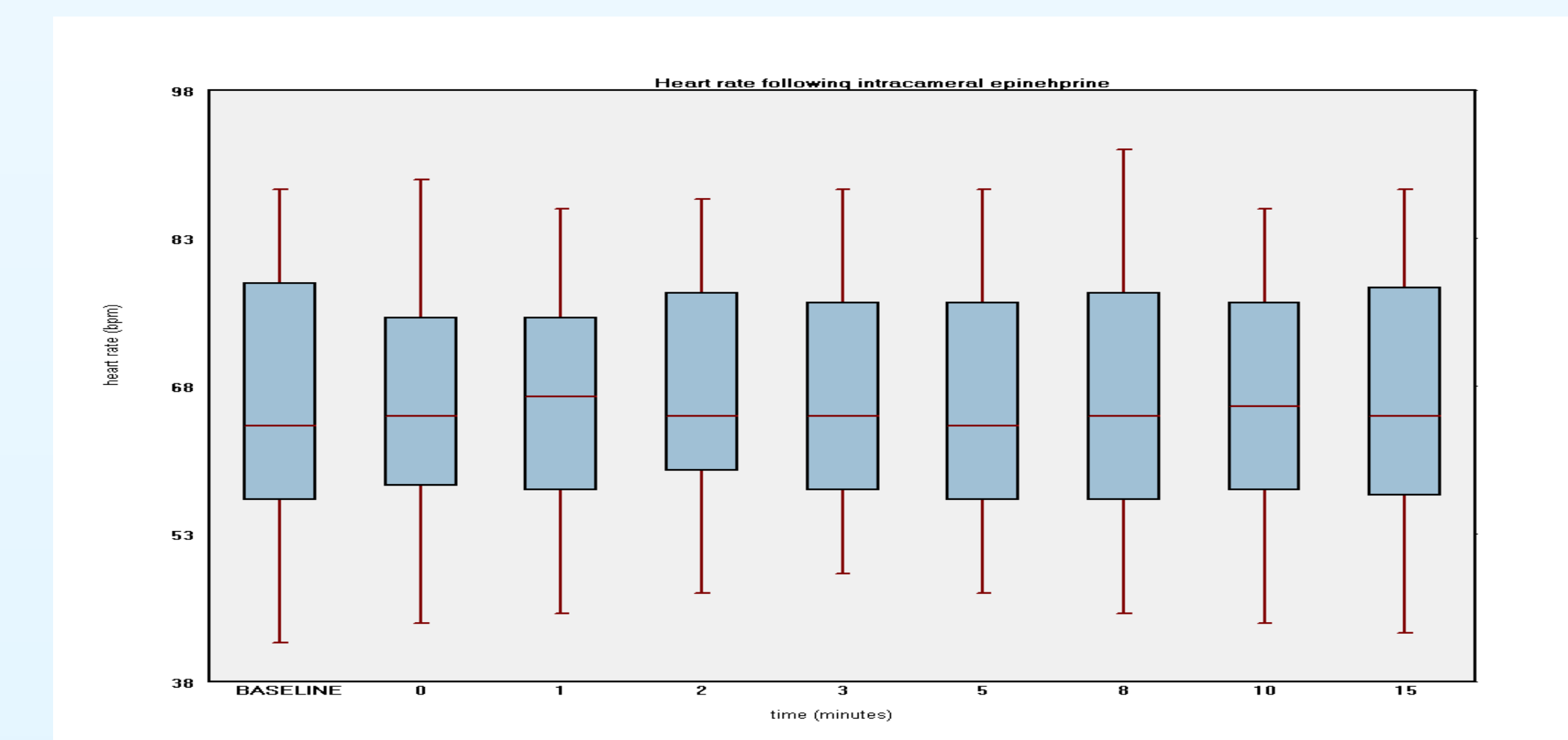
This study is a prospective, observational study and includes patients on either terazosin, doxazosin, or tamsulosin who are at risk for IFIS and are undergoing cataract surgery. Patients underwent routine outpatient cataract surgery under monitored anesthesia care with topical/intracameral anesthesia. Baseline readings of blood pressure, heart rate, and EKG were recorded prior to the first incision and prior to the intracameral injection of the epinephrine/lidocaine mixture aka epi-“Shugarcaine”.

The intracameral epinephrine mixture injected was a standard mixture as described by Dr. Shugar [2]. 9 ml of BSS Plus with 3 ml of 4% preservative-free lidocaine (= shugarcaine) together with 4 ml of 1:1000 bisulfite-free epinephrine was the mixture that was used. 1 cc of the above mixture was injected into the anterior chamber. 30 seconds after the injection of the mixture through the paracentesis, viscoelastic material was injected into the anterior chamber. The rest of the surgery was performed as a standard lens extraction using phacoemulsification techniques followed by intraocular lens placement.

After the injection of the above intracameral mixture, the heart rate, blood pressure, and EKG recording were recorded immediately during injection (t=0) and then at the following times: t=1 min, t=2 min, t=3 min, t=5 min, t=8 min, t=13 min, and then every five minutes until the end of the case. The timing of injection of intracameral epinephrine was recorded by the anesthesia personnel on the operative record as t=0. Any additional medical interventions (sedatives, anti-hypertensives, etc.) used throughout the procedure were noted.

## Results

Thus far with a n=13, analysis of our data using the repeated measures analysis of variance test (with the Tukey multiple comparisons test - TexaSoft, WINKS SDA Software, Sixth Edition, Cedar Hill, Texas, 2007) demonstrates a statistically significant decrease in the systolic blood pressure between time t=1 and t=2 minutes (p=0.03). There was no statistically significant difference in patients' heart rate and diastolic blood pressure before and after the injection of the epi-“Shugarcaine” mixture. No medical interventions were necessary to treat heart rate or blood pressure intraoperatively in our study population.



## Conclusion

Unlikely previously hypothesized, intracameral epi-“Shugarcaine” used during cataract surgery in patients at risk for intraoperative floppy iris syndrome does not seem to adversely increase patients' blood pressure or heart rate. It, therefore, may be safely used to stabilize and dilate the iris without concern that adverse effects on intraoperative cardiovascular parameters will ensue.

Note: This is an on-going study, and data/results are preliminary at this stage.

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