Purpose: To analyze astigmatism change after canaloplasty and its correlation with intraocular pressure (IOP) during the first postoperative year.

Methods: We retrospectively reviewed 185 eyes from patients with open angle glaucoma consecutively submitted to 360-degrees canaloplasty between 1st January 2010 and 31th September 2016. Canaloplasty procedure consisted of 360-degree catheterization of Schlemm canal by means of a flexible microcatheter with circumferential viscodilation of Schlemm canal and 10-0 polypropylene tensioning suture. Selected eyes included those submitted to isolated canaloplasty with complete refractive data at one-year follow-up. Primary outcomes included astigmatism and IOP at baseline, first week, at least one intermediate (1-2months/4-8 months) and one year evaluations. Corneal refractive parameters were obtained from autorefractometer lectures (Tonoref II, Nidek, Aichi, Japan). Quantification and vectorial analysis of astigmatism were performed and correlated with IOP at the different follow-up moments.

Results: From a total of 79 eyes submitted to isolated canaloplasty, 30 eyes met inclusion and exclusion criteria. Mean IOP decreased from preoperative 22.2±6.5mmHg to 12.9±2.5mmHg one year after canaloplasty (Paired t-test: p<0.001). Astigmatism increased from baseline -1.03±1.14D to -5.86±2.41D at the first postoperative week (Paired t-test: p<0.01) and then underwent spontaneous decline to -2.03±1.37D between first and second postoperative months (Paired t-test: p<0.01), -1.66±1.21D between fourth and eighth postoperative months (Paired t-test: p=0.37) and -1.01±1.20D at one year follow-up (Paired t-test: p=0.13). None of the components of the vectorial astigmatism reached a significative variation in the long-term (preoperative J0=0.02(0.3)D, long-term J0=0.08±0.5D, Wilcoxon test: p=0.83; preoperative J45=-0.06(0.4)D, long-term J45=-0.2±0.5D, Wilcoxon test: p=0.25). We verified a significative correlation between astigmatism and IOP at one week (Spearman correlation=0.62, p=0.01) but not in subsequent evaluations (Spearman correlation= -0.18, p=0.28).

Conclusions: 360-degrees canaloplasty induces transient refractive changes reaching preoperative values at 4-8 postoperative months. Possible slight decreases of astigmatism can occur until one year. This knowledge should be taken in account when managing patient expectations and clinical optical prescriptions. Our conclusions may have impact on future patient management and counseling.