

Canaloplasty: Finding its Place in Glaucoma Surgery, A Surgeon's One-Year Outcome Results

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Introduction: Canaloplasty is a restorative procedure designed to re-establish the eye's natural outflow drainage system to address increased intraocular pressure (IOP) associated with glaucoma [1]. Trabeculectomy has been the gold standard in the surgical treatment of glaucoma. It is however fraught with many complications – scarring, bleb infection, hypotony, and multiple post operative visits which may require interventions. Newer procedures such as canaloplasty are aimed at alleviating some or all these concerns [2-4]. Canaloplasty involves the use of a patented microcatheter with inner lumen to inject a high viscosity sodium hyaluronate for safe and effective 360 degree dilation effect on Schlemm's Canal, trabecular meshwork and the outflow collector channels enabling aqueous humor to exit as normal. The precursor to Canaloplasty - Visco canaloplasty used special canulas to inject viscoelastic into Schlemm's canal. However Canaloplasty has been shown to produce superior and consistent results [6].

Methods: This was a retrospective chart review of Primary open angle glaucoma patients who underwent Canaloplasty and Phaco-canaloplasty that was performed by a single surgeon between 2011 and 2016 at Marion Eye Surgical Center (MESCC) and Zerah International Eye Hospital, Uyo Nigeria (ZEIH). The study was approved by the Executive Clinical Committee of both Institutions. Data retrieved included baseline preoperative IOP, post-operative IOP, at 1 month, 3 months, 6months and 1 year and number of postoperative glaucoma medications.

Results: A total of 153 patients underwent canaloplasty during the period under review.

Characteristics of the patients are presented in Table 1. Most patients had previous selective laser trabeculoplasty. Most patients were on 2 or more medications. Indications for surgery included non-compliance, medication intolerance, ineffectiveness and inability to afford medications. Outcome results are shown on the Table 2.

Table 1: Characteristics of 153 patients who underwent canaloplasty

Average Age (Range)	74 years (43-94)
Gender	
Men	65 (42.5%)
Women	88 (57.5%)
Race	
Caucasians	132 (86.3%)
African Americans	18 (11.8%)
Nigerians	3 (1.9%)
Type of procedure	
Phaco-Canaloplasty	45 (29.4%)
Canaloplasty	108 (70.6%)

Table 2: Mean post-operative intraocular pressure and Mean number of postoperative glaucoma medications of patients following Canaloplasty

	Mean Intraocular Pressure (mmHg)	Mean number of medications
Baseline	24.7	2.0
1 month	15.7	0.26
3 months	15.7	0.31
6 months	15.5	0.42
12 months	15.6	0.58

Baseline IOP Range 14-46 mmHg

Baseline Number of medications Range 0-4

Complications: Hyphema occurred in 30% of patients. However most were small and resolved in less than a week. There was no case of flat anterior chamber.

Discussion: The ability to direct treatment at the main site of obstruction represents a major breakthrough in glaucoma management. Previous approaches involved special cannula and viscoelastic agents. But this approaches met with limited success. Canaloplasty as reported here

involves the dilation of the Schlemm's Canal, and the collector channels in a consistent fashion. Most common complication was hyphema. This was transient and did not require any intervention. Some have postulated a positive outcome with the presence of hyphema post-operatively.^[5] The versatility of Canaloplasty makes it attractive as it could be adapted to situations such as previous bleb failures^[7].

Conclusion: This report shows that canaloplasty is effective in reducing IOP and number of medications up to one year postoperatively. Compared to trabeculectomy complications are less with canaloplasty.

References

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