

COMPARISON BETWEEN PHACOTRABECULOTOMY 120 DEGREES VERSUS PHACOTRABECULOTOMY NEAR 360 DEGREES IN ADVANCED CHRONIC ANGLE CLOSURE GLAUCOMA

Mohamed Fathy Elsahn, Ahmed Hossam Abdalla, Abd Elhamid Shaker Elhofi, Ahmed Mohamed Abdelrahman Ghaith
Department of Ophthalmology, Faculty of Medicine, Alexandria University

INTRODUCTION

Glaucoma is a heterogeneous condition that leads to damage of the optic nerve and visual field loss. The World Health Organization (WHO) ranks glaucoma as the second most common cause of blindness after cataract, and as the leading cause of irreversible blindness affecting about 80 million people worldwide. Gonioscopically, glaucoma is classified into open-angle glaucoma and closed-angle glaucoma. A closed-angle is an anatomical configuration in which there is a mechanical blockage of the trabecular meshwork by the peripheral iris. Etiologically, it can be classified as primary or secondary angle closure. Primary angle closure is not associated with any other ocular condition, while secondary angle closure is associated with one or more other ocular conditions. Chronic angle-closure can occur with or without symptoms, and thus it can be described as "silent" closed-angle glaucoma. Because this condition mainly consists of irido-trabecular contact leading to synechiae formation and subsequent angle closure. Patients with advanced glaucoma, defined as near total cupping of the optic nerve with or without severe visual field (VF) loss within 10° of fixation. According to clinical guidelines of royal college of ophthalmologists Clear lens extraction / phacoemulsification is superior to PI and is advised as primary intervention in PACG. Phacoemulsification clear lens extraction/cataract surgery is preferred to trabeculectomy and phaco-trab in PACG on the basis of safety, but trabeculectomy or phacotrabeculectomy may be considered for severe disease. Nowadays non-penetrating glaucoma surgery became more favorable by many surgeons and patients due to its safety and efficacy.

AIM OF THE WORK

The aim of this retrospective study was to compare the efficacy and safety of trabeculotomy 120 degree versus trabeculotomy near 360-degree when combined with phacoemulsification in management of advanced chronic angle closure glaucoma.

SUBJECTS AND METHODS

This study include the medical records of 40 patients with angle closure glaucoma diagnosed by gonioscopy with visually significant cataract.

Inclusion criteria were primary angle closure (PAC) with high IOP >21 mmHg at diagnosis, patients with advanced glaucoma defined as near total cupping of the optic nerve with or without severe visual field (VF) loss within 10° of fixation and MD > -12 dB, at least 180° of angle closure obliterating pigmented part of trabecular meshwork, whether synechial or appositional, segmented or continuous and patients who have completed 6 months follow up postoperatively.

Exclusion criteria were patients with secondary angle closure glaucoma, patients with early stage glaucoma, previous intraocular surgery, with the exception of laser peripheral iridotomy and laser peripheral iridoplasty and patients who had complications during phacoemulsification.

The patients' notes were reviewed for preoperative ophthalmologic examination. Data about angle assessment with Zeiss gonio lens, monitoring of intraocular pressure using applanation tonometry, and assessment of fundus and optic disc cupping (C/D) ratio using slit lamp biomicroscopy were reviewed and collected. Intraocular lens power were calculated by ZEISS IOL Master 700.

All these data were analyzed using IBM SPSS software package version 20.0. (Armonk, NY: IBM Corp). In all statistical tests, level of significance of 0.05 used, below which the results were considered to be statistically significant.

RESULTS

Table 1: Demographic characteristics of the study sample (n= 40 eyes, 32 cases)

Term	Overall N (%)	Phacotrabeculectomy 120° N (%) (n=20)	Phacotrabeculectomy 360° N (%) (n=20)	p-value
Sex				
Female	23 (57.5)	10 (50)	13 (65)	0.522
Male	17 (42.5)	10 (50)	7 (35)	
Diagnosis				
Lt CNAG	20 (50)	10 (50)	10 (50)	0.99
Rt CNAG	20 (50)	10 (50)	10 (50)	
$\alpha = 0.05$. $p < 0.05^*$, $p < 0.01^{**}$, $p < 0.001^{***}$				
P-values obtained from Pearson's chi-square test of independence				
Term	Overall	120	360	p-value
Age (years)	Avg (SD) 57.4 (8.6)	57.2 (9.2)	57.6 (8.3)	t: 0.9000
$\alpha = 0.05$. $p < 0.05^*$, $p < 0.01^{**}$, $p < 0.001^{***}$				
P-values obtained from two-sample t-test (t) or Mann-Whitney test (U)				

Table 2: Comparing post-operative clinical data of the study participants between study arms (n= 40 eyes, 32 cases)

Term	Phaco-trabeculectomy 120°	Phaco-trabeculectomy 360°	p-value
postOp IOP 1 w (mmhg)	10.5 (2.8)	12 (3.2)	U: 0.7833
post op IOP 1m (mmhg)	10 (2)	10.5 (6.5)	U: 0.7320
post op IOP 3m (mmhg)	12 (4)	8.5 (4)	U: 0.0652
postop IOP 6m (mmhg) Plateau iris	11.5 (2.2)	9 (3.8)	U: 0.1719
	13.7	9.5	
Vision postop Plateau iris	0.33	0.4	U: 0.1493
	0.33	0.5	
Post op Visual field MD (dB)	-18.75	-15.45	U: 0.5726
C/D post op	0.8 (0.2)	0.8 (0.2)	U: 0.1292

CONCLUSION

Phacotrabeculectomy 120° and 360° are both safe and effective in managing advanced chronic angle closure glaucoma. Phacotrabeculectomy 360° is more effective than phacotrabeculectomy 120° in lowering IOP, BCVA and reduction in anti-glaucoma medication use. Plateau iris syndrome is a common cause of angle closure glaucoma and more effort to diagnose and manage this syndrome as very few studies focus on this syndrome. When comparing both techniques with phacoemulsification alone or combined phacotrabeculectomy we conclude that phacotrabeculectomy either 120° or 360° are safer and more effective.