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Outcome of anterior chamber phacoemulsification in poorly choppable soft cataract with best corrected visual acuity 6/36 to 6/12

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Abstract

Objective: To study the accuracy of assessment of cataract choppability using BCVA, to study the outcome of AC phacoemulsification in poorly choppable soft cataract.

Methods: 100 cataract pts were enrolled in the study. Patients with BCVA 6/36,6/24,6/18,6/12 are grouped as A,B,C,D respectively. During phacoemulsification choppability of cataract was graded as choppable, choppabale with difficulty and not choppable. Choppability of the cataract is correlated with BCVA. Anterior Chamber phacoemulsification was carried out Patients were followed up on post op day 1, after 1, 2,4weeks.

Results: 96% Patients with BCVA of 6/36 had SIMC NSIII. 90 % Patients with BCVA of 6/18 had SIMC NS II,100% Patients with BCVA of 6/12 had SIMC NS1.Nucleus was choppable in 100% Patients with 6/36,

choppable with difficulties in 73% Patients with 6/24, not choppable in 100% of patients with VA 6/12. Sk's were seen in 23% 21%, 23% in choppable, choppable with difficulties, not choppable groups respectively(On post op Day 1)

Conclusion: Cataract choppability can be assessed using BCVA. If the BCVA better than 6/36 Anterior Chamber Phacoemulsification is better.

Keywords: Phacoemulsification, Visual Acuity, Choppable

Introduction

The techniques and results of cataract surgery have changed dramatically during the past three decades. Smaller incisions have become the standard, with phacoemulsification now being the method of choice for most surgeons.[1]

Chopping techniques in cataract surgery are used to reduce the amount of phacoemulsification energy delivered to the eye during nucleus disassembly and subsequently preventing corneal endothelial damage than other techniques. Phaco chop technique is effectively carried out among grade II to III nuclear sclerosis. Surgical management of softer cataract are a challenge as they are poorly choppable. In such NSI and NSII cataract phacoemulsification within the capsular bag are prone to complications such as posterior capsular rent, corneal endothelial damage, nucleus drop, zonular dehiscence etc.

The techniques for soft cataract phacoemulsification are anterior chamber phacoemulsification, supracapsular phacoemulsification, endocapsular phacoemulsification with carousel technique.[2]

Anterior chamber phacoemulsification being easier among all if precaution are taken to prevent corneal endothelial damage. In softer cataract, safer option is delivering the nucleus into anterior chamber and then conducting the phacoemulsification. As most of the soft cataract requires very little energy or only aspiration, Anterior chamber phacoemulsification could be safe.

Assessing the grade of nuclear sclerosis can be done using visual acuity, slit lamp examination and red reflex. As slit lamp examination and red reflex findings need not always correlate with the hardness, visual acuity would be a simpler method in assessing the hardness of the cataract. Based on the visual acuity hardness of the nucleus can be assessed and hence help in deciding the surgical technique that is either endocapsular phacoemulsification when nucleus is choppable or anterior chamber phacoemulsification when nucleus is poorly choppable or not choppable.

Objective

1. To evaluate the accuracy of assessment of cataract choppability using best corrected visual acuity.
2. To evaluate the outcome of anterior chamber phacoemulsification in poorly choppable soft cataract.

Methodology: A prospective observational study was conducted in about 100 patient's Prior approval from Institutional Ethical Committee was obtained for conducting the study. The patients were included in the study by applying the following Inclusion and Exclusion criteria.

Inclusion criteria

1. Senile cataract above 50 years of either sex.
2. Best corrected visual acuity from 6/36 to 6/12.

Exclusion criteria

Following patients were excluded from the study-

1. Patients who have not given consent
2. Complicated cataract.
3. Shallow anterior chamber.

4. Cataract with uveitis, glaucoma, corneal opacity.

Methodology

Pre-operative evaluations were done. Visual acuity of 100 eyes were measured. Patients with BCVA 6/36, 6/24, 6/18, 6/12 are grouped as A, B, C, and D respectively. Each of them underwent same procedure. Under aseptic condition topical anesthesia or peribulbar block was given. Clear corneal incision was made. Two side port entry was made. Capsulorrhexis of 8mm was done. Hydrodissection was done. Choppability of cataract was assessed by trying to perform vertical chop.

Choppability of cataract was graded as choppable when nucleus was fragmented completely. Graded as choppable with difficulty when nucleus was partially fragmented. Graded as not choppable, when chopper tends to cheese wire through the nucleus. Choppability of cataract was correlated with Visual Acuity. Anterior chamber phacoemulsification was carried out using stop and chop. Patients were followed up on post-operative day 1, after 1, 2, 4 weeks. In each post-operative visit visual acuity, fundoscopy, slit lamp examination, retinoscopy, tonometry, corneal clarity, AC reaction, macular status was assessed.

Results

96%Patients with BCVA of 6/36 and 63% of patients with BCVA 6/24 had SIMC NSIII cataract.37% patients with BCVA of 6/24 and 90% patients with 6/18 had SIMC NS II cataract. 100%Patients with BCVA of 6/12 had SIMC NS1 cataract.

100% Patients with VA of 6/36 nucleus was Choppable.73% Patients with BCVA 6/24 and 48% patients with BCVA 6/18 CHOPPABLE WITH Difficulty. 27% Patients with BCVA 6/24 and 52% Patients with BCVA 6/18 and 100% with BCVA 6/12 were not choppable.

During post operative period (post op day 1) Sk's were seen in 23% 22%, 21% and corneal edema were seen in 9%.16%12.5% choppable, choppable with difficulty, not choppable groups respectively.

Discussion

Out of 100 patients 44 Patients had BCVA6/36 ,30 patients had BCVA 6/24,21 Patients had BCVA 6/18, and 5 Patients had BCVA 6/12.

In patients with BCVA 6/36, 96% had SIMC NSIII and 4% had SIMCNSII.

In patients with BCVA 6/24 ,63% had SIMCNSIII and 37% had SIMC NSII.

In patients with BCVA 6/18 ,90% had SIMCNSII and 10% had SIMC NSI. ($p<0.001$)

In patients with BCVA 6/12 ,100% had SIMCNSI.

Patients with BCVA 6/36 ,100% were choppable.

Patients with BCVA 6/24, 73% were choppable with difficulty,27% were not choppable.

Patients with BCVA 6/18 ,48% were choppable with difficulty,52% were not choppable.

Patients with BCVA 6/12 ,100% were not choppable. ($p<0.001$)

SK's were seen in 23%,22%,21% and corneal edema was seen in 9%,16%,12.5% patients in choppable, choppable with difficulty, not choppable groups. (p-0.776)

Conclusion

Patients with BCVA 6/36 were 100% choppable. Majority of Patients with BCVA 6/24 were choppable with difficulty. If the BCVA is 6/18 equal chance of choppable with difficulty and not choppable. Patients with BCVA 6/12 all were not choppable. Hence the assessment of choppability using BCVA is accurate.

Patients with BCVA of 6/36 or less Anterior Chamber phacoemulsification is better with safe outcomes.

Table 1: Analysis based on BCVA and grades of cataract

BCVA	SIMC NSI	SIMC NSII	SIMC NSIII
6/36	-	2(4%)	42(96%)
6/24	-	11(37%)	19(63%)
6/18	2(10%)	19(90%)	-
6/12	5(100%)	-	-

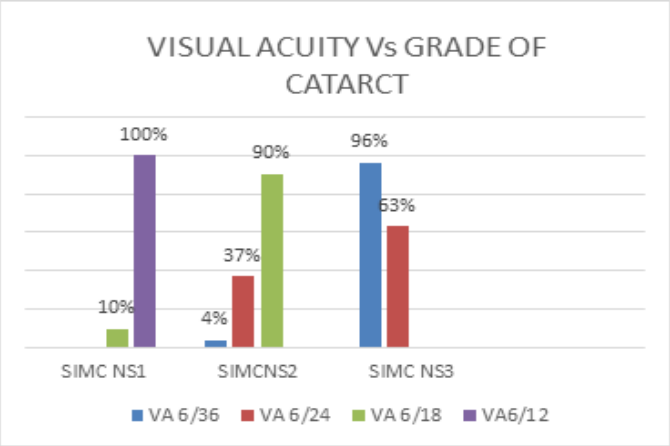
Table 2: Analysis based on choppability

BCVA	Choppable	Choppable with difficulty	Not Choppable
6/36	44(100%)	-	-
6/24	-	22(73%)	8(27%)
6/18	-	10(48%)	11(52%)
6/12	-	-	5(100%)

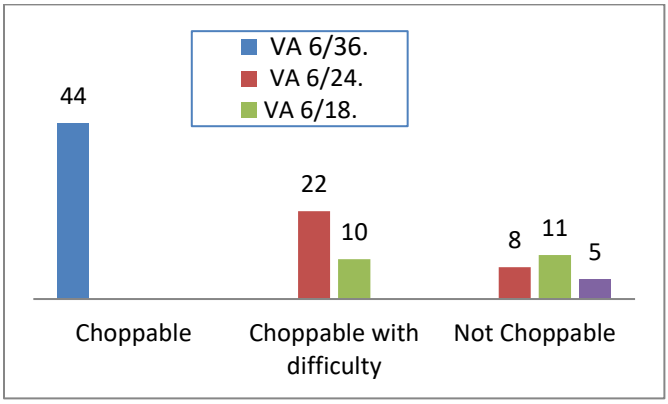
Table 3: Analysis based on post op findings:

Complications	Choppable	Choppable with difficulty	Not Choppable
SK'S	10(23%)	7(22%)	5(21%)
Corneal edema	4(9%)	5(16%)	3(12.5%)

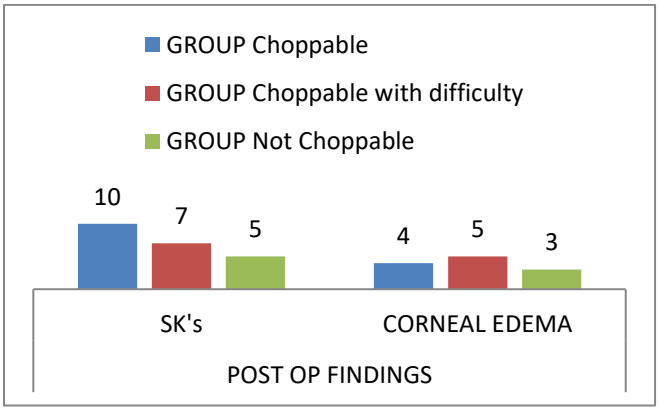
Graph 1



Graph 2



Graph 3



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