



## PHACOEMULSIFICATION OF A BROWN CATARACT IN A CASE OF MICROCORNEA WITH COLOBOMA.

### Ophthalmology

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### ABSTRACT

Cataract surgery in eyes with microcornea is associated with frequent complications such as corneal edema, posterior capsular rent, and risk of unplanned aphakia. We describe a surgical technique for the creation of surgical incisions during phacoemulsification in an eye with Nuclear sclerosis grade4(LOCSIII) associated with microcornea and typical coloboma. Surgery was done using the scleral pocket incision for phacoemulsification and posterior chamber IOL was placed. This scleral pocket incision was tangential to the limbus and created approximately 2.5 mm behind limbus through which phacoemulsification probe was inserted. Because of the posterior placement of incision, the anterior chamber crowding was minimized. There was no incidence of port-site peripheral corneal edema. Mean best-corrected visual acuity improved from perception of light and accurate projection of rays to 1.20 LogMAR. Posterior incision placement during phacoemulsification in microcornea helps achieve favorable postoperative outcomes in contrast to outcomes using clear corneal approach described in literature.

### KEYWORDS

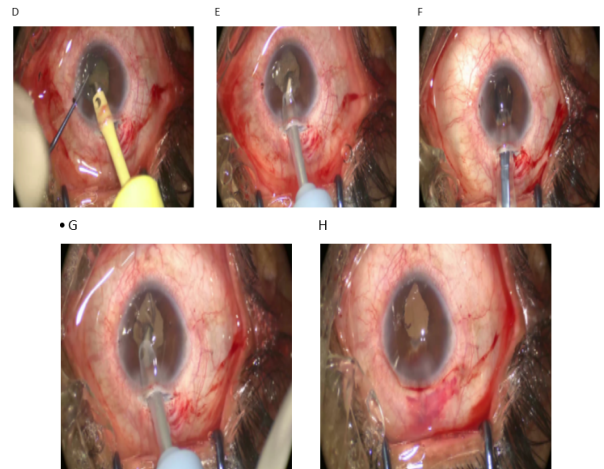
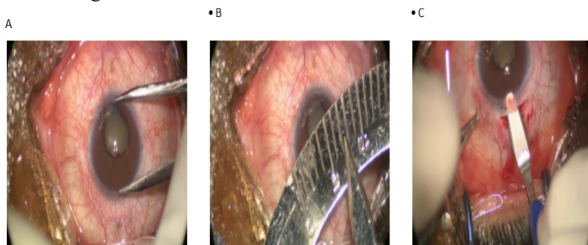
Cataract, microcornea, typical coloboma, phacoemulsification, scleral pocket incision

### CASE REPORT

Microcornea is defined as corneal diameter  $< 2$  standard deviation below normal population range or  $< 11$  mm horizontally. Eyes with microcornea and typical coloboma with associated bulky nucleus, shallow anterior chamber and zonular deficiency pose a significant challenge for surgeon because of issues such as surgical technique, decision to implant intraocular lens and increase risk of iatrogenic complications.<sup>[1]</sup> In view of these challenges such cases require a meticulous preoperative management plan. We describe a case report of outcome of scleral tunnel phacoemulsification in one such case.

A 38 year old male presented to our tertiary eye care centre with vision of perception of light and accurate projection of rays in right eye and NO perception of light in left eye with pseudophakia and pre thibical in left eye. On examination right eye had microcornea with horizontal diameter of 8.5mm and vertical diameter of 7.8 mm with posterior synechiae, nuclear sclerosis grade4(LOCSIII), inferior zonular deficiency, typical iris coloboma along with retinochoroidal coloboma. On Ultrasound biometry axial length was 22.76mm, anterior chamber depth 1.96mm and lens thickness of 5.53mm. On specular microscopy CD of 3705, CV 39% and 6A 48%.

Under peribulbar block, a superiorly placed scleral incision was made 1mm behind the limbus and scleral-corneal tunnel was made with crescent knife and anterior chamber entered with 2.8mm keratome knife, a side port incision was made with 15degree knife at 2 o'clock position. Endothelial protection was achieved with viscoat and posterior synechiae were released with sinskey hook. Continuous curvilinear capsulorhexis was accomplished with 26 gauge bent cystotome needle and capsulorhexis forceps. Gentle multiquadrant hydrodissection was done and nucleus mobility was checked with sinskey hook. (Figure 1) Phacoemulsification was done by horizontal chop using Gueder Megatron S4 with megatip design. Parameters set were bottle height 99cm, 70% phaco power cool flash mode, vacuum 350mm Hg and AFR at 34cc/min. Cortical clean up was done with co axial irrigation aspiration system. Posterior chamber IOL +24.00D (aspheric AcrySof IQ IOL, Alcon, Fort Worth, Texas, USA) was implanted in the bag. Post operative at 1 week patients vision improved to 1.20LogMAR.



**A and B:** Measurement of corneal diameter.

**C:** Making a sclerocorneal tunnel with crescent knife

**D:** Phacoemulsification by direct chop.

**E:** Cortical wash by coaxial irrigation and aspiration.

**F:** Implantation of single piece foldable aspheric IOL in the bag.

**G:** Aspiration of the viscoelastics from anterior chamber and under the IOL from bag.

**H:** Closure of the section with single 10-0 monofilament nylon. Chaurasia *et al.* described phacoemulsification in 3 eyes with microcornea with choroidal coloboma which was uncomplicated in 3 eyes and small incision cataract surgery in 3 eyes, of which 2 eyes required anterior vitrectomy.<sup>[3]</sup>

Nordlund *et al.* in their series of choroidal coloboma with cataract, 2 of the eyes with microphthalmos were operated using superior scleral incision and aphakia and clear corneal temporal incision in the second. Temporal scleral approach seems to be better as forehead restricts the movement of phaco handpiece in the superior approach.<sup>[4]</sup> Hence, varied approaches with regards to incision location, length, and placement as well as the technique of cataract extraction have been performed in eyes with microcornea, with not so appropriate outcomes.

Khokhar S *et al* describe a retrospective analysis of 8 patients with microcornea who underwent superior scleral tunnel phacoemulsification and out of 8, 5 patients were implanted with foldable intraocular lens in the bag and 3 were left aphakic with no major intraoperative or postoperative complication.<sup>[2]</sup>

The least corneal diameter in their series who received a posterior chamber intraocular lens was  $7\text{mm} \times 7.5\text{mm}$ <sup>[1]</sup>

We could successfully implant a acrylic foldable IOL with optic diameter of 6.0mm in the capsular bag in our case with corneal diameter of  $7.8\text{mm} \times 8.5\text{mm}$ . We did not had any intra operative complication of posterior capsular rupture or iatrogenic zonular dehiscence or need for intraoperative vitrectomy. Though determining

actual sulcus diameter by UBM would have given more accurate information about equatorial diameter of capsular bag and IOL sizing. We recommend performing scleral tunnel temporal incisions in eyes with microcornea. As this avoids the chances of corneal edema and port site descemet's detachment which is more common in eyes with microcornea where clear corneal incision is performed. Scleral tunnel further provides greater wound stability and lesser surgical induced astigmatism.

#### Our Recommendation

Horizontal WTW	Type of surgery	Section	Type of IOL
<7 mm	ICCE/ECCE	Limbal	Leave aphakic
7.50-10 mm(with typical inferior coloboma)	Phacoemulsification	Sclero-corneal tunnel, will have valvular self sealing effect, temporal section to avoid stress on inferior zonules	Single piece foldable IOL 13mm overall length
>10 mm	Phacoemulsification	As per surgeon's preference	As per surgeon's preference

Limitations include lack of a control group and outcomes in a single patient with relatively short follow-up period.

The technique described by us allows relatively easy intraoperative maneuverability along with favorable short-term postoperative outcomes.

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Nil.

#### Conflicts of interest

There are no conflicts of interest.

#### REFERENCES

1. Khokhar S, Gupta S, Kusumesh R, Kumar G. Outcomes of phacoemulsification in eyes with congenital choroidal coloboma. Graefes Arch Clin Exp Ophthalmol 2013;251:2489-90.
2. Khokhar S, Gupta S, Tew ari R, Agarwal R, Gogia V, Sinha G, Agarwal T. Scleral tunnel phacoemulsification: Approach for eyes with severe microcornea. Indian J Ophthalmol 2016;64:320-2
3. Chaurasia S, Ramappa M, Sangwan VS. Cataract surgery in eyes with congenital iridolenticular choroidal coloboma. Br J Ophthalmol 2012;96:138-40.
4. Nordlund ML, Sugar A, Moroi SE. Phacoemulsification and intraocular lens placement in eyes with cataract and congenital coloboma: Visual acuity and complications. J Cataract Refract Surg 2000;26:1035-40.