

Phacoemulsification and Intraocular Lens Implantation in a Patient with Megalocornea

Megalokornealı Bir Hastada Fakoemülsifikasyon ve Göz İçi Lens Yerleştirilmesi

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ABSTRACT

We report an unusual case of bilateral megalocornea and cataract in a patient who underwent phacoemulsification surgery. A 1-piece acrylic IOL and a 3-piece acrylic IOL with polymethyl methacrylate haptics were implanted into the capsular bag in the left and right eye respectively. Despite decentered IOLs, the outcomes of the surgeries were acceptable. Using the Holladay II Formula for calculating IOL power provided satisfying results as well.

Key Words: Megalocornea, cataract, phacoemulsification, intraocular lens.

ÖZ

Bu makalede fakoemülsifikasyon cerrahisi yapılan nadir görülen iki taraflı megalokornea ve katarakt hastası anlatılmıştır. Sol göze tek parçalı akrilik göz içi lensi (GİL) ve sağ göze üç parçalı akrilik GİL yerleştirildi. Göz içi lensleri desantralize olmasına rağmen cerrahi sonuç Kabul edilebilir düzeydeydi.

Anahtar Kelimeler: Megalokornea, katarakt, fakoemülsifikasyon, göz içi lens.

INTRODUCTION

Megalocornea is a corneal abnormality that occurs in three patterns: simple megalocornea unassociated with other ocular abnormalities; megalophthalmos anterior with megalocornea and iris/angle abnormalities together with buphthalmos in infantile glaucoma.¹ Simple megalocornea is a nonprogressive, symmetric and inherited condition in which the corneal diameter is 13 mm or greater and the limbus is enlarged without evidence of previous ocular hypertension.² In comparison to simple megalocornea, eyes with megalophthalmos anterior have enlargement of the iris-lens diaphragm and ciliary ring in addition to the cornea.³ Although X-linked recessive is usually the most common type of inheritance, autosomal recessive and autosomal dominant inheritance have also been reported.^{4,5}

A predisposition to premature cataract has been observed in megalocornea.^{6,7} Cataract extraction in megalocornea has been considered to be difficult and complications including vitreous loss, rupture of posterior capsule, lens subluxation and intraocular lens (IOL) dislocation are frequent.^{6,8} There have been several reports regarding intracapsular lens extraction^{9,10} and manual extracapsular technique^{11,12} in patients with megalocornea. However, there have been very rare reports of phacoemulsification in these patients.^{13,14} Herein, we report an unusual case of bilateral megalocornea and cataract in a patient who underwent phacoemulsification followed by the use of 2 different types of IOLs (1-piece and 3-piece).

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Table: Preoperative examinations of the patient with megalocornea.

	Right eye	Left eye
BCVA (Decimal)*	0.1	0.05
Horizontal corneal diameter (mm)	15.5	15.5
Axial length (mm)**	25.90	25.84
Central corneal thickness (µm)	445	438
Keratometry	43.50x176°/42.50x82°	43.25x178°/42.50x95°
Anterior chamber depth (mm)**	5.30	5.25
Intraocular pressure (mmHg)***	10	10
Cup-to-disc ratio	0.2	0.2

BCVA; Best Corrected Visual Acuity,
 *Measured by using Snellen Charts,
 **Measured by using A-scan ultrasonography,
 ***Measured by using Goldmann-Appplanation tonometry.

CASE REPORT

A 47-year-old male presented to our clinic with a history of megalocornea and complaints of deterioration in visual acuity. The Table shows the preoperative examination findings of the patient. Iridodonesis was observed in both eyes. The family history was unremarkable. The patient underwent bilateral phacoemulsification surgery spaced three months apart. In the first (left) eye, side ports were made in the anterior chamber of the eye following a 2.8 mm corneal incision. The anterior capsule was then stained with trypan blue.

After the anterior chamber was filled with chondroitin sulfate 4% (Viscoat), a continuous curvilinear capsulorhexis of 5.0-5.5 mm was made and hydrodissection performed. There were some adhesions between the anterior capsule and the superficial cortex during the continuous curvilinear capsulorhexis. However, capsulorhexis was performed without any complication or difficulty.

Phacoemulsification was done in the typical way using the phaco-chop technique and aspirating the cortical mass with the bimanual technique. The anterior chamber was filled with sodium hyaluronate 1.4% (Healon GV). A 1-piece acrylic IOL (optic diameter: 6 mm, lens length: 13 mm) was implanted into the bag targeting a final refraction of -1.50 diopter (D). One day postoperatively, the IOL was decentered inferiorly although the anterior chamber was well formed and no leak was detected (Figure 1).

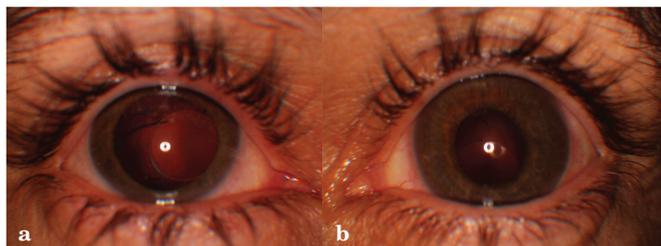


Figure 1: Decentration of 3-piece intraocular lens (IOL) in the right eye (a) and 1-piece IOL in left eye (b).

Three months later, a 3-piece acrylic IOL with polymethyl methacrylate haptics (optic diameter: 6 mm, lens length: 13 mm) was implanted into the capsular bag of the right eye, targeting a final refraction of -1.50 D using the same surgical procedure mentioned above. One day postoperatively, the anterior chamber was well formed and no leak was detected whereas the IOL was decentered nasally (Figure 1).

After a follow-up of 1 year, the best corrected visual acuity was 1.0 bilaterally and the positions of the IOLs remained as they were on the first postoperative day. The patient did not complain of any visual problems such as halos or glare as the IOLs remained in the visual axis and were centered through undilated pupils (Figure 2).

DISCUSSION

Megalocornea is a rare developmental anomaly in which cataract usually tends to develop between 40 and 50 years of age. Cataract surgery in megalocornea is often challenging. IOL implantation is prone to subluxation because of the weak zonules and the IOL can decenter within the larger than normal capsular bag.¹³ In our case, phacoemulsifications with implantation of two different types of IOLs (1-piece and 3-piece) were successful. The IOLs were inserted into the capsular bag, ensuring that all haptics were endocapsular, and the optics were well centered at the end of the surgical procedure.

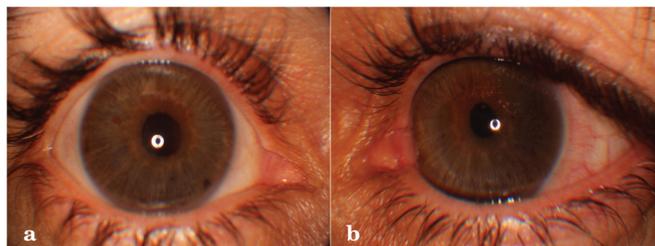


Figure 2: Appearance of IOLs in the visual axis through undilated pupil in the right (a) and left eye (b).

However, both IOLs decentered one day after the surgery. The decentration might have been caused by the relatively (to the abnormally enlarged eye) small IOLs. However, with an IOL optic diameter of 6 mm, the patient did not complain of any visual problems with undilated pupillas. On the other hand, using larger sized IOLs fixated to the sclera or iris or individually adjusted IOLs have been found to be associated with not only increased cost of the procedure, but also complications resulting from the necessity of larger anterior chamber openings.¹⁴

In conclusion, phacoemulsification through clear corneal incision and implanting routinely used IOLs into the bag had similar and acceptable outcomes for cataract surgery in a patient with megalocornea, despite decentered IOLs.

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