



Clinical Outcomes Of Phacoemulsification and Intraocular Lens Implantation in Eyes with High Myopia

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ÖZET

Yüksek miyop hastalarda fakoemulsifikasyon ve intraokuler lens implantasyonun klinik sonuçları

Amaç: Yüksek miyop hastalarda fakoemulsifikasyon ve intraokuler lens implantasyon cerrahisinin klinik sonuçlarının değerlendirilmesi.

Gereç ve Yöntem: Bu retrospektif çalışmaya katarakt nedeniyle fakoemulsifikasyon ve intraokuler lens implantasyonu cerrahisi uygulanan, aksiyel uzunluğu 26 mm'den fazla olan 35 hastanın 52 gözü dahil edildi. Katarakt ve yüksek miyopi dışında başka bir okuler patolojisi olan hastalar çalışma kapsamı dışında bırakıldı. Hastalara ait dosyalar taranarak, ameliyat öncesi ve sonrası en iyi düzeltilmiş görme keskinliği (EIDGK), refraksiyon kusurları ve komplikasyonlar kayıt edildi.

Bulgular: Çalışmaya alınan hastaların ortalama yaşı 58.06±15.46 yıl (27-80 yıl) ve ortalama takip süresi 8.44±3.62 ay idi. Ortalama preoperatif miyopi -10.94±4.75 diyoptri (D), ortalama aksiyel uzunluğu 28.14±1.72 mm ve ortalama EIDGK 0.84±0.4 logMAR idi. İntraoperatif vitreus kaybı iki hastada (3.85%) saptandı ve bu hastalara, arka kamara lensi sulkusa implante edildi. Periferik retina dejenerasyonları saptanan 8 göze (15.4%) preoperatif profilaktik argon lazer uygulaması yapıldı. Ortalama postoperatif sferik değer -0.26±1.51 D ve ortalama EIDGK 0.24±0.24 logMAR idi. Miyopi değerinde istatistiksel anlamlı düşüş (Wilcoxon testi p<0.001) ve EIDGK değerinde istatistiksel anlamlı artış (Wilcoxon testi p<0.001) saptandı.

Sonuç: Yüksek miyop hastalarda fakoemulsifikasyon cerrahisi anatomik ve fonksiyonel olarak başarılı sonuçları ile güvenli ve etkili bir yöntemdir. Detaylı retina muayenesi ve profilaktik uygulanan fotokoagülasyon işlemi retinal komplikasyonların oranının azaltılmasını sağlayabilir.

Anahtar kelimeler: Fakoemulsifikasyon, intraokuler lens implantasyonu, miyop

ABSTRACT

Clinical outcomes of phacoemulsification and intraocular lens implantation in eyes with high myopia

Objective: To evaluate the clinical outcomes of phacoemulsification and intraocular lens (IOL) implantation in eyes with high myopia.

Material and Methods: This retrospective study included 52 eyes of 35 patients with an axial length greater than 26 mm who had undergone phacoemulsification and IOL implantation surgery. Patients who had ocular pathologies other than high myopia and cataract were excluded from this study. All patients' charts were reviewed, and preoperative and postoperative best corrected visual acuity (BCVA), refraction error values, and complications were recorded.

Results: The mean age of the patients was 58.06±15.46 years (range 27 to 80 years), and the mean follow up time was 8.44±3.62 months. The mean preoperatively myopia was -10.94±4.75 diopters (D), mean axial length was 28.14±1.72 mm and the mean BCVA was 0.84±0.4 logMAR. Intraoperative vitreous loss occurred in two (3.85%) eyes, and a posterior chamber IOL was implanted in the sulcus in these cases. In 8 (15.4%) eyes, peripheral retinal degenerations detected and these patients underwent prophylactic argon laser treatment preoperatively. The mean postoperative spheric value was -0.26±1.51 D and, the mean BCVA was 0.24±0.24 logMAR. There was a significant decrease in the myopia values (Wilcoxon testi p<0.001) and a significant increase in the BCVA (Wilcoxon testi p<0.001). During the follow up time, no posterior segment complications were detected.

Conclusion: Phacoemulsification surgery is a safe and effective method with successful anatomical and functional outcomes in patients with high myopia. Detailed retinal examinations and prophylactic laser photocoagulation applications decrease retinal complication rates.

Key words: Phacoemulsification, intraocular lens implantation, myopia

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INTRODUCTION

High axial myopia is defined as eyes with an axial length greater than 26 mm and a spherical equivalent greater than -6.00 diopters (D). In high myopic patients presenile cataract is a frequent pathology, which is mostly posterior subcapsular or nuclear and appears at an earlier age, and progresses more rapidly (1). Complications of the phacoemulsification and IOL implantation surgery in patients with high myopia were reported previously in the literature (2). Retinal detachment (RD) is one of the most important postoperative complications which may result in vision loss. Axial length, degree of myopia, peroperative posterior capsular tear and vitreous loss are the risk factors for retinal detachment. Although retinal detachment incidence is reported in different rates in various studies, in extra capsular cataract surgeries it is obviously lower when compared to intra capsular surgeries (3-7). Complications in phacoemulsification surgeries have been decreasing owing to small incisional cataract surgeries, increased experience in phacoemulsification surgery, developments in intraocular lens and viscoelastic materials. In this study we investigated the clinical outcomes of phacoemulsification and intraocular lens (IOL) implantation in the eyes with high myopia in our clinic. We tried to indicate the risk factors for complications, especially, age, gender, axial length, and pre operative refractive errors.

MATERIAL AND METHODS

This retrospective study included 52 eyes of 35 patients with an axial length greater than 26 mm who had undergone phacoemulsification and IOL implantation surgery. The study was adhered to the tenets of the Declaration of Helsinki. It was approved by the local ethical committee and written informed consent was obtained from all patients before they recruited into the study. Patients who had an ocular pathology other than high myopia and cataract were excluded from this study. All patients' charts were reviewed and preoperative and postoperative best corrected visual acuity (BCVA), refraction error values, and complications were recorded. All patients had undergone a complete ophthalmic examination including a detailed funduscopy. In addition eyes with high risk peripheral retinal degenerations such

as atrophic holes and flap tears were treated with argon laser prophylactic photocoagulation. Power of IOLs was calculated by the formula of SRK/T and a standardized phacoemulsification surgery was performed.

RESULTS

The mean age of the patients was 58.06 ± 15.46 (range 27 to 80 years), and the mean follow up time was 8.44 ± 3.62 months. The mean preoperative spheric equivalent was -10.94 ± 4.75 diopters (D), the mean axial length was 28.14 ± 1.72 mm and the mean BCVA was 0.84 ± 0.4 logMAR. Intraoperative vitreous loss occurred in two cases (3.85%), a posterior chamber IOL was implanted in the sulcus in these cases. In 8 eyes (15.4%), peripheral retinal degenerations detected and these patients underwent prophylactic argon laser treatment preoperatively. Phacoemulsification was uneventful in the rest of the eyes. The mean postoperative spheric equivalent was -0.26 ± 1.51 D and, the mean BCVA was 0.24 ± 0.24 logMAR. There was a significant decrease in the spheric equivalent values (Wilcoxon testi $p < 0.001$) and a significantly increase in the BCVA (Wilcoxon testi $p < 0.001$) postoperatively compared to preoperative values. During the follow up time, no posterior segment complications were detected.

DISCUSSION

Presenile cataract is known to be associated with high myopia and especially those patients who have an axial length greater than 26 mm are under risk (8). In high myopic patients cataracts are mostly posterior subcapsular or nuclear, and they appear at an earlier age, and progress more rapidly (1). Phacoemulsification with IOL implantation is the most preferred treatment modality for these patients. With the development of the techniques in phacoemulsification surgeries, usually good results are obtained with less frequently detected complications. However high myopic patients are still potentially under risk for complications.

Previously it was reported that retinal changes in high myopia increase the risk of RD after cataract surgery and this risk increases due to certain factors such as young age, axial length, history of RD in the contralateral eye, predisposing retinal lesions, surgical technique, and posterior capsule integrity (9). Other clinical studies did

not confirm such increases in the retinal detachment risk and reported low postoperative RD risk (9-11). Myopia higher than -6D and longer than 26 mm results in degenerative changes in the eye such as lattice degeneration, posterior staphyloma, macular degeneration, and even undetected retinal breaks may potentially result in retinal complications (12-17). Previously in the literature retinal detachment was reported at different incidence rates. Alledredge et al. reported no retinal detachment in their series, Fan et al. reported the retinal detachment rate as 1.69%, Tosi et al. reported it as 0.1% and Ripandelli et al. reported it as 8% (18-21). In our study although posterior capsular tear and vitreous loss were detected in two cases, we detected no retinal detachment in an 8 months mean follow up time in none of the cases. This can be related to our small series and short follow up time. With longer follow up time, especially when more patients need YAG capsulotomy, perhaps we will detect more retinal detachments. Detailed fundus examinations and prophylactic laser photocoagulation applications decrease the retinal complication rates (22-24).

Calculating the IOL power is one of the most important issues in high myopic patients, and SRK/T and Holliday

formulas recommended for IOL calculation because a large hyperopic shift may occur with the SRK-II formula. In our cases, we used SRK/T Formula and targeted refraction between 0 and -1 D, and we reached this target in 94% of the eyes.

Previously it was shown that, retinal detachment risk increases after Nd-YAG posterior capsulotomy (25). To avoid posterior capsule opacity following the phacoemulsification surgery, we tried to perform a well centered capsule rhexis with a 5-5.5 mm diameter, and polish the capsular bag at the end of the surgery. We preferred foldable acrylic IOLs with hydrophobic surface and sharp edges which are shown to reduce the risk of posterior capsule opacity (25). In our study none of the cases required laser capsulotomy due to posterior capsule opacity in the 8 months' mean follow up time.

In conclusion, phacoemulsification surgery is a safe and effective method with successful anatomical and functional outcomes in high myopic patients. Although the follow up time is short in this study, we believe that detailed fundus examinations and prophylactic laser photocoagulation applications decrease retinal complication rates.

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