Review Article

Pseudophakic monovision is an important surgical approach to being spectacle-free

JianHe Xiao, CaiHui Jiang, MaoNian Zhang

There are few studies on pseudophakic monovision even though it is widely applied. We reviewed the published literature on pseudophakic monovision. Surgeons select patients who not only have a strong desire to be free of glasses after surgery, but also fully understand monovision design and its drawbacks. However, other criteria adopted for pseudophakic monovision are very different. Both traditional monovision and cross monovision are used in pseudophakic monovision, and the target binocular anisometropia ranges from –1.0 D to –2.75 D. Postoperative results were acceptable in every study and most patients were satisfied, with vision being improved and presbyopia corrected. Complications were decreased stereopsis, contrast sensitivity, and visual fields, similar to other types of monovision. The term "pseudophakic monovision" should include more than just monocular intraocular lens implantation in two eyes, and further studies are required.

Key words: Cataract, intraocular lens, monovision, presbyopia, pseudophakic

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Monovision is the adjustment of one eye for near vision and the other for distance vision. Pseudophakic monovision is a type of monovision used in lens surgery (most are cataract surgeries) to correct postoperative presbyopia by programmed refractive error from biometry calculations. We searched Medline, Embase, and Google Scholar for published data on pseudophakic monovision. Extracted data were based on the history, patient selection, design, and postoperative evaluation. When full articles were not available, abstracts were used as a source of information.

With development of modern surgical technology, cataract surgery has become much easier and most patients regain good eyesight after a short recovery time. However, patients desire further improvements, and being spectacle-free is a major goal.[1] Monovision is a frequently used technique,[2] and it is used in patients with pre-presbyopia or presbyopia before refractive surgery in preferred practice patterns (PPPs) as recommended by the American Academy of Ophthalmology (AAO).[3] In recent years, monovision design has been adopted in laser corneal refractive surgery[4-6] and conductive keratoplasty[7,8] or diode laser thermal keratoplasty[9] to correct presbyopia. Most patients achieve the desired results. Some cataract surgeons also incorporate monovision design into their clinical practice[10-22] and improve eyesight as well as achieve the extra benefit of correcting presbyopia. However, although pseudophakic monovision is widely used, there are few reported studies. In this article, we review the published literature on pseudophakic monovision.

Department of Ophthalmology, Chinese PLA General Hospital, Beijing, China

Correspondence to: Dr. MaoNian Zhang, Department of Ophthalmology, Chinese PLA General Hospital, No 28, Fuxing Road, Beijing 100853, China. E-mail: zhang_maonian@126.com

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History of Pseudophakic Monovision

In previous decades, some cataract surgeons prescribed a low myopia-inducing pseudophakic implant (usually –1.0 D) for one or two eyes of patients who wanted to comfortably see close objects. This practice could be the origin of pseudophakic monovision. Boerner and Thrasher[23] first described monovision design in pseudophakic patients in 1984, but there have been few studies published since that time, even though pseudophakic monovision is widely practiced. A survey in 2003[10] of the American Society of Cataract and Refractive Surgery (ASCRS) members showed that in the United States, 86% of surgeons preferred monovision or modified monovision, and only 13% preferred an Array or other multifocal intraocular lenses (IOLs). However, in a survey in 2007,[11] monovision or modified monovision was recommended by 61% of ASCRS members, while the ReSTOR multifocal IOL (Alcon) was preferred by 17.5%. A survey in New Zealand in 2004[11] was similar to that in 2007 in that monovision or modified monovision was preferred by 81%, but in 2007, it decreased to 50%, while multifocal IOL increased to 31%. Although the use of monovision has decreased, it is still a preferred and common surgical approach to spectacle independence.

As mentioned above, studies on pseudophakic monovision are few but its actual clinical practice is common. In 2002, Greenbaum[13] showed that most patients with bilateral eye cataracts or bilateral high ametropia have good results. Handa *et al.*,[14] then described ocular dominance and patient satisfaction after monovision induced by IOL implantation. Chen *et al.*,[15,17] compared monofocal AcrySof IOL using a "blended monovision" formula with a multifocal array IOL for independence from spectacle after cataract surgery. Shimizu[16] also compared visual function of pseudophakic monovision with multifocal monovision. Ito and Shimuzu[19] compared the reading ability of pseudophakic monovision with refractive multifocal intraocular lenses. They also assessed visual

performance in pseudophakic monovision.[18,20] Finkelman *et al.*,[21] and Marques *et al.*,[22] also evaluated patient satisfaction and visual function after pseudophakic monovision. Marques and Marques[12] and then Hayashi *et al.*,[24] studied the optimal target anisometropia for pseudophakic monovision. Stanojcic *et al.*,[25] compared visual fields of patients with implantation of multifocal IOLs with monofocal IOLs of monovision design. Therefore, there are only a few studies on pseudophakic monovision, although monovision plays an important role in presbyopia correction.

Patient Selection

Because some visual functions, such as stereopsis, contrast sensitivity and visual fields, can be reduced after monovision correction,[2,26,27] patient selection is a very important issue in presbyopia surgeries,[28] as well as for pseudophakic monovision.[29] Surgeons often select patients who not only have a strong desire to be free of glasses after surgery, but also fully understand monovision design and its drawbacks.[13,14,18,20-22]

Ito *et al.*, and Shimizu[18-20,29,30] emphasized patient selection, and strict criteria were used. Their inclusion criteria were patients older than 18 years, a previous cataract surgery in one eye with good uncorrected distance vision in that eye (Snellen visual acuity 20/30 or better), and good visual potential in the phakic eye. Exclusion criteria were: (1) corneal astigmatism greater than 1.50 D; (2) ocular deviation (strabismus, exophoria >10.0 prism diopters); (3) strong ocular dominance; (4) patients over 60 years of age; and (5) small pupil diameter to enhance near vision performance. The hole-in-card test (patients were asked to look at a Landolt C target at 50 cm and at 5 m through a 1-cm hole in the center of a piece of cardboard) was used to determine sighting dominance for distant vision. Hand *et al.*,[14] studied the relationship between ocular dominance and patient satisfaction with monovision induced by IOL implantation. They stressed the importance of thorough examination of the quantity of ocular dominance for monovision design. They also discussed their balance technique for evaluating the quantity of ocular dominance.[31] Pattern visual evoked cortical potentials are sometimes used to assess the interaction of binocular signals in the visual cortex. Finkelman *et al.*,[21] and Marques *et al.*,[22] had less restrictions for selection of patients for pseudophakic monovision; corneal astigmatism greater than 1.0 D was excluded in the study by Finkelman *et al.*, and 1.5 D greater than was excluded in the study by Marques *et al*. Greenbaum[13] had almost no restrictions for patient selection, except for corneal astigmatism greater than 2.0 D, even including patients who had high ametropia and could not be corrected by Lasik surgery. Handa *et al.*,[14] stressed the importance of ocular dominance in patient selection.

Currently, little advice has been proposed for selection of patients for monovision by PPPs in refractive surgery,[3] and there are no clearly defined limitations for pseudophakic monovision.

Monovision Design

In monovision design,[2] one eye is corrected for distance vision and the other eye for near vision. In clinical practice, traditional (or conventional) monovision is where the dominant eye is corrected for distance and the nondominant eye is corrected for near vision. The reason for this could be that it is easier to suppress blurred vision in the nondominant eye than in the dominant eye. There is another design called cross monovision, in which the dominant eye is corrected for near vision and the nondominant eye is corrected for distance.

Ito *et al.*, and Shimizu[18-20,30] adopted traditional monovision. The dominant eye was corrected to 0 to 0.25D, and the nondominant eye was corrected to –2.00 ± 0.50 D. Shimizu[30] preferred customized monovision (taking into account that the pseudophakic eye exhibits appreciable accommodation based on pupil diameter) with multifocal IOLs and mild monovision (–1.00 to 1.50 D, slight myopia in the nondominant eye with pseudoaccommodation in patients with pupil diameters of < 2.5 mm).[1] They also used hybrid monovision (implantation of a monofocal IOL in the dominant eye and a diffractive multifocal IOL in the nondominant eye) for patients under 60 years from 2009. Greenbaum[13] also used a traditional design, with the dominant eye corrected to emmetropia, and the nondominant eye corrected to –2.75 D. However, Finkelman *et al.*,[21] and Marques *et al.*,[22] did not account for eye dominance. In the study by Finkelman *et al.*, just one eye was corrected to stigmatism and the other eye was corrected to –1.0 to –1.5 D. In the study by Marques *et al.*, the first eye was corrected to +0.5 D and the second eye was corrected to –2.0 D. Marques and Marques[12] also used toric IOL in patients with relevant corneal astigmatism. In the study by Hayashi *et al.*,[24] approximately 1.50 D of anisometropia was thought to be optimal for successful monovision. Leaming's survey of practice styles and preferences of ASCRS members[10] showed that approximately 46% preferred a modified monovision approach (nondominant eye set to the –0.5 to –1.0 range regardless of age) in pseudophakic monovision practice. In a 2007 survey,[11] modified monovision accounted for 37%. A New Zealand survey in 2004 showed that modified monovision was preferred in 62%, and in 2007 it was 50%.

There are no strict criteria set for pseudophakic monovision, and therefore, various designs have been used by different physicians.

Postoperative Evaluation

Both retrospective and prospective studies have shown that most patients achieved the desired results after pseudophakic monovision, similar to monovision practiced in Lasik, conductive keratoplasty (CK) and traditional contact lenses to correct presbyopia.

Boerner and Thrasher[23] performed a retrospective study of the postoperative use of glasses in 100 patients with pseudophakic monovision. The number of patients wearing bifocal glasses preoperatively declined by half postoperatively. A total of 11% of patients wore glasses out of habit, even though their visual acuities subjectively needed no correction after surgery. Greenbaum's study[13] included 120 patients for removal of visually significant cataracts, and 20 patients had correction of high ametropia (+8.00 to –14.00 D). One hundred and twenty-nine patients (92%) achieved 20/30 or better uncorrected distance acuity, J1 or better uncorrected near acuity, or both. One hundred and ten patients (91%) in

[1]Shimizu K. Customized approach to pseudophakic monovision enhances outcome in patients having cataract surgery. EURO TIMES 2009,14:11.

the cataract group and 19 (95%) in the clear lens group also achieved this level. Patient acceptance was 90% in the cataract group and 100% in the clear lens group. Ito *et al*.,[18] evaluated 82 patients (age 49–87 years) with pseudophakic monovision, and found that most patients had a binocular uncorrected visual acuity of 0.10 logMAR. Shimizu[30] performed further studies and analyzed the outcomes of conventional monovision (69 patients) or customized monovision (20 patients). He found that the mean refraction in the nondominant eye was –2.20 ± 0.39 D for patients having conventional monovision and it was –1.34 ±0.24 D in the customized monovision group, but there were no significant differences of uncorrected visual acuity between the two groups. The study by Finkelman *et al*.,[21] evaluated 52 eyes of 26 patients with pseudophakic monovision. Uncorrected distance visual acuity was at least 20/30 in 96% of patients, with 92% achieving N8 (J4) or better uncorrected near acuity. Good stereopsis and contrast sensitivity were maintained. One fourth of the patients were completely independent of spectacles and one patient was totally dependent on spectacles. No patient required IOL exchange or other refractive corrective procedures or better vision at all distances. Marques *et al*.,[22] prospectively studied 38 patients with pseudophakic monovision. All patients achieved uncorrected distant visual acuity of 20/40 or better and uncorrected near visual acuity of J3 or better, and intermediate visual acuity of J3 in 90%. A total of 97.3% of patients were satisfied or very satisfied with this technique. Marques and Marques[12] combined the pseudophakic monovision technique with toric IOL in patients with relevant corneal astigmatism, and all patients achieved uncorrected distance visual acuity ≥ 20/30 and uncorrected near visual acuity ≥ J2, and none of them required spectacle correction at the sixth postoperative month.

Other Methods

Four studies compared monofocal IOL by monovision design with multifocal IOL. Chen *et al*.,[15] compared AcrySof monofocal IOL in the mini monovision formula (n = 20) with the Array multifocal IOL (n = 20) for patients wanting glasses independence after cataract surgery. The AcrySof monofocal IOL group showed similar and even slightly better results than the Array multifocal IOL group. However, a further study by Chen *et al*.,[17] showed that the ReSTOR IOL had a significantly higher proportion of postoperative independence from glasses than AcrySof monofocal IOL in the mini monovision formula. Ito *et al*.,[19] compared reading ability after bilateral cataract surgery in patients who had pseudophakic monovision achieved by monofocal IOL implantation and patients who had refractive multifocal IOL implantation. The monovision group had better critical character size and reading acuity results. Stanojcic *et al*.,[25] assessed the difference in binocular visual fields in patients who underwent bilateral cataract surgery with either multifocal (MF; Tecnis ZM900, AMO) IOLs or monofocal IOLs with powers adjusted to give monovision (Akreos AO, Bausch and Lomb). There was no statistically significant difference in the incidence of suboptimal visual field results in these two groups (P=0.662), but visual fields of monovision had various defects. No studies have compared monofocal IOL by monovision design with accommodating IOL.

Postoperative Complications

Some visual functions such as stereopsis, contrast sensitivity, and visual fields can decrease after monovision correction.[2] Pseudophakic monovision has the same problems as monovision induced by Lasik, CK and contact lenses, especially when there is high postoperative anisometropia.

Ito and Shimuzu[18] showed that near stereopsis is slightly decreased compared with almost complete refractive correction, although it remains within the normal range (within 100 seconds of arc). Contrast sensitivity is decreased at high frequencies. The most frequently cited reasons for dissatisfaction were asthenopia and spectacle dependence. In the study by Marques *et al*.,[22] the Titmus test showed a mean 197″ of arc with reduction of stereo acuity in 31 patients (total, 38 patients). The study by Finkelman *et al*.,[21] showed the same problems; stereopsis and contrast sensitivity were slightly decreased but they were still within the normal range. Greenbaum's report[13] had little discussion regarding complications of pseudophakic monovision, but the incidence of halos or glare was 20% overall. Handa *et al*.,[14] found that the reason for unsuccessful pseudophakic monovision was that the reversal thresholds (i.e., exclusive visibility of the nondominant eye crosses over that of the dominant eye) were at high decreasing contrast (20%), or not at all. However, in the successful monovision group, the reversal thresholds were displayed only at low decreasing contrast (80% and 60%).

Although some patients have had some complaints, the rate of satisfaction of surgery results was high in all patients.

Future Directions

There are probably two reasons for the lack of studies on pseudophakic monovision. First, many studies have been carried out on monovision and a series of theories have been proposed.[2] Second, new IOLs[32-34] such as accommodating IOL and multifocal IOL have attracted more physicians and patients than older methods such as pseudophakic monovision.

However, we believe that further pseudophakic monovision studies are required. The first reason is that binocular vision of pseudophakic monovision is established after surgery of two cataract eyes, which cannot see clearly preoperatively, and this is not the case in nearly normal eyes with Lasik, CK or contact lenses. In addition, the theories of binocular vision development are very complicated,[35,36] and therefore these theories may need modification. Second, new IOLs still have some drawbacks;[32,37] for example, accommodating IOLs do not have sufficient accommodating capability, and multifocal IOLs cause glare and halos. Moreover, these new IOLs are more expensive.[32,38,39] In developed countries, some patients hesitate when it is comes to financial considerations. In developing countries, new IOLs are far more expensive. Pseudophakic monovision can use common IOLs, and it can be reversed temporarily with contact lenses or glasses if patients are taking long driving trips or if they have difficulty adapting, but when using multifocal IOLs, waxy vision or glare is hard to correct.

The term monovision does not exactly describe two eyes being able to complement each other, but it has a very long history[2] and there is no other term that can replace it. Currently, there is no exact definition for pseudophakic monovision by any organization. Nevertheless, the term pseudophakic monovision should not be restricted to monofocal IOL implantation in two eyes, but instead should include various IOLs such as aspherical IOL, toric IOL, multifocal IOL, accommodating IOL

and light-adjustable IOL to complement each other.[12,39-42] In addition, visual function after cataract surgery is not merely restored, but can be reconstructed,[35] including binocular visual function, which is very important to pseudophakic monovision.

There are few studies[15,19,25] comparing IOL-induced monovision with other methods of presbyopia correction. It is difficult to determine which method is better or which is the best when financial interest is excluded. Basic research on pseudophakic monovision is rare, and only Kawamorita *et al.*,[43] have investigated the effect of pupil size on visual acuity in pseudophakic monovision. Therefore, further studies on pseudophakic monovision are required.

Finally, a definitive term should have a formal abbreviation, but pseudophakic monovision does not have such an abbreviation. We propose the use of "PPMV" for pseudophakic monovision.

References

1. McDonnell PJ, Lee P, Spritzer K, Lindblad AS, Hays RD. Associations of presbyopia with vision-targeted health-related quality of life. Arch Ophthalmol 2003;121:1577-81.
2. Evans BJ. Monovision: A review. Ophthalmic Physiol Opt 2007;27:417-39.
3. American Academy of Ophthalmology Refractive Management/ Intervention Panel. Preferred Practice Pattern® Guidelines. Refractive Errors and Refractive Surgery. San Francisco, CA: American Academy of Ophthalmology; 2007. Available from: http://www.aao.org/ppp. [Last cited on 2011 Apr 17].
4. Reinstein DZ, Couch DG, Archer TJ. LASIK for hyperopic astigmatism and presbyopia using micro-monovision with the Carl Zeiss Meditec MEL80 platform. J Refract Surg 2009;25:37-58.
5. Gatinel D. Presbyopia surgery. Rev Prat 2008;58:1049-54.
6. Baikoff G. Surgical treatment of presbyopia. Curr Opin Ophthalmol 2004;15:365-9.
7. Ayoubi MG, Leccisotti A, Goodall EA, McGilligan VE, Moore TC. Femtosecond laser *in situ* keratomileusis versus conductive keratoplasty to obtain monovision in patients with emmetropic presbyopia. J Cataract Refract Surg 2010;36:997-1002.
8. Du TT, Fan VC, Asbell PA. Conductive keratoplasty. Curr Opin Ophthalmol 2007;18:334-7.
9. Rehany U, Landa E. Diode laser thermal keratoplasty to correct hyperopia. J Refract Surg 2004;20:53-61.
10. Leaming DV. Practice styles and preferences of ASCRS members—2003 survey. J Cataract Refract Surg 2004;30:892-900.
11. Pick ZS, Leaming DV, Elder MJ. The fourth New Zealand cataract and refractive surgery survey: 2007. Clin Experiment Ophthalmol 2008;36:604-19.
12. Marques FF, Marques DM. Pseudophakic monovision technique with Toric IOL using the SN60T5 platform. Rev Bras Oftalmol 2010;69:121-4.
13. Greenbaum S. Monovision pseudophakia. J Cataract Refract Surg 2002;28:1439-43.
14. Handa T, Mukuno K, Uozato H, Niida T, Shoji N, Minei R, *et al*. Ocular dominance and patient satisfaction after monovision induced by intraocular lens implantation. J Cataract Refract Surg 2004;30:769-74.
15. Chen M, Atebara NH, Chen TT. A comparison of a monofocal Acrysoft IOL using the "blended monovision" formula with the multifocal array IOL for glasses independence after cataract surgery. Ann Ophthalmol (Skokie) 2007;39:237-40.
16. Shimizu K. Visual function of pseudophakic monovision versus multifocal monovision. Paper presented at the: ASCRS Symposium on Cataract, IOL, and Refractive Surgery 2009, April 6, 2009; San Francisco.
17. Chen M, Chen2 M. A study of monofocal intraocular lens (Acrysof) in mini-monovision (MMV) and premium multifocal implantation of ResTOR. Clin Optom 2010;2:1-3.
18. Ito M, Shimizu K, Amano R, Handa T. Assessment of visual performance in pseudophakic monovision. J Cataract Refract Surg 2009;35:710-4.
19. Ito M, Shimizu K. Reading ability with pseudophakic monovision and with refractive multifocal intraocular lenses: Comparative study. J Cataract Refr Surg 2009;35:1501-4.
20. Ito M, Shimizu K, Amano R, Niida T, Totsuka S, Iida Y, *et al*. Assessment of visual function and satisfaction in pseudophakic monovision. Nippon Ganka Gakkai Zasshi 2008;112:531-8.
21. Finkelman YM, Ng JQ, Barrett GD. Patient satisfaction and visual function after pseudophakic monovision. J Cataract Refract Surg 2009;35:998-1002.
22. Marques FF, Sato RM, Chiacchio BB, Marques DM, Barreiro J, Caetano RL. Evaluation of visual performance and patient satisfaction with pseudophakic monovision technique. Arq Bras Oftalmol 2009;72:164-8.
23. Boerner CF, Thrasher BH. Results of monovision correction in bilateral pseudophakes. J Am Intraocul Implant Soc 1984;10:49-50.
24. Hayashi K, Yoshida M, Manabe SI, Hayashi H. Optimal amount of anisometropia for pseudophakic monovision. J Refract Surg 2011;27:1-7.
25. Stanojcic N, Wilkins M, Bunce C, Ionides A. Visual fields in patients with multifocal intraocular lens implants and monovision: An exploratory study. Eye (Lond) 2010;24:1645-51.
26. Johannsdottir KR, Stelmach LB. Monovision: A review of the scientific literature. Optom Vis Sci 2001;78:646-51.
27. Fawcett SL, Herman WK, Alfieri CD, Castleberry KA, Parks MM, Birch EE. Stereoacuity and foveal fusion in adults with long-standing surgical monovision. J AAPOS 2001;5:342-7.
28. Farid M, Steinert RF. Patient selection for monovision laser refractive surgery. Curr Opin Ophthalmol 2009;20:251-4.
29. Ito M, Shimazu K. Pseudophakic Monovision Careful patient selection is crucial. cataract and refractive surgery today (EUROPE) [Internet]. 2009 Oct. Available from: http://www.bmctoday.net/crstodayeurope/2009/10/ article.asp?f=1009_14.php. [Last cited 2011 April 17].
30. Shimizu K. Monovision Strategies, In addition to conventional monovision, several modified methods are in use today. Catarac and Refractive Surgery Today [Internet]. 2011 Mar Available from: http://www.bmctoday.net/crstodayeurope/2011/03/article.asp?f=monovision-strategies. [Last cited 2011 Apr 17].
31. Handa T, Uozato H, Higa R, Nitta M, Kawamorita T, Ishikawa H, *et al*. Quantitative measurement of ocular dominance using binocular rivalry induced by retinometers. J Cataract Refract Surg 2006;32:831-6.
32. Olson R. Presbyopia Correcting Intraocular Lenses: What Do I Do? Am J Ophthalmol 2008;145:593-4.
33. Kashani S, Mearza A, Claoue C. Refractive lens exchange for presbyopia. Cont Lens Anterior Eye 2008;31:117-21.
34. Olson RJ, Werner L, Mamalis N, Cionni R. New intraocular lens technology. Am J Ophthalmol 2005;140:709-16.
35. Pepin SM. Neuroadaptation of presbyopia-correcting intraocular lenses. Curr Opin Ophthalmol 2008;19:10-2.
36. Pepose JS. Maximizing satisfaction with presbyopia-correcting intraocular lenses: The missing links. Am J Ophthalmol 2008;146:641-8.
37. Maxwell WA, Waycaster CR, D'Souza AO, Meissner BL, Hileman

K. A United States cost-benefit comparison of an apodized, diffractive, presbyopia-correcting, multifocal intraocular lens and a conventional monofocal lens. J Cataract Refract Surg 2008;34:1855-61.

38. Greenbaum S. Cost-benefit analysis of multifocal IOLs versus monovision pseudophakia. J Cataract Refract Surg 2009;35:614.
39. Packer M. Modified monovision with aspheric IOLs. Catarac and Refractive Surgery Today [Internet]. 2009 Mar. Available from: http://www.bmctoday.net/crstoday/ 2009/03/article.asp?f=CRST0309_11.php. [Last cited on 2011 Apr 17].
40. Chayet A, Sandstedt C, Chang S, Rhee P, Tsuchiyama B, Grubbs R, *et al*. Correction of myopia after cataract surgery with a light-adjustable lens. Ophthalmology 2009;116:1432-5.
41. Mayer S, Bohm T, Haberle H, Pham DT, Wirbelauer C. Combined implantation of monofocal and multifocal intraocular lenses for presbyopia correction in cataract patients. Klin Monbl Augenheilkd 2008;225:812-7.
42. He SZ. To recognize monovision correctly and matching different types of intraocular lenses in two eyes. Zhonghua Yan Ke Za Zhi 2008;44:1057-9.
43. Kawamorita T, Uozato H, Handa T, Ito M, Shimizu K. Effect of pupil size on visual acuity in a laboratory model of pseudophakic monovision. J Refract Surg 2010;26:378-80.

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