5-1-1988

Contact lens monovision

Bradley J. Lorenzen

Pacific University

Recommended Citation
https://commons.pacificu.edu/opt/854

This Thesis is brought to you for free and open access by the Theses, Dissertations and Capstone Projects at CommonKnowledge. It has been accepted for inclusion in College of Optometry by an authorized administrator of CommonKnowledge. For more information, please contact CommonKnowledge@pacificu.edu.
Contact lens monovision

Abstract
With the average age of our population on the rise public demand for near correction is increasing as well. One option available over multifocal spectacles is to fit the patient with a contact lens monovision system. With one eye corrected for near and the other at far central visual acuity suppression allows the viewer to discount images out of focus in one eye and maintain a quality image in the eye focused at a given distance.

Degree Type
Thesis

Rights
Terms of use for work posted in CommonKnowledge.

This thesis is available at CommonKnowledge: https://commons.pacificu.edu/opt/854
Copyright and terms of use

If you have downloaded this document directly from the web or from CommonKnowledge, see the “Rights” section on the previous page for the terms of use.

If you have received this document through an interlibrary loan/document delivery service, the following terms of use apply:

Copyright in this work is held by the author(s). You may download or print any portion of this document for personal use only, or for any use that is allowed by fair use (Title 17, §107 U.S.C.). Except for personal or fair use, you or your borrowing library may not reproduce, remix, republish, post, transmit, or distribute this document, or any portion thereof, without the permission of the copyright owner. [Note: If this document is licensed under a Creative Commons license (see “Rights” on the previous page) which allows broader usage rights, your use is governed by the terms of that license.]

Inquiries regarding further use of these materials should be addressed to: CommonKnowledge Rights, Pacific University Library, 2043 College Way, Forest Grove, OR 97116, (503) 352-7209. Email inquiries may be directed to: copyright@pacificu.edu

This thesis is available at CommonKnowledge: https://commons.pacificu.edu/opt/854
CONTACT LENS MONOVISION

By

BRADLEY J. LORENZEN, B.S.

A thesis submitted to the faculty of the

College of Optometry
Pacific University
Forest Grove, Oregon
for the degree of
Doctor of Optometry
May, 1988

Adviser:

James E. Peterson, O.D.
ABSTRACT

With the average age of our population on the rise public demand for near correction is increasing as well. One option available over multifocal spectacles is to fit the patient with a contact lens monovision system. With one eye corrected for near and the other at far central visual acuity suppression allows the viewer to discount images out of focus in one eye and maintain a quality image in the eye focused at a given distance.

Key Words: monovision, presbyopia, contact lens, suppression, stereopsis.
INTRODUCTION

As the post war baby boom of the 1940's and 50's pushes our mean age higher each year, eye care professionals are noting a proportional increased demand in near correction (1). Among the methods for near correction, contact lenses are becoming increasingly popular over spectacles due in part to an increased interest in personal appearance and a general increase in luxury items affordable to the general public. Several lens designs for the presbyope and pre-presbyope are currently marketed with technology introducing new designs and materials annually. Perhaps the oldest, most successful, (approximately 70% with the properly screened patient (2,3)) and controversial method is that of fitting monovision contact lenses.

The concept of monovision gained its roots around 100 years ago as the monocle reading lens and as the first contact lens system some 20 years ago as "the invisible monocle" (4,5,6). Often mistakenly considered a last resort in presbyopic fitting, monovision has enjoyed a great deal of success with the properly selected patient (2,7). Practitioners in the past, especially those
behaviorally schooled, have often avoided monovision on the assumption that binocularity is severely diminished. It has been demonstrated that some decreases in flat fusion, stereopsis and binocular summation are induced through monovision, but depth perception is not effected nearly as severely (8). Visual demands such as driving and flying tend rely much more on depth perception cues via. motion parallax, shading and various monocular cues than they do on stereopsis (9). Clinicians are frequently exposed to a similar type of situation in patients who have their own "built in" monovision system. The presbyopic anisometrope with one emmetropic eye and the other eye slightly myopic generally adapts quite well and is free of visual discomfort (10). An important area of concern is that of legal ramifications concerning monovision. Patient education is paramount in monovision fitting to keep the patient out of mishaps and the practitioner out of court. The practitioner must carefully explain to the patient just how the system works and discuss any limitations or expectations the clinician or the patient may have. It has even been suggested to go as far as a drawing up an informed consent document which the patient examines and signs (11).
SELECTING THE PROPER CANDIDATE

Like most things in life monovision is not for everyone and careful selection must be made in selecting a monovision candidate. Selection of the proper patient classically incorporates the three following factors: motivation, visual requirements and the patient's physical or refractive disposition.

To overcome the hardships in adaptation that contact lens patients may experience, the candidate must be motivated and committed to the undertaking. The patient must be advised that a slight compromise in vision is sometimes unavoidable with monovision when the patient is dead set against wearing spectacles. The potential effects of this compromise to the patient are best judged on the visual needs of the candidate. Generally ideal monovision candidates are those requiring low to moderate visual demands at varied distances, e.g. housewives, store clerks. Poor candidates are those patients requiring intense near requirements such as accountants or sustained far requirements such as long haul truck drivers (12). Occupations such as this often require a third contact lens for reading or distance.
demands or an unbalanced spectacle for use over the monovision arrangement.

It is at the level of physical and refractive status that practitioners tend to differ in fitting philosophies. In 1986 a study at the New England College of Optometry reviewed the effect of pupil size and add power on suppression. The results of their research indicated that a large add power is necessary to sustain suppression of the blurred image. They also found that patients experiencing strong miosis during the near reflex increased their depth of focus decreasing their ability to suppress the blurred image. This, however, is thought to be related to the relatively young age of the test group possessing accommodative ranges greater than the patient with advancing presbyopia (13). A greater portion of clinicians, however, parallel the results recently obtained at the University of California at Berkeley. Their study indicated that low amounts of anisometropia, (low add powers) were best suited for monovision candidates. They also found suppression was maintained easier when the patient was younger, viewed a larger target and expressed a weak ocular dominance. And unlike the study at
METHODS OF FITTING
Points which favor soft lenses are as follows:

- **Physiological needs and physical/structural factors.** A few prefer the convenience of the physical needs determined by the clinician through assessment of the patient's status. The decision to use a soft lens vs. a hard lens is one of

**LENS CHOICE**

(1)

For the increased accommodation necessary to clear a near target, the other hand, will most likely need the add earlier to compensate being incorporated into either of the lenses. The therapy on the contact lenses may relieve their near asthenopia without an add hypophora may discover that simply moving out of spectacles into switching from spectacles to contact lenses. The early presbyopic overlooked is the effect on reduced vertex distance when dropers or more (17,18). An important consideration not to be intermediate blur zone reported in some high add's. Z

Complete the asthenopia, thus reducing the focus of each eye. The other technique is to under correct each eye asthenopia; theoretically, enhancing central suppression of correction for each eye, therefore providing a large.
- soft lenses minimize glare
- soft lenses are less likely to trap debris under them or become dislodged (which could be disastrous while driving or flying)
- for the anxious first time wearer the initial comfort of soft lenses help to minimize the initial emotional and physical discomfort often experienced by the hard lens wearer
- the large optic zone of a soft lens maximizes peripheral vision

In cases where patients experience difficulty in central acuity suppression a variation called modified monovision may be attempted. In this form bifocal contact lenses, (in many instances different lens designs in each eye) are used to enhance distance acuity through full correction of the dominant eye and near acuity by under correcting the non-dominant eye (18).

**SUMMARY**

Monovision should be regarded as a powerful weapon within the practitioners arsenal. When properly used it offers the patient bent on not wearing spectacles a viable option and the clinician a growing source of revenue.
REFERENCES
An overview. Journal of the American Optometric Association
18. Carter, Barbara, Josephson, Joshua E., Binocular hyperopic lenses:
YORK, N.
17. Cogger, Susan E., Fitting contact lenses. Raven Press, NEW
OPHTHALMIC VISION DEVELOPMENT 9/85, 19-21.
presbyopia. Review and personal comments. Journal of
16. Rutherford, Stuart M., Pronouision fitting of contact lenses for
10/77.
15. Erickson, Paul, Success with monovision. Review of Optometry
14. Erickson, Paul, Potential range of clear vision in monovision.
behavior analyzed as a function of monovision addition power.
13. Heath, David A., Hines, Catherine, Schwartz, Raya, Suppression
OPHTHALMIC 8/84, 72-75.
12. Parsons, Cita, What’s so hard about monovision. Review of
OPHTHALMIC 2/89, 31.
11. Shoobin, Joseph P., Monovision and the law. Review of