

Pacific University

CommonKnowledge

College of Optometry

Theses, Dissertations and Capstone Projects

5-1993

The use of topical anesthetics in RGP contact lens fitting

Brenden R. White
Pacific University

Matt G. Merrell
Pacific University

Recommended Citation

White, Brenden R. and Merrell, Matt G., "The use of topical anesthetics in RGP contact lens fitting" (1993).
College of Optometry. 1082.
<https://commons.pacificu.edu/opt/1082>

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.

The use of topical anesthetics in RGP contact lens fitting

Abstract

This study compared advantages and disadvantages of using a topical anesthetic while fitting twenty first time RGP contact lens wearers. Changes in attitude and corneal health were compared between subject groups. The experimental group received one drop of 0.5% proparacaine OU just prior to initial lens insertion while the control group received a placebo drop. Anesthetic was used at the fitting visit only. Corneal health was established prior to subjects being fit with lenses, immediately after being fit, and then again monitored at one week and one month of lens wear. Subjects answered questionnaires before and immediately after being fit with RGP lenses. Follow-up questionnaires were then answered at one week and one month of lens wear to assess differences in adaptation and attitude. Results indicated that subjects receiving anesthetic required less time to be fit and were more likely to be confident about their chances for becoming successful rigid lens wearers. No significantly adverse effects to corneal health or integrity were noted. Preliminary data from one week and one month follow-up visits indicated that subjects receiving anesthetic may be more likely to feel adapted to their lenses within two weeks. We have suggested, barring any outward contraindication, that anesthetic can be advantageous when used with unusually tense or apprehensive patients.

Degree Type

Thesis

Degree Name

Master of Science in Vision Science

Committee Chair

Cristina M. Schnider

Subject Categories

Optometry

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

**THE USE OF
TOPICAL ANESTHETICS IN
RGP CONTACT LENS FITTING**

By

BRENDEN R. WHITE

MATT G. MERRELL


**A thesis submitted the faculty of the
College of Optometry
Pacific University
Forest Grove, Oregon
for the degree of
Doctor of Optometry
May, 1993**

Advisor:

Cristina M. Schnider, O.D., F.A.A.O.


Signature Page

Authors:


Brenden R. White


Matt G. Merrell

Advisor:


Cristina Schnider, O.D., F.A.A.O.

Spring 1993

About the Authors

Brenden R. White

Brenden completed his undergraduate work at the University of Utah where he majored in physics and psychology with a minor in German. He received his Bachelor of Science degree from Pacific University in 1991 and is a candidate for an O.D. degree from Pacific University College of Optometry in May of 1993.

During his undergraduate studies, Brenden was awarded Honors at Entrance and S.E.G. foundation scholarships. He received multiple honor role listings and Summa Cum Laude honors with his B.S. degree. While at Pacific University, Brenden was a four-year member of Beta Sigma Kappa honor fraternity and served as a student consultant to the American Optometric Association Multidisciplinary Practice Section.

In the future, Brenden will be completing residency/fellowship training in ocular disease at Omni Eye Specialists in Denver, Colorado. He then plans to work in a group practice or specialty care setting in the intermountain area.

Matt G. Merrell

Matt G. Merrell received his Associates Degree from Ricks College in Rexburg, Idaho. He then attended Pacific University in Forest Grove, Oregon where he was awarded his Bachelor of Visual Science Degree and will also receive his Doctor of Optometry Degree in May of 1993. Matt plans to work in a commercial Optometric setting or for a corporate practice for a few years. He then plans to buy into a group practice or open a private practice in Southern Idaho or surrounding areas.

THE USE OF TOPICAL ANESTHETICS IN RIGID LENS FITTING

Brenden White
Matt Merrell

ABSTRACT

This study compared advantages and disadvantages of using a topical anesthetic while fitting twenty first time RGP contact lens wearers. Changes in attitude and corneal health were compared between subject groups. The experimental group received one drop of 0.5% proparacaine OU just prior to initial lens insertion while the control group received a placebo drop. Anesthetic was used at the fitting visit only. Corneal health was established prior to subjects being fit with lenses, immediately after being fit, and then again monitored at one week and one month of lens wear. Subjects answered questionnaires before and immediately after being fit with RGP lenses. Follow-up questionnaires were then answered at one week and one month of lens wear to assess differences in adaptation and attitude. Results indicated that subjects receiving anesthetic required less time to be fit and were more likely to be confident about their chances for becoming successful rigid lens wearers. No significantly adverse effects to corneal health or integrity were noted. Preliminary data from one week and one month follow-up visits indicated that subjects receiving anesthetic may be more likely to feel adapted to their lenses within two weeks. We have suggested, barring any outward contraindication, that anesthetic can be advantageous when used with unusually tense or apprehensive patients.

Acknowledgments

We would like to acknowledge the support of GT Labs for the supply of our RGP contact lenses.

We would like to acknowledge Opticon Labs, Portland, OR. for their support in modifying our RGP lenses.

We would also like to acknowledge the faculty and staff of Pacific University College of Optometry for their willingness to offer frequent words of advice or expertise and to occasionally alter their schedules to do such without prior notice.

INTRODUCTION

The question of whether an anesthetic should be used during RGP lens fitting is often hotly debated. Advocates point to the advantages of decreased fitting time, improved ease and accuracy of assessment, benefits in patient's perceptions and attitudes, as well as a more expeditious adaptation to the lenses. Opponents point to a lack of "reality" and potential adverse physiological effects as sufficient contraindication to its use.

Since RGP contact lenses provide better tear/oxygen exchange and in many cases better visual acuity than soft contact lenses, their lack of popularity can in great part be attributed to non-ocular health related issues. Notable among these difficulties are a more lengthy fitting process, an initial adaptation time, and/or a perceived discomfort by many patients. Hence, these factors deter from patient's as well as practitioner's attitudes toward RGP lenses thereby decreasing their chances for success. ^{1,2}

Intuitively, one can foresee numerous advantages in using a topical anesthetic when fitting rigid lenses. Expectations include that patients would experience less reflex tearing upon lens insertion. Lenses and blinking would stabilize quicker allowing less delay before obtaining a (possibly even more accurate) over-refraction. With less tearing and blinking one could more easily and accurately assess lens fit. In addition, a patient's attitude toward successful lens wear may be protected by decreasing the severity of any initial discomfort which is frequently experienced by patients during a first time trial of a rigid lens. Furthermore, the use of anesthetic may help bridge the initial adaptation to foreign body sensation resulting in happier and more comfortable patients sooner.

Although the advantages of using anesthetic when fitting rigid lenses are easily conceivable, the question of the appropriateness of its use remains disputable. In opposition to its use stand a number of disadvantages or potential

problems. For many years eye-care practitioners have been aware that topical anesthetics soften the corneal epithelium leaving it more susceptible to injury.^{3,4,12} Repeated use can slow or even negate healing^{4,5,6,7} by slowing or disrupting epithelial cell motility.^{8,9} Even rare instances of seizure or fainting have been associated with the application of very small amounts of drug.¹⁰ With topical ocular instillation of any medication, exist slight risks of sensitivities to the solution.^{4,5} However, there appears to be little or no risk of systemic side effects associated with the use of topical anesthetic.¹¹

Some practitioners may prefer not to use anesthetic in situations where they rely on feedback from the patient as part of the fitting process. It is also conceivable that a patient may gain a false sense of comfort initially thus hindering their subsequent efforts at adaptation. This study sought to explore possible advantages for patients and practitioners when using a topical anesthetic during rigid lens fitting while simultaneously monitoring corneal and ocular health for possible adverse side effects.

Materials and Methods

Twenty subjects were sought out via newspaper and press releases for study participation. All subjects were required to have a comprehensive ocular examination prior to being accepted into the project. Spectacle corrections greater than -8.00 diopters myopia, +2.00 diopters of hyperopia, or 3.00 diopters of cylinder were excluded. Subjects chosen had no rigid lens experience within the past 10 years. Since subjects were acquired in a random fashion, they were assigned to the two groups on an alternating basis. No specific age limitations were imposed, however, subjects under the age of 18 were required to have parental permission. Presbyopic subjects with no ocular contraindications, were included as long as they showed adequate understanding of the need for a

supplementary near correction. Subjects had no allergies to anesthetics and were free of any conditions which would contraindicate RGP wear.

Pre-fit protocol for interaction between examiners and subjects was established to keep the regimen uniform for all subjects. To begin, each subject answered a questionnaire (see appendix 1) designed to assess their initial attitudes and opinions about RGP lens wear. At this point, a pre-fit corneal staining/slit-lamp examination was done to assess initial corneal integrity. All subjects were given written instructions to hold comments to themselves to aid the examiners in maintaining the research in a double blind fashion. Just prior to lens insertion, subjects were given one drop per eye of either anesthetic (0.5% proparacaine) or the placebo (saline with a pH adjustment) both of which cause a slight sting. The drops were dispensed from equally appearing bottles marked only as A or B; neither subject nor examiner had direct knowledge of which bottle contained anesthetic or saline.

Each subject was then fit using Flourex 700 lenses of a standard design to obtain an optimal fitting relationship. Beginning "on K" to the flattest corneal meridian, base curve and overall diameter adjustments were made in order to attain adequate centration and movement for all eyes. Lens diameters ranged from 8.8mm to 9.5mm. Subjects were observed until lenses and tearing became adequately stabilized. The elapsed time required from the completion of lens insertion until the point of stabilization was then recorded and a spherical over-refraction performed to determine proper correction for each subject. Monocular visual acuities were required to be 20/20 unless subjects had previously been determined to be amblyopic.

At the completion of the fitting session a corneal staining/slit-lamp examination was again performed and the results compared with any previously documented findings. Subjects were then given a "post-fitting" questionnaire (see

appendix 2) where they were asked to rate the comfort of their lenses, any effects on their blink rate, changes in eye watering (tearing), whether they experienced any head posture changes (i.e. tilting head back to help avoid blinking), as well as to rate their level of confidence that they would be able to successfully wear RGP lenses.

Lenses were ordered in accordance with the parameters of base curve, power, and over all diameter determined during the fitting session. These lenses were dispensed to subjects with instruction on proper insertion, removal and lens care. All subjects were dispensed an Alcon Soac-Lens care system and were instructed to follow the included protocol of daily cleaning, wetting, and disinfection with weekly to bi-weekly enzymatic cleaning. No anesthetic was used during the dispensing procedure for any subjects.

After one week of wear, each subject was again examined to check lens fit, movement, and to document proper lens care. Follow-up slit-lamp examination of corneal health and integrity was also performed. Subjects then answered a third questionnaire, similar to the initial "pre-fit" questionnaire but adjusted to past tense, to assess variances in opinion and attitude as well as to monitor progress of the adaptation process occurring over the first week. At one month of wear, the subjects involvement in the study was completed by repeating a follow-up examination and questionnaire. All subjects were required to purchase a contact lens service care agreement or sign a waiver indicating that they intended to obtain follow-up care elsewhere.

Results

General information regarding the two subject groups differed only moderately in mean age. Keratometry and refractive values varied negligibly between groups. Furthermore, past contact lens experience of subjects belonging

to either group were highly similar. Background data and general information regarding the subject groups are summarized in table 1.

	<u>ANESTHETIC GROUP</u>	<u>NON-ANESTHETIC GROUP</u>
MEAN AGE: RANGE:	29.2 YRS 20 - 37	24.2 YRS 14 - 32
MEAN KERATOMETRY VALUES:	OD 44.44/45.08 WTR OS 44.41/45.14 WTR	OD 43.85/44.70 WTR OS 43.90/44.74 WTR
MEAN REFRACTIVE CORRECTION:	OD -2.39 DS -0.77 DC WTR OS -1.64 DS -0.77 DC WTR	OD -2.28 DS -0.48 DC WTR OS -2.14 DS -0.89 DC WTR
PREVIOUS CONTACT LENS EXPERIENCE:	HAVE WORN SCL'S: 5 Subjects UNSUCCESSFUL PMMA : 1 Subject	HAVE WORN SCL'S: 6 Subjects UNSUCCESSFUL PMMA: 1 Subject

Table 1. Comparison of pertinent background data for both subject groups

Post-fitting corneal staining/slit-lamp examinations using sodium fluorescein revealed only minor corneal changes in a small percentage of subjects from both groups. Two subjects in the anesthetic group did acquire superficial epithelial foreign body tracks in one eye which appeared under the central portion of the trial lens. The tracks, appearing to have been caused by a small particle trapped underneath the lens, were discrete, very few in number, and healed rapidly with no sequelae or symptomatology. One subject who was later determined to maintain a tendency to stain mildly around the lens edges, showed a slightly exaggerated staining response while anesthetized. This subject did not experience any sequelae nor complain of any discomfort with or without anesthetic.

Observations as made by the examiners during the fitting session, included the elapsed time from the completion of lens insertion until the subject's tearing and blink rates had decreased sufficiently to allow for accurate and stable

over-refraction. The groups varied significantly by an average net difference of three minutes and eighteen seconds. Examiners noted all subjects to be free of any corneal staining prior to their being fit with lenses. Corneal slit-lamp examination results as recorded from fitting sessions are summarized in table 2.

	AVE TIME	RANGE	POST-FIT STAINING	n
WITH ANESTHETIC:	1:45	0:30 - 2:36	TRACE PUNCTATE: 1 Subject TRACE FB TRACKS: 2 Subjects *GRADE 1: 1 Subject, surrounding lens edges 240 deg	10
WITHOUT ANESTHETIC:	4:03	2:05 - 6:15	TRACE PUNCTATE: 1 Subject TRACE 3 - 9: 1 Subject	10

*Subject showed similar staining pattern without anesthetic

Table 2. Summary of findings as documented by examiners for all fitting sessions.

The subject group's sentiments differed most notably in regard to their lenses immediately following their fitting sessions upon answering the "post-fitting" questionnaires (see appendix 2). The anesthetic group left their fitting sessions predominantly valuating their lenses as having a *minimal or slight sensation* while the control group chiefly ascribed their lenses as having *noticeable irritation*. The non-anesthetic or control group also noted with greatest frequency that their blink rate and eye watering were *significantly increased*. Those receiving anesthetic most commonly specified a *negligible effect* or a *slight increase* in both blink rate and eye watering. As subjects were questioned as to whether they felt the need to alter their head posture, 10 of 10 (100%) who had received anesthetic answered no. Conversely, 3 of 10 (30%) subjects not receiving anesthetic felt that they were indeed altering their head posture while wearing lenses.

When asked about their expectations for becoming successful rigid lens wearers, subjects of the anesthetic group more frequently responded with a

greater level of confidence. Of 10 subjects receiving anesthetic, 5 (50%) responded that they were *very confident*, while only 2 of 10 (20%) control subjects reported the same level. Three subjects of each group rated their expectation for success as *likely*. However, 5 of 10 (50%) non-anesthetic subjects reported being *uncertain*, while only 2 of 10 (20%) subjects receiving anesthetic specified *uncertain* as their level of confidence. Subject responses immediately following the fitting sessions are summarized in table 3.

	<u>ANESTHETIC GROUP</u>	<u>NON-ANESTHETIC GROUP</u>
COMFORT OF LENSES RATED AS:	MINIMAL OR SLIGHT SENSATION 7/10 Subjects	NOTICEABLE IRRITATION 8/10 Subjects
EFFECT ON BLINK FREQUENCY RATED AS:	NEGLIGIBLE EFFECT TO SLIGHTLY INCREASED 7/10 Subjects	SIGNIFICANTLY INCREASED 7/10 Subjects
EFFECT ON EYE WATERING RATED AS:	NEGLIGIBLE EFFECT TO SLIGHT INCREASE 9/10 Subjects	SIGNIFICANTLY INCREASED 6/10 Subjects
FELT THAT POSTURE OF HEAD WAS AFFECTED:	YES: 0 NO: 10	YES: 3 NO: 7
EXPECTATIONS FOR SUCCESS RATED AS:	VERY CONFIDENT (5/10 Subjects) LIKELY (3/10 Subjects) UNCERTAIN (2/10 Subjects)	VERY CONFIDENT (2/10 Subjects) LIKELY (3/10 Subjects) UNCERTAIN (5/10 Subjects)

Table 3. Comparison of both subject group's responses to questionnaires which were administered to each subject immediately following their fitting session.

The initial (pre-fitting) questionnaire (see appendix 1) completed by subjects prior to beginning their participation in the study, consisted of ten questions aimed at establishing subjects attitudes and perceptions in the following areas: expected lens comfort, anticipated ability to adapt to lenses within two weeks, relative sensitivity of their own eyes, whether they felt their eyes should be anesthetized, and whether they felt they had avoided trying rigid lenses due to expected discomfort. Three questions each were aimed at the categories of comfort and adaptation, two toward eye sensitivity, and one question each toward whether they felt anesthetic should be used and if they had

been avoiding rigid lenses due to expected discomfort. Questionnaire data were analyzed using Mann-Whitney U comparison of non-parametric ranked data for two groups with unmatched pairs. Probability values indicate that both subject groups are from the same population. Results are summarized in table 4.

		<u>mean rank</u>	<u>U value</u>	<u>p value</u>	<u>n</u>
EXPECT GOOD COMFORT	ANESTHETIC	33.58	443.0	p = .47	30
	NO ANESTHETIC	30.27			30
WILL ADAPT IN 2 WEEKS	ANESTHETIC	31.02	462.5	p = .66	30
	NO ANESTHETIC	33.08			30
FEEL EYES ARE SENSITIVE	ANESTHETIC	22.79	191.5	p = .47	20
	NO ANESTHETIC	20.07			20
SHOULD USE ANESTHETIC	ANESTHETIC	11.18	53.0	p = .88	10
	NO ANESTHETIC	10.8			10
AVOIDED RGP'S DUE TO EXPECTED DISCOMFORT	ANESTHETIC	12.41	39.5	p = .28	10
	NO ANESTHETIC	9.45			10

Table 4. Comparison between subject groups using Mann-Whitney U statistic of responses to questionnaires administered prior to subjects being fit with lenses.

Preliminary data from one week and one month follow-up visits were combined and also analyzed using the Mann-Whitney U comparison for non-parametric ranked data for two groups with unmatched pairs. Presently 19 of 20 subjects have completed 1 week follow-up visits and questionnaires and 8 of 20 have completed their 1 month follow-up visits. Probability values indicate no statistically significant difference between groups. Results for each category are summarized in table 5.

1 = Strongly Agree
6 = Strongly Disagree

		<u>mean rank</u>	<u>U value</u>	<u>p value</u>	<u>n</u>
HAVE GOOD COMFORT	ANESTHETIC	44.62	793	p = .43	42
	NO ANESTHETIC	40.38			42
CAN ADAPT IN 2 WEEKS	ANESTHETIC	38.76	725	p = .15	42
	NO ANESTHETIC	46.24			42
FEEL EYES ARE LESS SENSITIVE	ANESTHETIC	27.9	375.5	p = .78	28
	NO ANESTHETIC	29.1			28
SHOULD USE ANESTHETIC	ANESTHETIC	16.4	70.5	p = .19	14
	NO ANESTHETIC	12.5			14
WOULD NOT RECOMMEND RGP LENSES	ANESTHETIC	15.1	89	p = .65	14
	NO ANESTHETIC	13.8			14

Table 5. Comparison between subject groups using Mann-Whitney U statistic of responses to questionnaires administered after 1 week and 1 month of lens wear.

Responses to questions regarding subject's level of comfort at one week and one month follow-up visits were very similar between groups. Both subject groups responded most frequently that they agreed with statements that described their comfort level as good. Response frequency distributions are summarized in table 6.

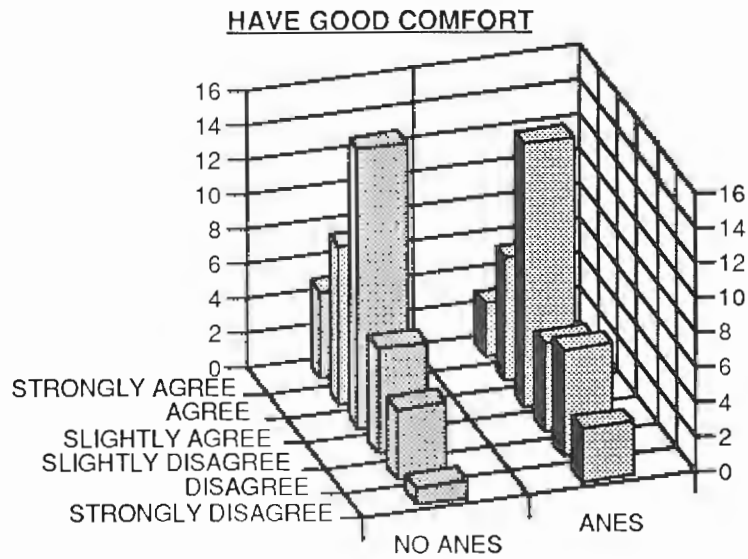


Table 6. Distribution of response frequencies indicating subject's level of agreement/disagreement with statements regarding their level of comfort. Data were compiled from questionnaires administered after 1 week and 1 month of lens wear.

Subjects receiving anesthetic tended to be slightly more in agreement with statements that adaptation was easy and that they felt they could accomplish it within two weeks. Distributions of response frequencies are indicated in table 7.

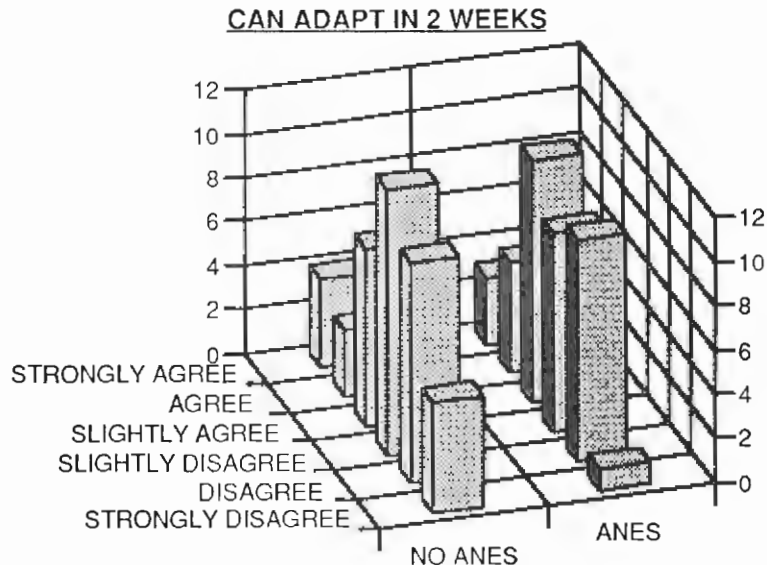


Table 7. Distribution of response frequencies indicating subject's level of agreement/disagreement with statements regarding their ability to adapt to their lenses within 2 weeks. Data were compiled from questionnaires administered after 1 week and 1 month of lens wear.

Responses from both subject groups to statements suggesting that their eyes felt less sensitive than others showed no significant difference at one week and one month of lens wear. Distributions of response frequencies for both groups are indicated in table 8.

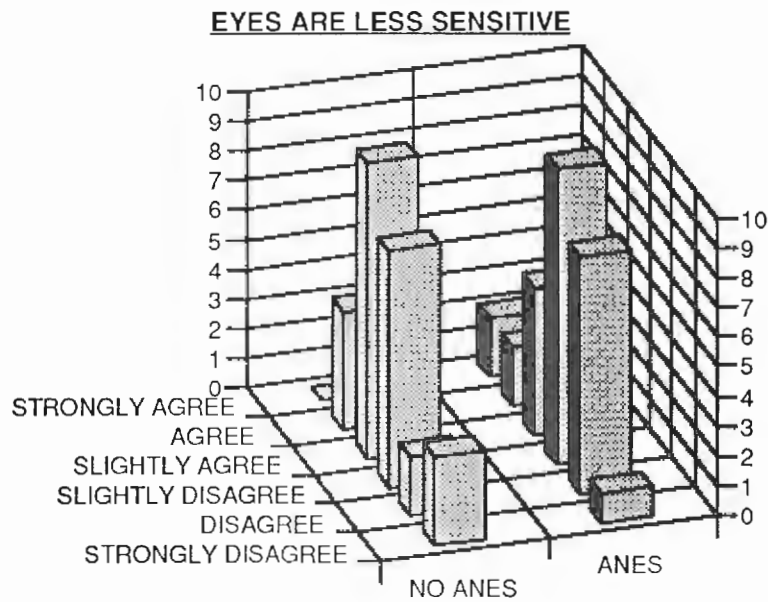


Table 8. Distribution of response frequencies indicating subject's level of agreement/disagreement with statements regarding the relative sensitivity of their eyes. Data were compiled from questionnaires administered after 1 week and 1 month of lens wear.

Responses to the question of whether subjects were of the opinion that their eyes should be "numbed" while being fit with lenses tended to be more frequently answered as *disagree* by the anesthetic group. Distributions of response frequencies are indicated in table 9.

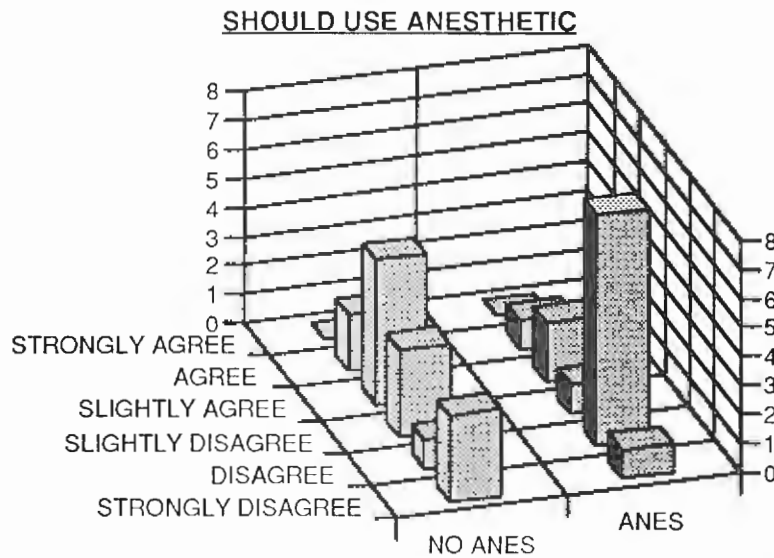


Table 9. Distribution of response frequencies indicating subject's level of agreement/disagreement with statements regarding their opinion of whether or not anesthetic should be used. Data were compiled from questionnaires administered after 1 week and 1 month of lens wear.

Subject responses to questions of whether they would or would not recommend RGP lenses to others showed both groups with a slight tendency to not recommend them. Distributions of response frequencies for both groups are summarized in table 10.

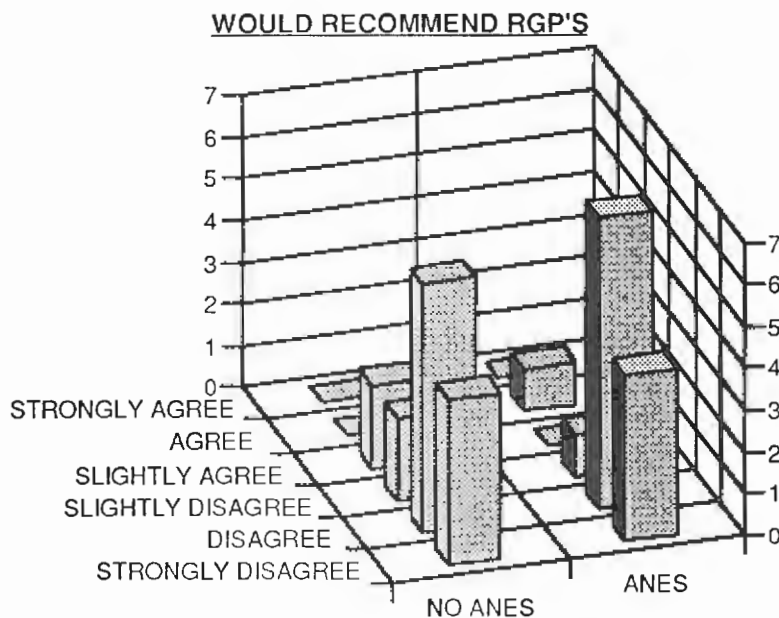


Table 10. Distribution of response frequencies indicating subject's level of agreement/disagreement with statements regarding their opinion of whether or not they would recommend RGP lenses to others. Data were compiled from questionnaires administered after 1 week and 1 month of lens wear.

Discussion

The results of this study have shown a number of advantages to using a topical corneal anesthetic when fitting first time rigid contact lens patients. Foremost were that subjects could be fit with lenses more rapidly and were more likely to have greater confidence in their ability to wear rigid lenses. We found an average measurable time savings of three minutes and eighteen seconds per subject. Considered together with the fact that subjects were likely more comfortable and responsive throughout the fitting session, the overall increase in efficiency could prove substantial.

At the conclusion of their fitting sessions, subjects receiving anesthetic showed an overall higher opinion of their lenses and frequently showed a superior confidence level about their expectations for successful lens wear. Though difficult to measure, most would agree that starting down the road toward adaptation to rigid lenses with a more positive attitude would be advantageous for most patients. Likewise, since subjects not receiving anesthetic were more likely to be uncertain about their chances for success, one might suspect them to be more easily swayed from completing the adaptation process.

Statistical analysis did not substantiate whether use of anesthetic and the subsequent improvement in confidence level, were beneficial to subjects to a measurably significant degree. At both one week and one month of lens wear, both subject groups responded variably to questions regarding their perceived comfort and their relative eye sensitivity. There was a moderate tendency for subjects who had received the anesthetic to agree with the statement that anesthetic should not be used, perhaps indicating again a higher level of confidence. Subjects receiving anesthetic also showed a possible tendency ($p=.15$) to being more capable of adapting to their lenses within two weeks. In general, since any changes in subject's responses after one week and one month of wearing lenses tended to be more favorable from the group receiving anesthetic, we have shown no detrimental effects on the subjects adaptation process when using anesthetic. Lack of significance in any of these areas may otherwise reflect a lack in the efficacy of our questionnaires (see appendix 1 & appendix 2) to measure what changes, if any, truly did occur.

All changes in corneal health noted during our examinations fell well within the compass of what may normally be experienced during routine rigid lens fitting. We recommend that any contact lens practitioner using topical anesthetic should be aware that the anesthetic does render the corneal epithelium softer and more

susceptible to injury.^{3,4,12} Furthermore, we again emphasize that we have advocated only a single use of topical anesthetic and strongly recommend avoiding any prolonged use due to possible deleterious effects.¹³ The results of this study however, indicate that routine rigid contact lens fitting on anesthetized corneas can be done effectively and to noteworthy advantage without compromising corneal integrity.

CONCLUSION

This study has summarized a number of advantages and possible risks to using a topical anesthetic when fitting rigid contact lenses. It has shown that the benefits of anesthetic should not be ruled out solely on the basis of risk to corneal health. Since anesthetized corneas are more susceptible to injury, we do not recommend its use on all patients. However, the lack of corneal sequelae found in this study when using topical anesthetic while fitting rigid lenses renders good support for its use. Baring obvious contraindications, we suggest that anesthetic can safely be used when fitting unusually tense or apprehensive patients, or anytime that practitioners appraise its use as beneficial.

Appendix 1

Anesthetic Research Study Initial Questionnaire

Participant's name: _____ Date: _____

To the following statements, please indicate by circling the letter which corresponds to whether you:

- 1 - Strongly Agree
- 2 - Agree
- 3 - Slightly Agree
- 4 - Slightly Disagree
- 5 - Disagree
- 6 - Strongly Disagree

1 2 3 4 5 6 I think rigid contact lenses will feel very uncomfortable to wear.

1 2 3 4 5 6 When rigid contact lenses are put on my eyes, I think they will feel like cushions.

1 2 3 4 5 6 After adapting to rigid contact lenses, I think they will still feel like I always have something in my eyes.

1 2 3 4 5 6 I think getting used to rigid contact lenses will be easy.

1 2 3 4 5 6 When the lenses are put on my eyes, I think they will really bother me.

1 2 3 4 5 6 I think getting used to rigid contact lenses will take weeks.

1 2 3 4 5 6 When trying on lenses, I think my eyes should be numbed.

1 2 3 4 5 6 I think my eyes are very sensitive.

1 2 3 4 5 6 I have not tried rigid contact lenses before because I think they will hurt.

1 2 3 4 5 6 Getting used to rigid contact lenses will be easier for me than for other people.

Appendix 2

ANESTHETIC STUDY: POST-FITTING QUESTIONNAIRE

Participant's Name: _____ Date: _____

Circle the response which most closely corresponds to your opinion.

The statement which best describes the comfort of your lenses at this time is:

1. Can't be felt
2. Minimal or slight sensation.
3. Noticeable irritation
4. Can't tolerate

The extent to which the lenses have affected your normal blink rate.

1. Negligible effect
2. Slightly increased
3. Significantly increased
4. Difficult to open eyes

The extent to which the normal watering of your eyes is affected.

1. Negligible effect
2. Slightly increased
3. Significantly increased
4. Continual tearing

Do you feel that wearing lenses causes you to change the posture of your head.

1. Yes
2. No

Based on your experience today, do you believe that the comfort of your RGP contact lenses is adequate enough for you to be a successful RGP contact lens wearer?

1. Very confident
2. Likely
3. Uncertain
4. Unable to wear RGP contact lenses

Do you feel that the daily length of time which you are able to comfortably wear your contact lenses will be sufficient to your needs?

- Yes No

REFERENCES

1. Mandell, R.B.: *Contact Lens Practice 4th ed.* Charles C. Thomas, Publisher, Springfield, Illinois, 1988 pp. 388-389.
2. Bennett, E.S., and Weissman, B.A.: *Clinical Contact Lens Practice.* J.B. Lippincott Company, Publisher, Philadelphia, 28:01.
3. Jervey, J.W.: Topical anesthetics for the eye. A comparative study. *Southern Med. J.*,48:770-774, 1955.
4. Grant, W. M.: *Toxicology of the eye.* Charles C. Thomas, Publisher, Springfield, Illinois, 1962 p. 43.
5. Marr, W.G., Wood R., Senterfit, L., and Sigelman, S.: Effect of topical anesthetics on regeneration of corneal epithelium. *Amer. J. Ophthal.*, 43: 606-610, 1957.
6. Gundersen T and Liebman SD: Effect of local anesthetics on the regeneration of the corneal epithelium. *Arch Ophthalmol* 31:29,1944.
7. Epstein DL and Paton D: Keratitis from misuse of corneal anesthetics. *N Engl J Med* 279:396, 1968.
8. Rosenwasser GO: Complications of topical ocular anesthetics. *Int Ophthalmol Clin* 29:153,1989.
9. Dass BA, Soong HK, and Lee B: Effects of proparacaine on actin cytoskeleton of corneal epithelium. *J Ocul Pharmacol* 4:187,1988
10. More, D.C., and Bridenbaugh, L.D.: Oxygen, the antidote for systemic toxic reactions for local anesthetic drugs. *J.A.M.A.*,174: 842-847, 1960.
11. Leopold, I.H. (Ed.): *Ocular Therapy; Complications and Management.* The C.V. Company, St Louis, 1966.
12. Thomas, T. I.: *The Cornea.* Charles C. Thomas, Publisher, Springfield, Illinois, 1955 p. 143.
13. Behrendt, T.: Experimental study of corneal lesions produced by topical anesthesia. *Am. J. Ophthalmol.* 41:99, 1956.