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The Binocular Status of Two Mono-Vision Patients — Case Report

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Abstract:

Two presbyopic patients were fitted with contact lenses, using the mono-vision technique. The results were evaluated considering the binocular status of the patients, fusion, stereopsis, distance and near acuity and subjective perception of vision.

Abrégé

Deux personnes presbytes ont été ajustées avec des lentilles cornéenes par voie de la technique (vision monoculaire alternante). Les résultats ont été evalués en marge des effets sur leur statut binoculaire, soit, la fusion, la stéréoscopie, l'acuité, à distance et de près ainsi de leurs impressions subjectives de ce genre de correction visuel.

Introduction:

The aim of the mono-vision technique is to alternate the vision of both eyes, one fitted for near and the other for distance in an effort to achieve acceptable distance and near vision in a presbyopic patient.[1, 2, 3]

The chief advantage of the technique is the opportunity to fit conventional non-bifocal lenses.[4]

The following is an evaluation of the binocular status of two patients wearing mono-vision lenses.

Patient Selection and Method

Two patients were selected:

One myopic, the other hyperopic; both had a normal binocular vision with fusion and stereopsis (refer to table 1)

Patient 1 - Age 54 - secretary, an advanced presbyope:

Rx: o.d. + 1.75 Add: + 2.00
o.s. + 2.00

K: o.d. 43.00/44.00 at 90°
o.s. 43.00/44.00 at 90°

The other, patient 2, an early presbyope:

Patient 2 - Age 42 - teacher:

Rx: o.d. - 1.00 - 1.00 x 180°
o.s. - 0.75 - 0.75 x 180°

K: o.d. 43.00/44.00 at 90°
o.s. 43.00/44.00 at 90°

The dominant eye was fitted for distance and the other for near[4]. Dominance was established using the aiming eye and prefered image as criteria[5].

Both patients were fitted with Boston® lenses*.

Patient 1

	Bc	Dia.	PWR
o.d.	7.85	8.60	+ 2.00
o.s.	7.85	8.60	+ 2.00
M/V left	7.85	8.60	+ 4.00

Patient 2

o.d.	7.67	8.80	- 1.50
o.s.	7.62	8.80	- 1.25
M/V left	7.62	8.80	Plano

A keystone stereoscope was used and patients were tested for:

a) distance and near visual acuity
b) fusion
c) stereopsis.

Two tests were performed, one wearing the distance Rx and the other wearing the mono-vision lenses.

Visual skill tests nos: DB-1D, DB-2D, DB-3D, DB-15, DB-16, DB-17, were used to quantify distance and near acuities.

Angular visual acuity was tested as a mean to avoid the subjective responses associated with snellen letters[6].

Fusion far and near were tested with visual skills cards DB-4K, DB-5K.

Stereopsis was tested using card serial 5131 DC: Aviator Short Stereo Test.

Results and comments:

All the results are summarised in table - 1.

A) Acuity at distance:

A drop of vision was expected and found at far with the mono-vision lenses: with patient 1 — a monocular and binocular loss was observed, with patient 2 only a monocular loss was observed, obviously related to instrumentation limitation.

B) Acuity at near:

With patient 1, a monocular and binocular increase at near was observed, while patient 2 had only a very slight increase in near vision.

C) Fusion:

The fusion pattern did not seem to vary with either patient even though a no answer response was issued by both patients in the acuity test.

D) Stereopsis:

The greatest loss was expected and found at this level.

Subjective patient impressions:

Patient 1: complained of her loss of depth perception which impaired, according to her, her ability to drive.

Patient 2: complained of loss of distance and near acuity and stereopsis.

Both were displeased with the results of the experiment and both

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eventually discontinued at the conclusion of the clinical investigation.

Patient 1 tried to visually adapt, but this was to no result, even after three months of trial.

Conclusion

A general conclusion is impossible due to the small number of patients present in the study. The hypothesis that the binocular status would be impaired was confirmed.

A more general investigation may be necessary to help predict successful wearers. Such an investigation would help establish acceptable criteria of impairment for different visual tasks, thereby permitting a better selection of patients who could benefit from the technique.

TABLE 1

Visual performance using the keystone stereoscope

	Distance Rx	VS	Monovision lens
Acuity at far	Patient 1 o.d. 88% o.s. 84% o.u. 96%		Patient 1 o.d. 84% o.s. no answer o.u. 84%
	Patient 2 o.d. 105% o.s. 98% o.u. 105%		Patient 2 o.d. 105% o.s. no answer o.u. 105%
Acuity at near	Patient 1 o.d. 20% o.s. 40% o.u. 50%		Patient 1 o.d. 40% o.s. 70% o.u. 80%
	Patient 2 o.d. 80% o.s. 90% o.u. 100%		Patient 2 o.d. 102% o.s. no answer o.u. 103%
Fusion	Patient 1 no change		P1
	Patient 2 no change		
Stereopsis	Patient 1 30%		Patient 1 20%
	Patient 2 60%		Patient 2 30%

Notes

[1]HERSH, D. A novel modality for management of presbyopia contact lens patient. *Opt. J. Rev. Optom.* 106 (6) 35-40, 1969.

[2]FLEISCHMAN, WE. The single vision reading contact lens, *Am. J. Optom.*, 45 (6) 408-409, 1968.

[3]MANDELL, RB. Contact lens practice — Hard and flexible lenses — monovision contact lenses. P. 651. C.C. Thomas — 1974.

[4]BIER, LOWTHER, contact lens correction — Monovision technique — P. 318 — Butterworths — 1977.

[5]BORISH-I-M, Clinical Refraction — P. 440 — Professional Press Chicago — 1975.

[6]Idem, Ibid — P. 347.