USE OF CONCAVE LENSES IN THE MANAGEMENT OF INTERMITTENT DIVERGENT SQUINT

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Presented in Adelaide, April 1974

On the final day of the 1973 Conference, Dr. Goodwin Breinan remarked that ophthalmologists "fiddle" with plus lenses to help control convergent deviations; why not, he asked, use minus lenses to help control divergent deviations? From the multitude of papers delivered at that time, this question remained with me.

When, in September 1973, I first tentatively suggested the use of minus lenses to an honorary consultant at Sydney Eye Hospital, his interest encouraged me to use them in the treatment of three children as described in this paper. Concave lenses, by stimulating accommodation, seemed to present a more active form of management than the use of prisms, which can indeed produce a desired effect, but which correct nothing. It was hoped that these lenses might, indirectly, stimulate lazy medial rectus muscles to stronger performance.

These three children were selected for three main reasons:

1. all had symptoms of headaches and/or sore eyes and blurred vision,
2. their parents were opposed to surgery at this time for various personal reasons,
3. summer was rapidly approaching; in each case, the intermittent divergent squint, previously of the "divergence excess" type, was becoming almost constantly manifest for near.

In no case was the use of concave lenses regarded as a cure: the parents were informed it was a measure to circumvent operation temporarily, and to help the children control their intermittent divergent squints during the summer months.

In ordering the lenses, the honorary medical officer took into consideration, in each case

1. the result of refraction under cycloplegia,
2. the severity of symptoms,
3. the angle of deviation,
4. a cautious estimate of the desired strength by the orthoptist.

Details of the individual cases are as follows:

C., aged 9, complained of occasional headaches and blurred vision.
He wore glasses $\frac{+0.75}{-1.50} \times 180^{o}$ each eye.
There was no previous surgery
Vision : 6/9 + 3 letters, N5, each eye
Convergence to near point 6cm. with great effort & marked fatigue
Synoptophore angles: fixing right eye -13^{o}, L/R 3 $^{\Delta}$
fixing left eye -15^{o}, 0/0
New glasses $\frac{-0.50}{-1.50} \times 180$ each eye, were ordered

Two weeks later, his mother reported that she thought his eyes looked "much better". He showed no desire to take these glasses off as had been the case with the previous pair, and there had been no mention of the usual headaches. His vision has improved to 6/6, N5 each eye.

A., a girl aged 6, had occasional headaches and sore eyes
Surgery : bilateral rectus recession, 5mm. at 4 years
No glasses. Atropine refraction +1.00 sph. each eye
Vision : 6/6, N5 each eye.
Convergence near point 6cm. when concentrating.
Synoptophore angles: fixing right eye −6° o/o
fixing left eye −5° o/o

She was ordered −1.25 sph. each eye
Her parents reported an immediate improvement in her appearance.
The school teacher had even rung to tell them of this, and of improved school work and concentration. A. herself remarked that her eyes were not sore as before.

L., aged 12 had constant headaches and used an analgesic daily for some relief. She complained also of sore eyes.
Operations: left lateral rectus recession 7mm. at 8 years
right lateral rectus recession 6mm. at 9 years
left medial rectus resection and excision of prolapsed Tenon's capsule at 10 years
No glasses. Atropine refraction 4 years earlier + 2.50 sphere.
Vision 6/6, N5 each eye
Convergence near point 8 cm. on accommodative target.
Synoptophore angles : fixing right eye − 10°, L/R 7$^{\Delta}$
fixing left eye −8°, L/R 5$^{\Delta}$

Glasses ordered were −2.00 sphere, each eye.
L. experienced immediate relief from her headaches. Also, her mother was delighted with her increasing social engagements; whereas, before,, L had been loathe to join in outdoor activities, now that she felt her eyes were straighter she was mixing freely with her friends.

Over the last six months the children and parents have remained satisfied with the glasses. The incidence of headaches has been negligible. The basic angles remain unchanged but all the children now show a good recovery on cover test for near vision; before this treatment their divergence became manifest for near on moderate dissociation.

All parents were convinced that the improved cosmesis was genuine; it was not merely that the frames were disguising the divergence. They also noticed that when the glasses were removed, the eyes rolled outwards as before.

Moreover, fate intervened during this six months. A. contracted a severe dose of chicken pox and was unable to wear her glasses for two weeks because of her numerous scabs and sores. L. unfortunately sat on her glasses at a swimming party during the New Year holiday and was without them for one week.

During these short periods without glasses, both girls experienced a rapid recurrence of symptoms. A's parents were distressed by her frequent divergence and complaints of sore eyes, and L. complained bitterly. of severe daily headaches. These symptoms miraculously disappeared once the glasses were resumed.

Concave lenses were also ordered for a fourth rather different case of divergence excess seen in this clinic.

M., a boy aged 3, had no symptoms
cover test at 6 metres and over : large right divergent squint, unable to retain right fixation
cover test at 1/3 metre : large exophoria with slow recovery.
He was prescribed −3.00 sphere each eye for constant wear, and returned six weeks later,with
cover test at 6 metres : large exophoria/right divergent squint
cover test at 1/3 metre : small right convergent squint, not maintaining right fixation.
His ophthalmologist reduced the lenses to −1.25 spheres, and the result is awaited with more than usual interest.

This last case perhaps presents a lesson in selecting cases for concave lens

treatment. Here there was a strong preference for the right eye, and no evidence of equal visual acuity. Moreover, although his parents were distressed by his appearance, M. had no symptoms. It was the symptoms which prompted use of the lenses in the other three cases, surgery being disallowed.

At this stage the use of concave lenses must be approached with caution. It would appear that surprisingly weak lenses may relieve symptoms, and it is the relief of symptoms that justifies their use. Like prisms, they can serve merely as a temporary measure to maintain or strengthen binocularity until an operation is possible.

Although reactions in the first three cases are encouraging, six months is but a short time. Perhaps next year I shall be able to tell you more about the indications for or against this type of therapy.

THE HESS-WEISS
MEASUREMENT OF OCULO-MOTOR DEVIATIONS
BY A METHOD OF FORMS OF CHOICE

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Introduction

Orthoptists have long charted oculo-motor deviation using one of the adaptions of the Hess technique, that is with the eyes fully dissociated by means of complimentary colour filters or a plane mirror. They are also aware that oculo-motor deviation can be heavily influenced by fusion and by accommodation. Hitherto, the standard techniques for recording this modified deviation have not produced the neat and graphical presentation of the Hess.

Professor Weiss has developed a technique to do this using two screens; red and green filters, and a torch to project a red arrow. Thus the effect of the normal efforts to fuse and accommodate can be seen at a glance by comparing the charts.

The patient observes the Hess-Weiss screen at a distance of 50 cms. using red and green filters and indicates the cardinal points on the screen by means of a red arrow projected by a torch held in his hand. The usual care is taken to keep the head steady and in a constant position throughout the test. The examiner plots the position of the red arrow on special charts for the purpose.

The test is performed first using the "fully dissociated" screen-forme libre (F.L.), to ascertain the full deviation. The test is then carried out again using the second screen which has numerous black dots accompanying the previous pattern i.e. with fusion and accommodation involvement- forme à choix multiple (F.C.M.) This second test indicates a more true to life situation than the fully dissociated test.

The Hess-Weiss Screens

The F.L. screen (fully dissociated) shows red/orange lines forming small squares of side 2.5 cms. which correspond to 5 prism dioptres at 50 cms. The cardinal points are also marked in the pattern. The central square field is 20 prism dioptres out from the centre and the peripheral field is 40 prism dioptres out from the centre. When viewed through the green filter, the lines appear black but are unseen when viewed through the red filter. The patient indicates the position of the cardinal points on the screen with a red arrow projected from a torch held in his hand. This arrow is only seen by the eye behind the red filter.