Treatment

The methods of treatment are fairly traditional but the emphasis is different,as described earlier. They are surprisingly effective in cases of convergence spasm and esophoria.

Once attention was concentrated on motor responses it became clear that fusional vergence is a complex process. If one eye has been favoured over a period of time a conditioned inhibition of fixation develops, affecting the deviating eye. Even when by voluntary effort it is brought into position for binocular fixation, this eye fails to fixate into position. We judge the need for occlusion now, on fixation behaviour rather than on subjective evidence of suppression...finding that this ensures sufficient treatment and avoids what is unnecessary.

Acknowledgement

The writer is indebted to colleagues in England, the U.S.A. and all Australian States for the fruits of their experience and particularly to the late J. Ringland Anderson as teacher, Emmie Russell for an objective approach to Suppression and Beverley Balfour for unflagging encouragement.

Summary

Gordon Holmes' distinction between the role of the occipital oculo-motor centre, concerned with fixational, fusional and accommodation reflexes, and that of frontal centres which are concerned with voluntary eye movements, was quoted by Mann to explain the cure of convergence deficiency through instruction in voluntary convergence. Convergence and accommodation are not ordinarily conscious actions, but the frontal oculo-motor centre is seen by the writer as responsible for changes in both functions in response to perceived changes in fixation distance, as demonstrated by Ittelson and Ames, and also for certain mal-adaptive convergence habits. Such habits, it is claimed, underly any binocular disorder which is susceptible to improvement by orthoptic treatment. They may be cured by making the patient aware of vergence movements and of his power to control them. Fusional vergence is regarded as innate reflex, but a complex one, involving active fixation of each eye. Its function in the control of ocular deviations can be improved not be direct training, but by frontal facilitation and by suitable occlusion of the preferred eye.

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SUPERIOR OBLIQUE SURGERY

Jeanette Yap

Presented in Sydney, April 1975

The logical treatment of a paralytic deviation is to strengthen the affected muscle and/or to weaken its direct antagonist. Other methods of attack are unsound, in our experience. We have frequently seen disastrous results from the surgical treatment often recommended for superior oblique palsy, namely weakening of the contralateral inferior rectus or of the ipsilateral inferior oblique. The following case history illustrates this point.

GW suffered a traumatic right I V nerve palsy. A typical Hess Chart (Fig.1) was obtained 12 months after the accident. Recession of the left inferior rectus resulted in left hypertropia, as shown in the chart (Fig.2) taken 3 months later.
A second operation, left inferior rectus advancement was then performed. Six months later the Hess Chart (Fig. 3) shows further incomitancy, and the patient is no better than before surgery.

In such cases a more desirable procedure is one which increases the efficiency of the paralytic muscle. In the past, attempts to do this in cases of superior oblique palsy have been avoided as too difficult.

Fig. 1. G.W. : R IV nerve Palsy

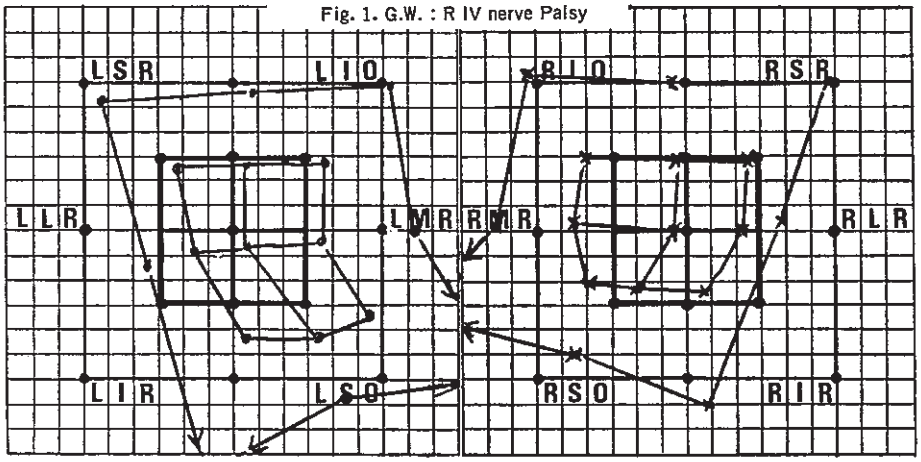


Fig. 2. G.W. : 3 months after L.I.R. recession

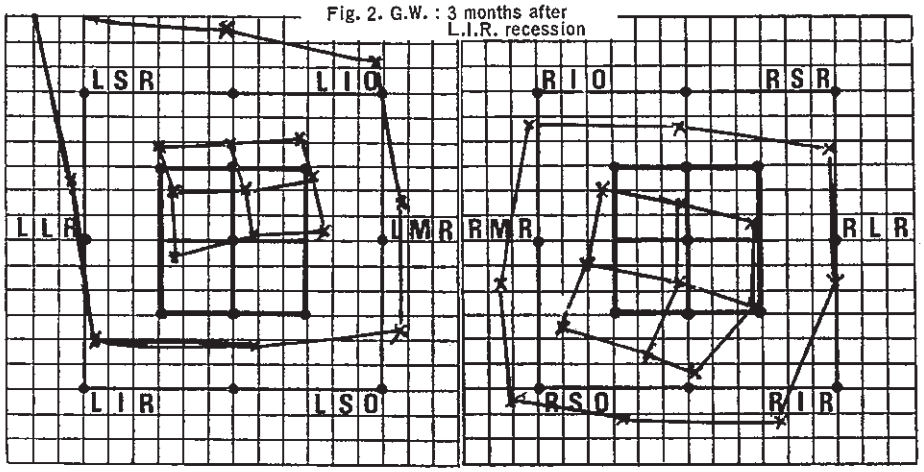
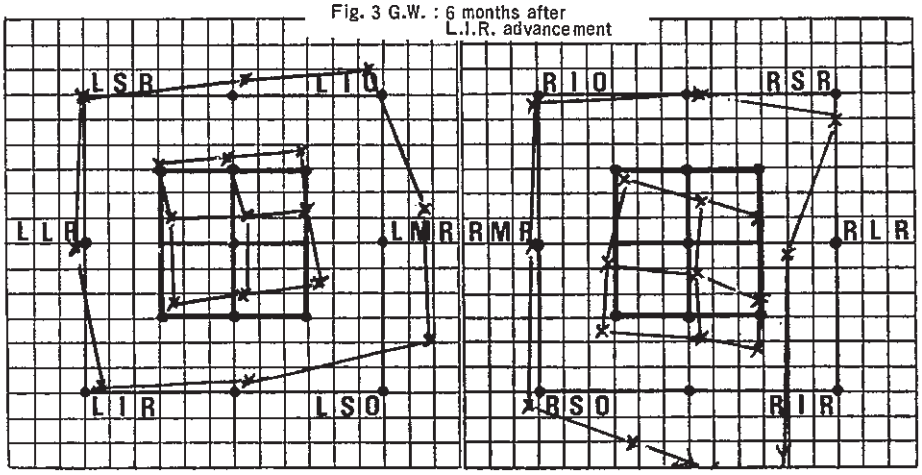


Fig. 3 G.W. : 6 months after L.I.R. advancement



During the past few years, surgeons at the Prince of Wales Hospital have been using a simple technique called Sagittalisation of the Superior Oblique.

Operative procedure: the usual fornix incision is made through the conjunctiva and Tenon's capsule. The superior rectus muscle is pulled up with a squint hook, and then half the superior oblique is split back to the trochlea (Fig.4). The anterior half of the muscle is cut off its original insertion, and sutured to the sclera above the upper border of the lateral rectus muscle. (Fig.5)

Sagittalisation of Superior Oblique

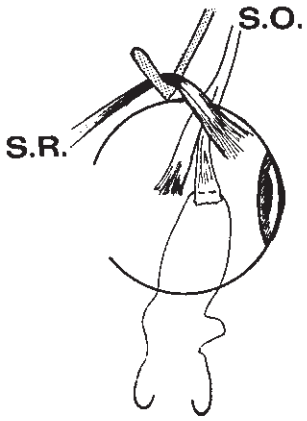


Fig. 4
Superior Oblique split back to trochlea

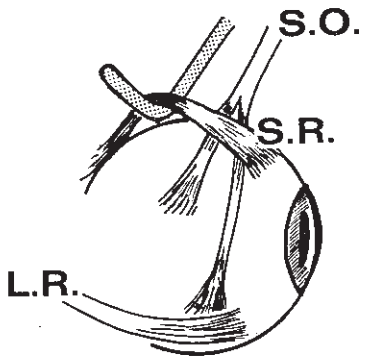


Fig. 5
Advancement of anterior half of Superior Oblique

Advancement of the rectus muscle has little effect because it is such a short distance from the limbus. The oblique, however, is ideally suited for the advancement procedure because of its sagittal approach to the globe. Up to 15mm of advancement can be performed on the superior oblique muscle, thereby increasing its effectivity in a direction close to that of its normal action. In no other way can the torsion, hypertropia, and esotropia caused by superior oblique weakness be so reduced.

The following are case histories of two patients on which this operation has been used.

CASE I

JS, aged 32, was involved in a motor-bike accident 10 months before seeing us in the orthoptic clinic; he was complaining of diplopia and difficulty walking down steps. He suffered severe head injury and had a traumatic brain stem syndrome.

The Hess Chart (Fig. 6) and synoptophore chart confirmed the presence of a left superior oblique palsy. The Bielchowsky test with head tilt to the left was positive.

Synoptophore angles were

in primary position, fixing right eye 0, L/R 4$^{\Delta}$, excyclo1°

fixing left eye 0, L/R 5$^{\Delta}$, excyclo5°,

in 15° depression fixing right eye + 2°, L/R9$^{\Delta}$, excyclo5°

fixing left eye + 3°, L/R 10$^{\Delta}$, excyclo 8°

14 months later, there being no significant change, sagittalisation of the left superior oblique muscle was performed.

The post-operative Hess Chart (Fig. 7) showed an overcorrection; and there was 5$^{\Delta}$ left hypertropia. As the oedema and swelling reduced, the hypotropia decreased. JS was instructed to try to join the diplopia, and to extend his field of binocular vision.
A further chart (Fig. 8) was plotted 6 weeks after surgery; there was now an exophoria of 4$^{\Delta}$ with binocular single vision in all directions of gaze.

Fig. 6 JS Left IV nerve palsy
duration 10 months

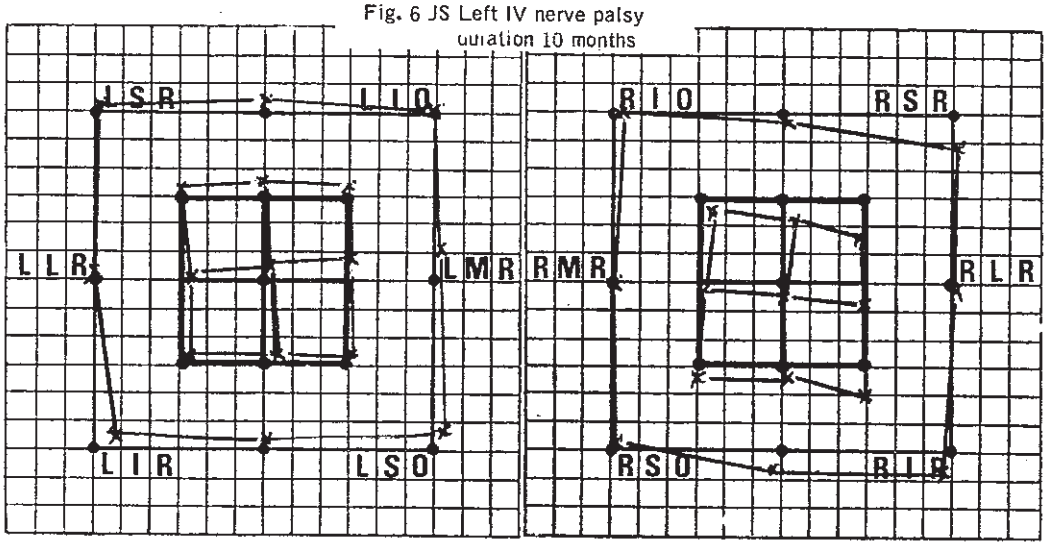


Fig. 7 JS After sagittalisation
of L.S.O.

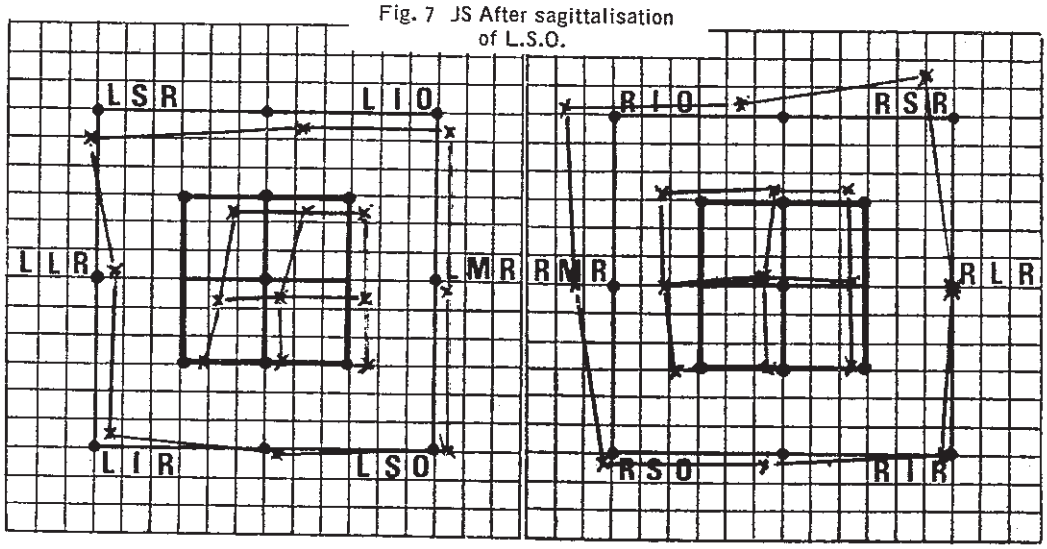
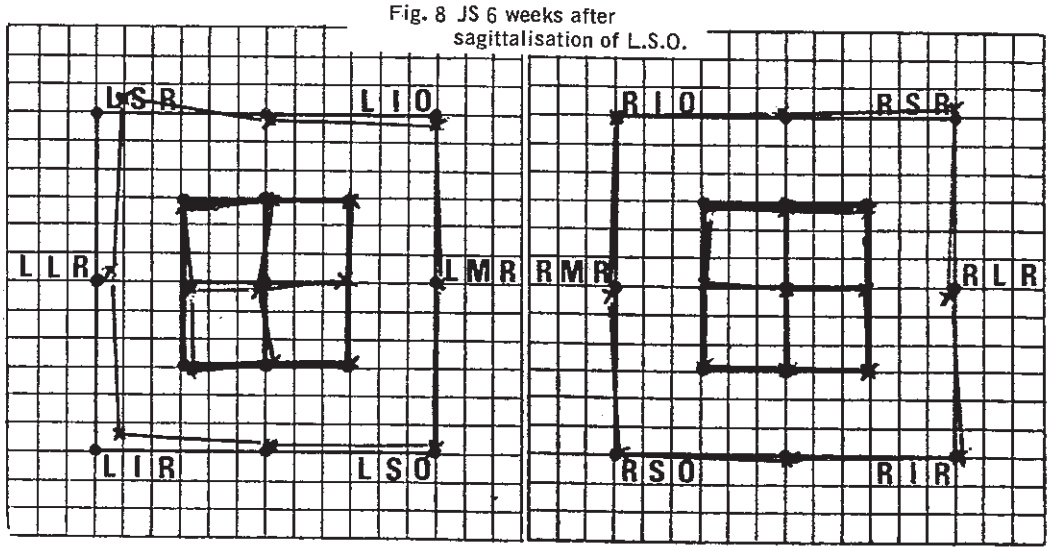


Fig. 8 JS 6 weeks after
sagittalisation of L.S.O.



CASE II

JP, also was involved in a motor vehicle accident and was seen 3 years later. He had suffered severe brain stem injury. His Hess Chart (Fig. 9) showed a classical pattern of right IV nerve palsy.

Synoptophore readings were

in primary position, fixing right eye +2° R/L 18Δ, excyclo 10°
fixing left eye +1°, R/L 7Δ, excyclo 15°

in 15° depression, fixing right eye +3°, R/L 20Δ, excyclo 15°

The first operation, in accordance with accepted theory, was a myectomy of the overacting direct antagonist, in this case the right inferior oblique. The immediate post-operative result was most favourable, but as the weeks progressed the deviation grew more incomitant, and JP was more distressed by diplopia.

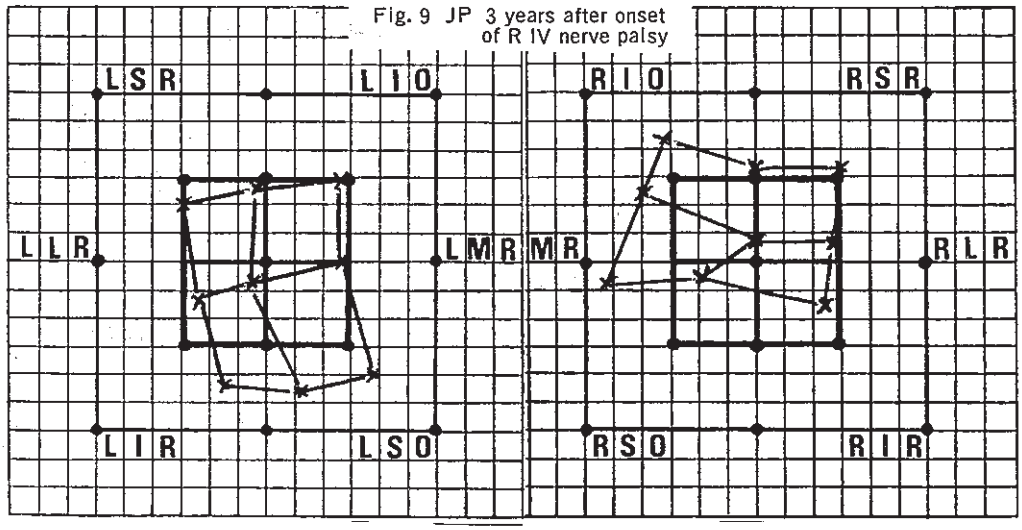


Fig. 9 JP 3 years after onset of R IV nerve palsy

Five months later, the Hess chart (Fig. 10) confirmed this incomitancy. The synoptophore angles had increased, and in primary position were:

fixing right eye +3°, R/L 11Δ, excyclo 11°
fixing left eye +3°, R/L 6Δ, excyclo 4°

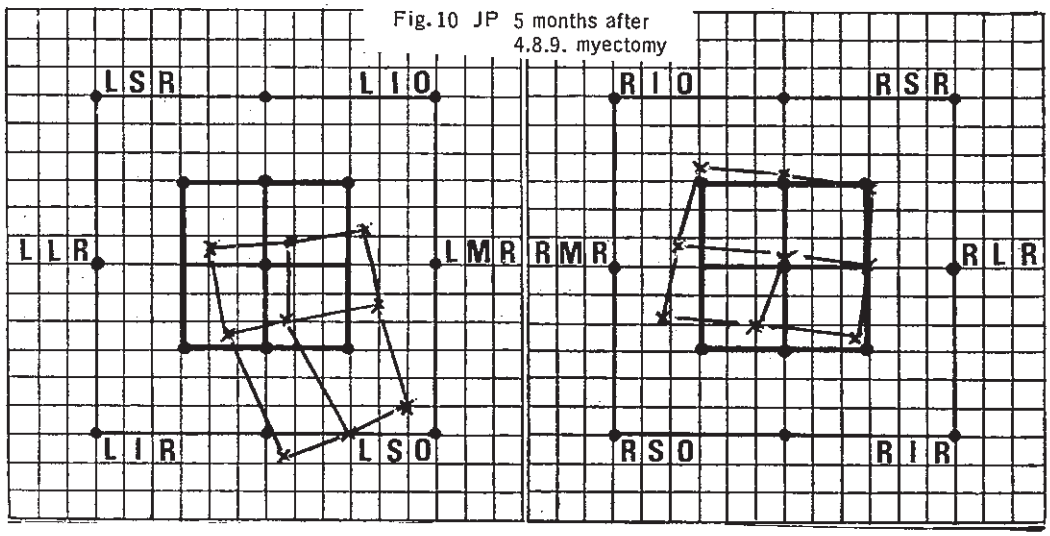


Fig. 10 JP 5 months after 4.8.9. myectomy

Sagittalisation of the right superior oblique combined with a left inferior rectus recession of 4mm was carried out.

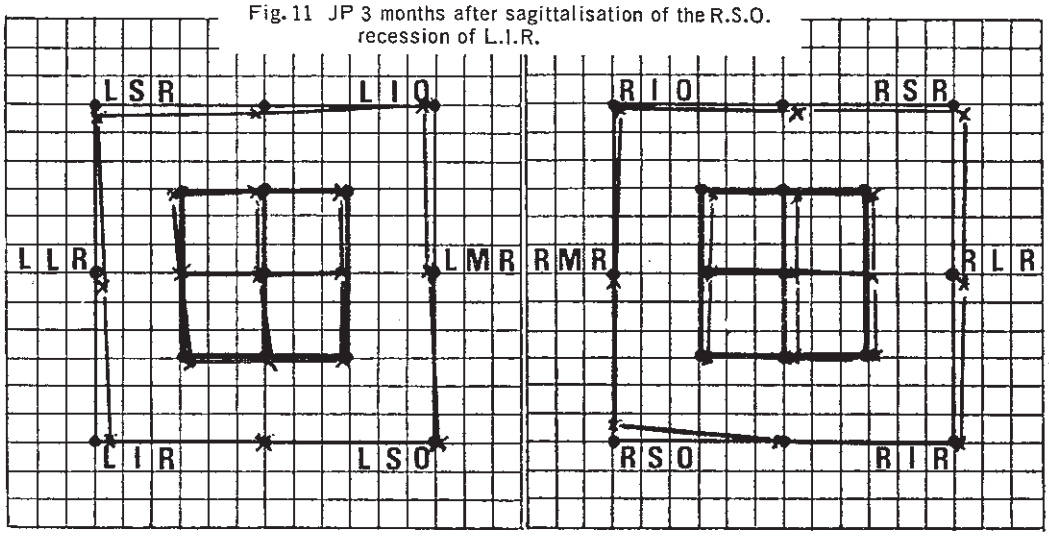
The immediate post-operative chart showed a constant small right hypotropia of 10Δ. Constant diplopia was present.

As the oedema and swelling decreased, so did the hypotropia.

2 weeks after operation, the hypotropia measured 5Δ, and single vision was obtained in the primary position. JP was instructed to try to control the diplopia and continued to practice exercises at home.

3 months after surgery the Hess Chart (Fig.11) was almost perfect, there was orthophoria for distance and a small exophoria for near, with binocular single vision in all directions of gaze.

Fig. 11 JP 3 months after sagittalisation of the R.S.O. recession of L.I.R.



The simple procedure of advancing the paresed muscle appears to be the treatment of choice in partial IV nerve palsy. It may well be the treatment of choice for all oblique muscle weakness.

Acknowledgment

I would like to take the opportunity of thanking Professor Hollows, Dr. Paul Beaumont and the orthoptists at the Prince of Wales Hospital for their help and encouragement in preparing this paper.

ALTERNATING SURSUMDUCTION: THREE CASE HISTORIES

Diana Craig

Presented in Adelaide, April 1974.

Alternating sursumduction presents the most fascinating and challenging problems that orthoptists encounter. When it is the only disorder, it is no obstacle to binocular vision; it is evident on dissociation only, disappearing when both eyes are uncovered. But it commonly occurs together with other motor anomalies, the most usual being latent nystagmus and the A phenomenon (Lang 1968). Signs of alternating sursumduction (=ASD) and the other anomalies present may be marked or very slight , often affecting one eye more than the other. The picture may be further complicated by refractive error and temperament.

Our problem is to distinguish the signs of ASD and nystagmus, which we cannot treat, from secondary effects which we may be able to reduce by orthoptics and accompanying disorders which may be corrected by glasses or surgery. The following cases illustrate some of the phenomena encountered, and methods of examination which are sometimes helpful.