FOURTEEN PATIENTS WITH BILATERAL SUPERIOR OBLIQUE DEFECT AND CONVERGENCE EXCESS CORRECTED BY SAGITTALIZATION

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Abstract
The nomenclature of this type of strabismus is mentioned. An indication of the age of onset and incidence is given. Reactions to the loss of superior oblique muscle function are stated. Factors common to all patients as well as the orthoptic investigations, orthoptic treatment and explanation of surgery to the patient's parents, are given. Surgical results and change of symptoms are noted.

Key Words
Superior oblique, convergence excess, esotropia, bilateral, sagittalization.

Introduction

A procedure used by Professor F. Hollows to correct traumatic superior oblique palsy has been described by Jeanette Yap [1]. This procedure was used by Mr T. Roper-Hall in Birmingham to correct superior oblique defects in fourteen children, whose cases are presented here.

In each case, the surgical procedure was bilateral and done in two stages. Firstly, the superior oblique was split from its insertion to, or almost to the trochlea, the lateral portion being detached and inserted under the resected lateral rectus. One month later, bimedial rectus recession was made, to correct remaining convergence.

This method was chosen because it was felt that weakening a sound muscle, ie, the inferior oblique, was not physiologically sound as it did not influence the deviation where it was most troublesome.

It is hoped that this report will be useful as the condition is by no means uncommon and to date conventional treatment has not been satisfactory.

Classification

The condition under discussion has been known by a variety of names – constant esotropia with accommodative element, intermitten esotropia with convergence excess (from 1947 onwards), or most commonly, convergence excess [2].

Whatever the name given to this deviation, there are variations. It may be unilateral or alternating; it may vary in degree for near vision depending on the level at which the fixation target is held and the clarity of vision required by the viewer.

It is commonly agreed that this type of deviation is demonstrable under the age of three years. When decompensation takes place before this age, it is likely that the deviation will be present for near and distance viewing, because of the lack of strong binocular functions and the ease with which suppression is invoked.

Investigation

Lloyd [3] gave 80% of children under the age of ten years as having a vertical component for the cause of their angle of deviation. In the same year Wesson [4] attributed 38% of 369 squinting patients to a superior oblique malfunction.

If one considers the main action of the superior oblique muscle, it is apparent that the deviation will be greatest on depression and for near viewing, for if the patient is tested looking down for distance, the deviation is almost always present.

A defect of the superior oblique muscle may show one of several characteristics and can also be

affected by other factors such as refractive error, facial structure and the desire for binocular single vision. The most likely variations are as follows:

1. Paralysis – congenital or acquired.
2. Definite weakness of all functions of the muscle.
3. Malfunction due to a) misalignment of the muscle, b) adhesions, c) displacement from the trochlea.

The patients in this study were considered to have misalignment of the muscle because binocular testing showed defective depression on adduction, whereas on uniocular testing the defective movement was less obvious.

The likely results of malfunction of the superior oblique muscle are:

1. Intermittent manifest convergence for near.
2. Intermittent manifest convergence, greater for near than for distance.
3. Constant manifest convergence, greater for near than for distance.
4. Control of the deviation by loss of accommodation, (usually with older patients).

All fourteen patients were in groups 1 – 3.

Common Factors

1. Convergent deviation greater for near than distance.
2. 'V' phenomenon.
3. Defective depression on adduction.
4. Updrift of the adducted eye in the uniocular field, some showing this in the binocular field as well.
5. Abnormal head posture, greater for near and after testing.
6. Dislike of looking down.
7. Fixation with the more affected eye as far as could be assessed.
8. Insecure, fidgety children.
9. Central fixation on visuoscopic examination.
10. General health good.

There were however a number of widespread general problems such as dislike of close work and of going down stairs, irritability and poor co-ordination, intermittent diplopia, asthma and insecurity, the latter especially in the younger children.

Examination: ophthalmic

Ocular examination revealed normal fundi in every case. Four patients were hypermetropic, two of these having astigmatism and receiving optical correction. There was no one precipitating factor, and in most cases, none was known. Photographic evidence showed in each case that an abnormal head posture was present from early infancy.

Examination: orthoptic

Histories revealed onset, intermittent at first, between the ages of twelve months and seven years. Family histories gave two patients with similarly affected sibs, and there were three with relatives who had coloboma. All the patients had greater convergence for near than for distance. Only four were controlled for distance, and only one controlled above the midline for near. Twelve had convergence with hypertropia in the primary position, the other two showing hypertropia in adduction only.

All the fourteen had updrift and defective depression of the adducted eye, "V" phenomenon, and dislike of testing in depression. Nine showed downdrift of the abducted eye. In no patient was stereoscopic vision demonstrable. In all cases synoptophore measurements showed increased torsion on depression. Each of the older patients was tested on the Lees screen.

Treatment

All patients were given glasses where applicable and occlusion to equalise visual acuity, to achieve diplopia, and to achieve alternation. Before operation, parents were told that the surgery was in two parts, the first to correct torsional and vertical deviation; the eyes would not look better after the first operation though the head should be erect. The second operation was to correct the horizontal deviation.

Plano spectacles where necessary were supplied to allow use of Fresnel prisms after the first operation.

Post-Surgical Findings

Following the second operation it was expected that binocular single vision for near and distance, without an abnormal head posture, would be present. Examination showed:

9 out of 14 had demonstrable binocular single vision, 2 had doubtful binocular single vision, 3 had no demonstrable binocular single vision.

Thirteen out of the 14 patients attained a normal head posture and all were symptom-free. The parents remarked that generally the children were more confident, better-tempered and experienced fewer problems with close work than previously.

Conclusion

This surgical procedure has shown, in the fourteen cases examined, a considerably improved success rate when compared to other procedures as it corrects the deviation in the area where it is most troublesome.

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A METHOD OF VISION TESTING OF SEVERELY HANDICAPPED CHILDREN

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Key Words
Vision testing, handicapped children

Six symbols from the first communication board used by handicapped children at the Waverley Special School (Victoria) were chosen and presented in varying sizes (6/60 – 6/9) in the manner of single Sheridan Gardiner optotypes. The identification board was large enough to be rested across the arms of a wheel chair, the symbols on it being well separated to facilitate pointing with finger or headpointer.

63 of the 64 handicapped children tested were able to respond to these familiar objects and thus an estimate of their visual acuity was possible. This failure rate of less than 2% is compared with 16% failure on the conventional tests by the same group of multiple handicapped children. The method is simple, quick and successful.