OPERATIONS ON ONE HUNDRED CASES OF CONVERGENT CONCOMITANT SQUINT*

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THE following series of 100 consecutive cases operated on for convergent concomitant squint is recorded to show the degree of success which can be obtained by operation combined with orthoptic treatment. The patients were children from 6 to 14 years old, referred from the Salford Education Committee Clinic and operated on at the Salford Municipal Hospital. It is estimated that in the orthoptic clinic approximately 45 per cent. of concomitant squint cases are of the accommodative type and respond satisfactorily to treatment by glasses and orthoptics without operation. Of the rest, less than 1 per cent. suffer from conditions such as nystagmus, rendering them unsuitable for operation. This series is representative of the remainder, though some of the cases on the waiting list were operated on before their turn, owing to their having almost reached the school-leaving age, and one of the cases of inferior oblique overaction was given priority owing to its clinical interest.

Of the 100 cases, it was found that binocular vision at the angle of squint was obtained prior to operation in 45 cases. These cases are referred to as treatment cases. The remaining 55 cases are referred to as cosmetic cases. In 19 of these no attempt at occlusion or orthoptic treatment was made, as the children were either at evacuated schools, rendering repeated attendances impossible,

<i>Cosmetic Cases</i>			<i>Treatment Cases</i>	
Total Cases	No attempt at Orthoptic Treatment	Occlusion failed to improve vision	Vision satisfactory in each eye. No binocular vision	Satisfactory Binocular vision at angle of squint
100	19	22	14	45

or had almost reached the age for leaving school. In 22 cases occlusion failed to produce satisfactory vision in the amblyopic eye. In many of these, probably in most, occlusion was not

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satisfactorily carried out by the patient. The vision was considered satisfactory if there was not more than $1\frac{1}{2}$ lines difference between the two eyes on the Snellen Type. Of the remaining 14 cases the vision in both eyes was satisfactory, but binocular vision at the angle of squint could not be established.

The operations were carried out under general anaesthesia, and the following table shows the results obtained. The post-operative angle was measured without glasses being worn.

<i>Cosmetic Cases</i>	<i>Eyes straight angle 0 to +5°</i>	<i>Angle +6° to +10°</i>	<i>Angle +11° to +25°</i>	<i>Over-correction</i>
55	51	2	2	0
<i>Treatment Cases</i>				
45	41	3	2	0
<i>Total Cases</i>				
100	92	5	4	0

The operations carried out in the first place were advancement and recession 48, bilateral recession 32, bilateral advancement 6, single advancement 8, single recession 4, single recession combined with myectomy of inferior oblique 1, myectomy of inferior oblique 1.

In the group of 92 cases, straight after operation a second operation had been found necessary in six cases. In three of these the original angle was 35 deg., and it was found that a double operation did not usually correct the angle by more than 30 deg. A single recession operation gave a maximum correction of 15 deg. The scleral sutures were never inserted more than 5 mm. behind the original insertion of the internal rectus tendon.

In the group of five cases with end results from 6 deg. to 10 deg. it is likely that a small additional operation would have rendered at least most of these cases straight. In the three treatment cases an additional operation would have been considered worth while, but it was not found possible to persuade the parents that it was necessary.

There were four cases with a residual angle of 10 deg. to 25 deg. In three of these the operation performed was obviously insufficient to correct the total angle. In one case anaesthetic difficulties necessitated stopping operating after a single operation when a double operation was planned. In the second case the original angle was 40 deg. In the third case the original angle

was 30 deg., but the left eye was 14Δ higher than the right. Advancement of the left ext. rectus and re-attachment, 2 mm. above the level of the original insertion, reduced the angle to 15 and the height to 5Δ . Unfortunately, the child's mother was satisfied with the result and refused to consider a second operation, in spite of the fact that this was a treatment case and we hoped for a complete cure in view of the result of the first operation. The last case differed from all the others in its response to operation, and is described in detail below.

The patient was a girl aged 12 years, suffering from left concomitant convergent squint of 20 deg. Her mother and one sister suffered from squint, and at the first interview her mother stated that the squint had started at the age of 18 months, following a "bang on the head." Her home conditions were unhappy.

R.V. with glass (+3.00 sph. +1.00 cyl. 90°) = 6/9

L.V. ,, ,, (+2.00 sph. +2.00 cyl. 90°) = Fingers.

After a left advancement of external rectus she was discharged with her eyes straight, and they remained straight until, during a family row two months later, her grandmother pushed her so that the door-knob caught her left eye and gave her a "black eye." The squint recurred, and the angle was 20 deg. as before. Subsequent operation L. recession and R. advancement failed to effect any improvement.

This would appear to be a case of psychological squint. One other case where psychological upset influenced the squint was noted during this series of cases, but the case is not included in the statistics, as no operation was performed. The patient was a girl aged 11 years, suffering from an alternating concomitant squint of 30 deg., which started when she was three years old. There was no family history of squint. Her vision with a +2.00 sph. +2.00 cyl. axis 90° was 6/6 in each eye. The child vomited after each treatment on the synoptophore, and no binocular vision was obtained. On admission to hospital the patient vomited repeatedly, and when she was brought to the operating theatre the squint was found to have disappeared. When seen two weeks after discharge the squint had recurred at its original angle. Nine months later the squint was only present intermittently, and there had been no vomiting since the treatment was discontinued.

In contrast to these two cases are two cases referred from the Child Guidance Clinic for operation, as the children were getting inferiority complexes resulting from the presence of concomitant squint. Both of these cases responded normally to operation.

Five treatment cases were failures owing to the presence of an appreciable residual deviation. Of the remaining 40 cases 28 were able to converge to +25 deg. or over, 8 were able to converge to +20 deg. or over, 2 to +15 deg. only, and 2 moved out of the

Salford area and did not attend for satisfactory post-operative orthoptic treatment.

TREATMENT CASES

Total Cases	Residual angle	Straight Converging to at least 25°	Straight Converging to at least 20°	Straight Convergence below 20°
45	5	28	8	4

Of the 45 cases, 33 were found to be cured in accordance with the severe standard proposed by the British Orthoptic Association.

Four cases in the total series of 100 cases were complicated by difference in height of the two eyes. In two of these over-action of the inferior oblique was present, and operation on this muscle, combined with recession of the internal rectus in one case, resulted in a cure in both. One other case where the height present was reduced by altering the level of re-insertion of the muscle has already been described. In the fourth patient 3 deg. of height followed the operation—recession and advancement. This was the only patient in which troublesome post-operative diplopia occurred, and this was present for 12 months. The difference in height subsequently disappeared and normal binocular vision was obtained, so that the case is included in the list of satisfactory cases.

Marked differences in muscle thickness were found at the time of operation, but it was not found possible to demonstrate any appreciable difference in the response to operation depending on this factor. The increased thickness of muscle found in some children under general anaesthetic may be partly due to individual idiosyncrasy in the response to anaesthetics. In many cases some degree of puffiness of eyelids is present at the end of the anaesthetic, and on dissecting the orbital contents the tissues are found to be slightly oedematous. In exceptional cases, on making the incision over the internal rectus, the conjunctiva is found to be very much increased in thickness. In one case in this series this was found, and the condition was thought to be due to an abnormality of the conjunctiva. Accurate closure of the conjunctiva at the end of the operation was difficult and the end result not very satisfactory.

No cases of granulomata were seen, but in three cases retained black silk advancement sutures incompletely removed by the nurse were subsequently removed without difficulty. No rise of temperature and no undue reaction necessitating prolongation of stay in hospital took place in any patient.

We were fortunate in having the co-operation of the Medical Superintendent of Hope Hospital, so that a small ward was set aside for squint operations. All the children in the ward had their operations on the same morning and were more content to submit to the necessary discipline, as they were all at the same stage of treatment. The squint ward had the additional advantage of permitting us to keep a child with a residual angle for a second operation where necessary—a procedure not always possible in a hospital with a limited number of beds and a large number of acute cases requiring admission.

Summary

1. The result of operative treatment for convergent concomitant squint in 100 cases unsuitable for orthoptic treatment alone is described.

2. Ninety-two of the cases were rendered approximately straight by operation and orthoptics.

3. One patient considered to be a case of psychological squint was unimproved with repeated operation.

4. Of the seven remaining relatively unsatisfactory cases, it is likely that most would have responded to further operation.

5. Of 45 treatment cases with binocular vision at the angle of squint, 33 satisfied the conditions of cure according to the proposed standard of the British Orthoptic Association.

6. Greater co-operation of the parents in allowing a further operation in cases with a residual angle and in bringing the children for post-operative orthoptic treatment would have reduced the number of patients classed as failures from the point of view of normal binocular vision.

A SIMPLIFIED EXTERNAL DACRYOCYSTO- RHINOSTOMY *

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IN operations designed to establish a short circuit between the lacrimal sac and the nasal cavity, the main efforts have been directed towards establishment of an opening between the two which will not cicatrize and become stenosed. To this end, flaps from the mucuous membrane lining the sac, the nose, or both have

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