RECESSION OF THE INFERIOR OBLIQUE*

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Introduction. Vertical imbalance of the eyes related to abnormalities of the inferior oblique is receiving ever-increasing attention, and the accumulation of the results of surgical intervention for the cure of the condition already enables an opinion to be offered as to the effectivity of such treatment.

Overaction of the inferior oblique has interested surgeons for many years, and in certain types of case its cause is still in doubt. Particularly is this so in its relationship to the horizontal squints in children. Doubtless many cases of overaction are due to a paresis of a superior oblique or a superior rectus, but there still remain a number which cannot be explained so readily. The writer tends to the belief that the latter are partly due to a compensatory overaction of the inferior oblique in an endeavour to abduct the eye to counteract excessive convergence by the internal rectus, and probably linked up with a low-grade masked paresis of the external rectus.

It has been the custom to correct the horizontal element in a squint and so far as possible allow the vertical component to right itself, perhaps with the aid of orthoptic exercises. That this procedure is incorrect receives confirmation from many authorities including Spaeth, Gibson, Wheeler, Guibor, Dunnington, Hughes, Wagman, Prangen, Foster and Anderson. Anderson¹ found that 53 per cent. of convergent squints in children were associated with a vertical defect and that 30 per cent. were characterised by overaction of the inferior oblique. The writer reviewed the last 100 cases in his own clinic which required operation for a horizontal defect of convergent type, and found that 48 of them had a vertical defect in addition, which was sufficiently marked as to require operative correction.

It therefore appears to be essential that greater attention should be devoted to the vertical element in the convergent squints. Apart from the cosmetic improvement, which is often considerable, the writer is convinced that in correcting the vertical defect a better functional result is obtained, as the tendency to hyperphoria is eradicated.

Operations on the inferior oblique are not by any means a new thing, but it is only in comparatively recent years that a rational

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approach to the problem coupled with adequate investigation have led to more reliable results being obtained. Wheeler,² Wagman,³ Berens, Conrad and Loutfallah⁴ have resected the inferior oblique in cases of paresis of this muscle. White,⁵ Guibor,⁶ and Prangen⁷ have recessed the muscle to correct its overaction.

Tenotomy to reduce overaction of the inferior oblique has been practised for over a hundred years, but the operation has only been used scientifically during the last twenty to thirty years, mainly as a result of improvements in anaesthesia and surgical technique. The transconjunctival route for the operation of tenotomy of the inferior oblique is linked with the name of Guibor, but Landolt described it in 1885.¹¹ Banister¹² condemned the operation of tenotomy, and it must be conceded that it is only applicable in extreme cases of overaction of the muscle, and that no grading of the result can be obtained. The writer would also add that it deprives the eye of the torsion effect of the muscle. Duane tried a partial tenotomy of the muscle, but was not impressed with the results. The writer has performed this operation on several occasions, and finds that the results are unreliable.

White stated that the indications for reducing the overaction of the inferior oblique were:—

(1) To correct a secondary overaction of the inferior oblique caused by a paresis of the superior rectus of the fellow eye.

(2) To correct a secondary contracture due to a paralysis of the superior oblique of the same eye.

The writer would like to add a further indication, *viz.*, overaction of the inferior oblique associated with a horizontal squint, especially convergent in type, and not always definitely due to paresis of a vertically acting muscle.

In consequence of the unreliability of partial tenotomy of the muscle, and the fact that a full tenotomy could not produce a graded result, attempts were made to recess the muscle. This operation has now been performed by several surgeons, but the number of cases reported is still comparatively small. Despite this the results are so far encouraging. White, Guibor and Prangen have described the technical details of the operation, but do not offer many case-reports.

TECHNIQUE

The surgical approach to the inferior oblique may be either through the lower lid, or by the transconjunctival route. For recession of the muscle the latter method is preferable, as it gives a much better access to the insertion of the muscle, and enables a resection or advancement of the external rectus to be carried out at the

same time, as is so often required. Both Landolt and Guibor favour this approach.

Guibor and White recessed the inferior oblique in such a way as to bring the new insertion further forwards and to some extent downwards, *i.e.*, a true recession as the insertion is made to approximate to the origin. Prangen⁷ placed the new insertion 6 to 7 mm. behind the insertion of the external rectus and on the same horizontal line with the latter.

The writer attempted a series of recessions adopting the technique of Prangen, Guibor and White, but found that the effect was very variable and often almost negligible. In consequence the modification described below is suggested. The results of some of the earlier cases were not entirely satisfactory, and this was found to be due to under-correction, *i.e.*, insufficient recession. In the later cases the increased recession proved adequate to correct the defect.

In the main the operation suggested is that of Prangen and Guibor, the transconjunctival route is used, and the eye is rotated upwards and inwards, and maintained in that position by a silk traction suture inserted through the bulbar conjunctiva near the outer limbus. It appears to be essential to free the muscles from Tenon's capsule in order to give an uninterrupted view of the field of operation and prevent confusing post-operative adhesions. If operation is also required on the external rectus this is detached and allowed to recede into the wound, being retained by sutures. Otherwise it is held upwards out of the way by a squint hook or retractor.

The inferior oblique muscle is then located by Guibor's method with a squint hook, and the value of freeing Tenon's capsule fully is then appreciated, as there is less tissue to cause confusion. When the oblique has been lifted up into the wound it is cleared of all extraneous tissue, and the check ligament attaching it to the external rectus is divided. The muscle is then followed up to its insertion, which should be identified with certainty, and a muscle clamp, *e.g.*, Prince's forceps, applied to the tendon close to the insertion in the sclera. Then tendon is then divided. Two catgut sutures are passed through the end of the muscle, one at each corner, and secured with a "whip stitch," and the muscle clamp removed. The sutures are then passed through the superficial layer of the sclera and each one tied separately, so that the muscle is anchored in position. The suturing to the sclera is done in such a way that the knots are one above the other, causing the end of the muscle to be spread out flat with its edge vertical. This seems to give a neater result than the single stitch of Prangen. The conjunctiva is closed, after reattaching the external rectus in

the appropriate cases, using a continuous silk suture. This type of suturing is quite adequate, and renders its removal very much easier, especially in children, than interrupted sutures.

The position on the sclera to which the muscle is attached is further forward than that suggested by Guibor and Prangen. The amount of recession required depends on the pre-operative investigation and measurements. For a full recession the writer has placed the new insertion of the muscle immediately inferior to the insertion of the external rectus, but for lesser effects the muscle may be inserted at varying distances behind this point, but not more than 4 mm., as beyond this the recession appears to be inadequate and unreliable. The line of recession for a graded result is posterior to that for a full recession, and is kept horizontally just below the lower border of the external rectus.

To illustrate the positions for insertion of the left inferior oblique.

It will be seen therefore that, in spite of what Guibor and Prangen advocate, the external rectus need not be detached in order to recess the inferior oblique.

SUMMARY

A review of the operative treatment for overaction of the inferior oblique is presented, and some of the disadvantages of present methods are discussed.

Indications for operation on the inferior oblique are given, particularly in cases of overaction of the muscle.

It is suggested that recession of the muscle is a practicable procedure, and is preferable to partial or complete tenotomy.

RECESSION OF THE INFERIOR OBLIQUE

295

CASES OF RECESSION OF INFERIOR OBLIQUE

No.	Age	Type of squint	Operation	Result
1	14	Conv. concom. squint 35° L.E., overaction L.I.O.	L.E.: 5 mm. recess. int. rect. 10 mm. resect. ext. rect. 9 mm. recess. inf. oblique.	Angle of squint + 5° overaction of inf. oblique corrected.
2	5	Conv. concom. squint 25° L.E., overaction L.I.O.	L.E.: 5 mm. recess. int. rect. 8 mm. resect. ext. rect. 6 mm. recess. inf. oblique.	Angle of squint 0° overaction of inf. oblique corrected.
3	5	Conv. concom. squint 30° L.E., overaction L.I.O.	L.E.: 5 mm. recess. int. rect. 10 mm. resect. ext. rect. 9 mm. recess. inf. oblique.	Angle of squint + 5° overaction of oblique corrected.
4	8	Conv. concom. squint 35° L.E., L/R 7, bilateral overaction I.O.	L.E.: 5 mm. recess. int. rect. 10 mm. resect. ext. rect. 8 mm. recess. inf. oblique.	Angle of squint 0° L/R 2. No overaction L.I.O. R.I.O. still overacting.
5	7	Conv. concom. squint 35° R.E., overaction R.I.O.	R.E.: 5 mm. recess. int. rect. 10 mm. resect. ext. rect. 6 mm. recess. inf. oblique.	Angle of squint + 5° overaction of R.I.O. corrected.
6	8	Conv. concom. squint 25° R.E., R/L 5., overaction R.I.O.	R.E.: 5 mm. recess. int. rectus. 10 mm. resect. ext. rectus. 8 mm. recess. inf. oblique.	Angle of squint + 5° overaction of inf. oblique corrected.
7	14	Conv. concom. squint 35° R.E., R/L 15., overaction R.I.O.	R.E.: 5 mm. recess. int. rectus. 10 mm. resect. ext. rect. 6 mm. recess. inf. oblique.	Angle of squint + 5° R/L 5. Overaction of inf. oblique corrected.
8	41	R/L8., overaction R.I.O. paresis R.S.O.	R.E.: 7 mm. recess. inf. oblique.	R/L 0° overaction of inf. oblique corrected.
9	5	Overaction L.I.O. paresis L.S.O.	L.E.: 9 mm. recess. inf. oblique.	Angle of squint 0° overaction of inf. oblique corrected.
10	6	Conv. concom. squint 25° L.E., L/R 7., overaction L.I.O.	L.E.: 5 mm. recess. int. rect. 10 mm. resect. ext. rect. 9 mm. recess. inf. oblique.	Angle of squint + 5° L/R 0° overaction of inf. oblique corrected.
11	7	Conv. concom. squint 5° bilateral overaction of inf. obliques.	R.E.: 8 mm. resect. ext. rectus. 9 mm. recess. inf. oblique. L.E.: 9 mm. recess. inf. oblique.	Angle of squint 0° 0/0 No overaction of inf. obliques.
12	7	Conv. concom. squint 30° R.E., overaction of inf. oblique.	R.E.: 5 mm. recession int. rectus. 10 mm. resection ext. rectus. 8 mm. recess. inf. oblique.	Angle of squint + 3° no overaction of inf. oblique.

Evidence is produced that the position for the new insertion of the inferior oblique is important, and that the positions already described for recession of the muscle do not give reliable and accurate results.

The results of cases are given.

REFERENCES

1. ANDERSON, J. RINGLAND (1947).—*Brit. J. Ophthalm.*, Monograph Suppl. 12.
2. WHEELER, J. M. (1934).—*Trans. Amer. Ophthalm. Soc.*, 32.
3. WAGMAN, O. H. (1945).—*Amer. J. Ophthalm.*, 28, 1226.
4. BERENS, CONRAD, LOUTFALLAH (1943).—*Ibid.*, 26, 528.
5. WHITE, J. W. (1943).—*Ibid.*, 26, 586.
6. GUIBOR, G. P. (1944).—*Ibid.*, 27, 254.
7. PRANGEN, AVERY DE H. (1947).—*Ibid.*, 30, 1161.
8. HUGHES, W. L. (1944).—*Ibid.*, 27, 1123.
9. SPAETH and GIBSON (1948).—*Ibid.*, 31, 976.
10. DUNNINGTON, J. H. (1929).—*Trans. Amer. Ophthalm. Soc.*, 27, 277.
11. LANDOLT (1885).—*Arch. d'Ophtal.*, 5, 402.
12. BANISTER, J. M. (1925).—*Trans. Amer. Acad. Ophthalm. and Oto-laryng.*, 30, 160.

STATISTICAL DATA OF MY CATARACT OPERATIONS PERFORMED WITH A NEW SUTURE OF THE SCLERA

BY

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BUDAPEST

WHEN studying the history of cataract operations we can see that this most important and most frequent of eye operations has undergone very great changes since the first operations, performed almost 2,000 years ago, up to now. This process, however, was not made equally, but in periods of progress more or less defined by certain great medical discoveries.

The oldest cataract operations which quacks performed during many centuries were depressions or reclinations. They were carried out by inserting a pointed, awl-like needle through the sclera into the eye, and pushing the opaque lens backwards or downwards into the vitreous body. As a consequence of this operation at least 60 per cent. of the patients lost their sight after a longer or shorter time owing to infection, haemorrhage into the vitreous and glaucoma. It often happened that sooner or later, after surgical intervention, the cataract either returned to its original place, or luxation into the anterior chamber took place.

In the middle of the eighteenth century Daviel found out that