Simultaneous surgical correction of dissociated vertical deviation, superior oblique overaction and A-pattern with associated horizontal strabismus: A case series

Sir,
In patients with dissociated vertical deviation (DVD), laterality, symmetry, and comitance are vital factors for deciding the appropriate surgical management; associated superior oblique over action (SOOA), if present, results in incomitant DVD.
A retrospective review of the file records of all patients of DVD with SOOA with A-pattern horizontal strabismus who underwent bilateral superior rectus recession with PTSO with horizontal muscle recession, over a period of 3 years (January 2008-December 2010) at Dr. Shroff's Charity Eye Hospital was undertaken. Approval for the same was obtained from the Institute review board. The inclusion criteria were bilateral incomitant DVD with SOOA (DVD greater in abduction and least or not present in adduction), A-pattern ≥ 10 PD and associated primary position horizontal deviation ≥ 20 PD. Those patients with previous surgery on vertical/oblique muscle and with a follow-up of less than 3 months were excluded. Out of 14 files reviewed, 4 patients who fulfilled all the criteria were finally included for analysis.

Pre-operative patient details and orthoptic data, details of the surgery undertaken and post-operative results were collected from the records, details of which are summarized in Table 1. All patients had undergone bilateral superior rectus recession with PTSO along with horizontal muscle recession as a single stage procedure. With this combined approach, A-pattern decreased from 26.25 ± 6.29 PD (range 20-35 PD) pre-operatively to 8 ± 2.94 PD (range 5-12 PD) post-operatively. The average collapse in the pattern was 18.25 ± 7.41 PD (range 12-28 PD). DVD in the primary position (average of both eyes) decreased from 11.37 ± 4.75 (range 6-20 PD) to 5.5 ± 2. (range 2-8 PD) while DVD asymmetry reduced from 5.25 ± 2.5 (range 2-4 PD) to 3 ± 0.82 (range 2-8 PD).

The triad of A-pattern exotropia, bilateral SOOA and DVD had been first reported as early as 1966, though the associated incomitance had not been mentioned. The usual approach for such cases is to perform a 2 staged procedure; DVD and A-pattern in the first stage and second stage for horizontal deviation. Mc Call and Rosenbaum in 1991 for the first time described surgical weakening of both superior rectus and superior oblique for incomitant DVD. Velez in their study also recommended that patients with A-pattern measuring 12 PD to 20 PD require superior oblique weakening in combination with superior rectus recession. We found good surgical results in our series of patients who underwent single step combined surgery for superior recti, superior oblique and horizontal recti in patients with this triad as well as associated horizontal strabismus. These results are in

Table 1: Pre-operative and post-operative details of four patients in our series

|                | Case-1 | Case-2 | Case-3 | Case-4 |
|----------------|--------|--------|--------|--------|
| Age (in years) | 17     | 17     | 20     | 8      |
| Sex            | Female | Female | Male   | Male   |
| BSCVA          | OD     | 6/9    | 6/9    | 6/9    | 6/6    |
|                | OS     | 6/6    | 6/9    | 6/9    | 6/6    |
| Horizontal deviation in primary gaze |        |        |        |        |
| Preoperative   |        |        |        |        |
| Postoperative  |        |        |        |        |
| A-pattern      |        |        |        |        |
| Preoperative   |        |        |        |        |
| Postoperative  |        |        |        |        |
| DVD            |        |        |        |        |
| Preoperative   | 12 PD/20PD/8PD | 8PD/6PD/2PD | 7PD/12PD/5PD | 10PD/16PD/6PD |
| Postoperative  | 4PD/7PD/3PD  | 5PD/4PD/1PD | 4PD/5PD/1PD  | 2PD/4PD/2PD   |
| SOOA           |        |        |        |        |
| Preoperative   | +3/+4  | +2/+4  | +2/+2  | +2/+2  |
| Postoperative  | 0/+1   | 0/+1   | 0/0    | 0/0    |
| Stereopsis     |        |        |        |        |
| Preoperative   | Absent | Absent | Absent | Absent |
| Postoperative  | Absent | Absent | Absent | Absent |
| Surgery undertaken |        |        |        |        |
| OD             | LR recession 8.5 mm, SR recession 5.5 mm, PtsO | LR recession 7.5 mm, SR recession 5.0 mm, PtsO | MR recession 5.5 mm, Sr recession 7.0 mm, PtsO | MR recession 4.0 mm, Sr recession 6.0 mm, PtsO |
| OS             | LR recession 8.0 mm, SR recession 9 mm, PtsO | LR recession 7.5 mm, SR recession 5 mm, PtsO | MR recession 5.0 mm, Sr recession 8 mm, PtsO | MR recession 4.0 mm, Sr recession 8 mm, PtsO |

BCSVA: Best corrected Snellen’s visual acuity (taken under standard conditions), Prism alternate cover test (in prism dioptres) to determine (a) Horizontal deviation: in primary position; 20 PD considered significant and (b) A-pattern—in upgaze and downgaze: 10 PD considered significant, DVD: Dissociated vertical deviation (prism uncover test) for incomitance (>7 PD in adduction, primary position and abduction) and asymmetry, SOOA: Superior oblique overaction (graded on 9 point scale +4 to -4), Stereopsis by Worth four dot test (under standard conditions), Surgery undertaken: LR: Lateral rectus, MR: Medial rectus, PTSO: Posterior tenectomy of superior oblique (posterior 7/8"), OD: Right eye, OS: Left eye, SR: Superior rectus, PD: Prism dioptres
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accordance that published by Velez et al. in their 14 patients with DVD with A-pattern of 12-20 PD.

To conclude, simultaneous weakening of the superior rectus, superior oblique and horizontal recti as a single stage procedure gives good surgical results and correlates well with pre-operative magnitude of DVD and A-pattern.

Suma Ganesh, Nidhi Khurana, Sumita Sethi, Priyanka Arora

Department of Pediatric Ophthalmology and Strabismology Services, Dr. Shroff’s Charity Eye Hospital, Daryaganj, New Delhi, 1Department of Ophthalmology, BPS Government Medical College for Women, Sonepat, Haryana, India.

Correspondence:
Dr. Suma Ganesh,
Department of Pediatric Ophthalmology and Strabismology Services, Dr. Shroff’s Charity Eye Hospital, Daryaganj - 110 002, New Delhi, India.
E-mail: drsumaganesh@yahoo.com

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