MANAGEMENT OF DECOMPENSATED HETEROPHORIA WITH SPECTACLES

Bruce Evans


TREATMENT OF MOTOR DEVIATION

- Motor deviation
  - Refractive correction / modification
  - Prisms
  - Eye exercises

- Binocular sensory adaptations
  - Phoria: foveal suppression is rare
  - Strabismus: consider both sensory & motor

MOTOR DEVIATION:
REFRACTIVE CORRECTION: OVERVIEW

- Mandatory in accommodative esotropia
- Also possible to treat exo-deviations with negative lenses & convergence excess with multifocals
- Limited by 4 factors
  - Angle of deviation
  - Refractive error
  - Accommodation
  - AC/A ratio

MOTOR DEVIATION:
REFRACTIVE CORRECTION: SPECIFICS

- Determine sphere that
  - Eliminates strabismus (no diplopia)
  - Eliminates FD on Mallett Unit
- Can check (2 mins) don’t adapt (North & Henson, 1985)
- Prescribe, try to reduce approx. every 3-6/12
- Negative adds (Chen et al., 2016) and bifocals/varifocals can work well

MOTOR DEVIATION:
REFRACTIVE CORRECTION: MYTHS

- Negative adds might cause myopia
  - Overminus lenses do not induce clinically significant myopic changes (Rutstein et al., 1989; Paula et al., 2009)
- Patient likely to adapt to the over-correction
  - If abnormal BV, tend not to adapt (North & Henson, 1985)
- Bifocals might reduce children’s ability to accommodate
  - Smooth muscle, 14D-3D=11D
  - BF don’t reduce amplitude of accommodation (Fresina et al., 2010)
- Accommodative (hyperopic) esotropia will not need glasses in later life
  - After 10 yrs, 97% still need Rx (Rutstein & Marsh-Tootle, 1998)

MOTOR DEVIATION:
REFRACTIVE CORRECTION: CASE STUDY: D1542

- 11/5/96, female, age 8y, 1 headache a fortnight
  - Wearing full cyclo plus (c. +2.00, R=L)
  - Cover test: D: 8 ∆ SOP N: 10 ∆ RSOT
  - With +2.00 add: N ortho

<table>
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<th>Date</th>
<th>May 96</th>
<th>July 96</th>
<th>Mar 97</th>
<th>Jun 97</th>
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<th>Apr 98</th>
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<tr>
<td>Add</td>
<td>+2.50</td>
<td>+3.00</td>
<td>+2.50</td>
<td>+2.00</td>
<td>+1.75</td>
<td>+1.50</td>
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11/5/96, female, age 8y, 1 headache a fortnight
- Wearing full cyclo plus (c. +2.00, R=L)
- Cover test: D: 8 ∆ SOP N: 10 ∆ RSOT
- With +2.00 add: N ortho
MOTOR DEVIATION:
PRISMATIC CORRECTION: OVERVIEW

• preferred treatment in small/moderate vertical deviations
• may also help in small/moderate horizontal deviations if not amenable to refractive modification or exercises
• limited by angle of deviation / cosmesis of prism

MOTOR DEVIATION:
PRISMATIC CORRECTION: SPECIFICS

• determine prism that
  – eliminates strabismus (no diplopia)
  – eliminates FD on Mallett Unit
• unlikely to adapt to prism if abnormal BV (North & Henson, 1985)
  • But can check (2 mins) don’t adapt (North & Henson, 1985)

MOTOR DEVIATION:
PRISMATIC CORRECTION: EVIDENCE

Small RCT (mostly esophoria) shows Mallett prism preferred to no prism “Based on our results, one would not expect to find a significant preference for prism prescribed according to Sheard’s criterion.”

Prism prescribed using Sheard’s criterion is no better than placebo for children with CI

RCT: Mallett prism improves reading speed

Presbyopes with CI have fewer symptoms with BI prism

Prismatic glasses (8BI) as effective as computer orthoptics at improving reading

Vertical prism improves postural stability, especially if chronic lower back pain

MOTOR DEVIATION:
PRISMATIC CORRECTION: MYTH

• patient might “eat up prisms”
  • prism adaptation usually abnormal in orthoptic anomalies (North & Henson, 1981)
  • exceptions can occur
  – e.g., myopes with decompensated esophoria
  – MKH Polatest method criticized for leading to “excessive amounts of prisms” (Lang, 1994)

MOTOR DEVIATION:
FUSIONAL RESERVE EXERCISES: OVERVIEW

• preferred treatment in small/moderate horizontal deviations, if px co-operative
  • Work well in those aged 11-19y, even if strabismic (Pickwell & Jenkins, 1982)
  • in exo-deviations improve ability to converge
  • in eso-deviations improve ability to diverge
  • try to assess progress using a method different to the treatment technique
  • there is some supporting evidence from RCTs
    – Ciuffreda & Tannen (1995)
    – Scheiman & Gwiazda (2011)
<table>
<thead>
<tr>
<th>Exercises v refractive management v prisms</th>
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</thead>
<tbody>
<tr>
<td><strong>Exercises</strong></td>
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<tr>
<td>Treatment</td>
</tr>
<tr>
<td>Lots of effort</td>
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<tr>
<td>Lots of patient time</td>
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<tr>
<td>Likely to make symptoms worse</td>
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<tr>
<td>If regression to the mean, waste of time</td>
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<td>Costs practitioner, patient, parent time</td>
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**Conclusions:** patient & parent should pick the management taking account of their priorities

**FUSIONAL RESERVE EXERCISES:**

- In-office VT better than placebo or home pencil push-ups (Scheiman et al., 2005; CITT, 2008)
  - [15min a day + 60min weekly > 15min a day]
- Systematic review supports VT for CI; lack of evidence for other disorders (Cacho Martinez et al., 2009)
- Treatment for 12+ weeks may be optimal (Scheiman et al., 2010)
  - But did not control for treatment dose
- Systematic review suggests in-office VT better than at home (Scheiman & Gwiazda, 2011)
  - But don’t seem to have controlled for treatment dose

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"We find comfort among those who agree with us – growth among those who don’t."

Frank A. Clark