Orthoptics for the busy optometrist

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PLAN
INTRODUCTION
INVESTIGATION OF INCOMITANCY
INVESTIGATION OF HETEROPHORIA
INVESTIGATION OF HETEROTROPIA
TREATMENT
CONCLUSIONS

Full handout of slides from www.bruce-evans.co.uk

OVERVIEW: CAVEAT
- >5% of patients seeing community optometrists have BV problems
- Always look for pathology:
  - Neuro-optometric checks
  - Pupils, discs, fields, strabismus, incomitancy, accommodation
  - Check these things regularly
- Don’t forget refraction
- Change management if not improving significantly
- Refer if still not improving
- Appropriate re-exam intervals (frequent)

Video clip source: CD-ROM in Evans (2007)
Pickwell’s Binocular Vision Anomalies, 5th edition

Duane’s syndrome
- Retraction of the globe on attempted adduction
- Contraction of medial and lateral recti
- Not all cases exhibit retraction
- Limitation of abduction and/or adduction in one or both eyes
  - Can look like a lateral or medial rectus palsy
  - May also be elevation or depression of affected eye
- Convergence is very often abnormal, even when adduction appears to be intact

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**Brown’s syndrome**
- Mechanical restriction of the superior oblique
- Looks like inferior oblique (IO) palsy
- But IO palsy is much rarer & has:
  - Secondary sequelae
  - In cyclo-deviation in primary position
  - Positive Parks three step test

**Incomitancies: conclusions**
- Some incomitancies are difficult to detect
  - If symptoms are suspicious, do cover testing in peripheral gaze
  - Testing for cyclo-deviations detects SO palsies
  - Refer new or changing incomitancies
  - In some long-standing cases, prescribing the prism required in the primary position may help

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**Signs of decompensated phoria**
- Symptoms
- Poor cover test recovery
  - Some information can be obtained from recovery movement, but
  - No data on sensitivity & specificity of this
  - Cover test dynamics are complex (Bevan & Thomson, 1990)

**KEY SIGNS OF DECOMP. PHORIA**
- Symptoms
- Poor cover test recovery
- **Aligning prism (FD test)**
- Low fusional reserve opposing phoria
  - Sheard’s criterion
  - Particularly useful for exophorias
- For esophorias, size and imbalanced fusional reserves are relevant
- For hyperphorias, size matters
ALIGNING PRISM: Mallett Unit
- aligning prisms/spheres to eliminate FD
- good foveal and peripheral fusion lock
- question set is important
  - ask if a line ever moves
    - Karania & Evans (2006)
  - for symptomatic phoria:
    - sensitivity 75%
    - specificity 78%
    - Jenkins, Pickwell, & Yekta (1989)

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Key Signs of Decomp. Phoria
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Strabismus: the bottom line for the busy optometrist

Is it new or changing?

A
terilaq

yes

no

do I know the cause?

yes

e.g., hypermetropia

no

REFER

can I correct it?

yes

e.g., Rx

no

REFER

any treatment needed?

yes

(probably not)

no

REFER

is it new or changing?

yes

no

any treatment needed?

yes

(probably not)

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REFER

can I correct it?

yes

e.g., Rx

no

REFER

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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
• 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-Topple, 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 ° S
    
    SOP N: 10 ° RSOT
  - with +2.00 add: N 4 ° RSOT
  - with +2.50 add: N ortho

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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

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 & Gelazos (2011)

DEVELOPMENT OF IFS: Primary goal

- To maintain the patient in an over-converged posture for 10-20 mins a day without them becoming bored
- To provide a variety of stimuli to help any benefit translate into everyday life

Declaration of interest
**PLAN**

**SYMPTOMS**

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**CONCLUSIONS**

- Always be on the lookout for pathology
- Refer if no significant improvement
- But pathology is very rare
- It is possible to treat amblyopia in optometric practice
- Patients will need good instructions & regular checks
- Many comitant ocular motor anomalies are treatable
- Plus for eso, minus for exo, & prisms are under-used treatments
- Vision therapy for convergence insufficiency is evidence-based, but there is a need for more research for other forms of vision therapy

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