Orthoptics for the busy optometrist: a user-friendly guide

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- Paid lectures & KOL/product feedback programmes:
- Lecture content always my own
- Author of Pickwell’s Binocular Vision Anomalies, editions 3-5
- i.O.D. Sales Ltd markets IFS orthoptic exercises, which the speaker designed, and for which he receives a small royalty
- Community optometric practice in Brentwood, Essex

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
- 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)

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CAUSES OF PARESES

- Diabetes
- Hypertension
- Stroke
- Aneurysms
- Temporal arteritis
- Tumours
- Multiple sclerosis
- Myasthenia gravis
- Migraine
- Trauma
- Thyrotoxicosis
- Toxic
- Iatrogenic
- Idiopathic

Underlined = more likely in elderly

Drugs and diplopia

- Suspect drug interaction if diplopia occurs shortly after starting new drug

Motility test

- Use reliable pen torch
- Check nose not occluding
- Really, three tests, so do three times:
  1) Observe corneal reflexes
  2) Cover test in peripheral gaze
  3) Ask about diplopia

- Beware of reports of diplopia
  - May break down (in view of target, distance, fus. res.)
  - May be variable
  - May be confused
  - Know the muscle actions (RADSIN)

Actions of superior muscles
**Primary & secondary deviations**

**SO palsy**
- Usually:
  - Hyper-deviation of affected eye, worse in down-gaze
  - Under-action of affected eye when looking down and in
  - More likely to have symptoms with reading than with distance
- But, may have secondary sequelae
- Avoid fitting multifocal spectacles or monovision

**Duane’s syndrome**
- Retraction of the globe on attempted adduction
- Co-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

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

**Incomitancies: conclusions**
- Some incomitancies are difficult to detect
  - 2/3 of diplopic hypertropic pxs OK on motility
- 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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DISSOCIATED HETEROPHORIA

fusional reserves → motor fusion → sensory fusion

COMPENSATED or NOT

KEY SIGNS OF DECOMP. PHORIA

- Symptoms
- Poor cover test recovery

<table>
<thead>
<tr>
<th>Grade</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>rapid and smooth</td>
</tr>
<tr>
<td>2</td>
<td>slightly slow/jerky</td>
</tr>
<tr>
<td>3</td>
<td>definitely slow/jerky but not breaking down</td>
</tr>
<tr>
<td>4</td>
<td>slow/jerky and breaks down with repeat covering, or only recovers after a blink</td>
</tr>
<tr>
<td>5</td>
<td>breaks down readily after 1-3 covers</td>
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<table>
<thead>
<tr>
<th>1st appt. mean (TP &amp; BE)</th>
<th>3.00</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st appt. difference (TP-BE)</td>
<td>2.00</td>
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</table>

- 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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Strabismus: the bottom line for the busy optometrist

MICROTROPIA: SUGGESTED DIAGNOSTIC CRITERIA

Motor Deviation: Refractive Correction: Overview

Full handout of slides from www.bruce-evans.co.uk
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 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: 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: 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 (Rickwell & 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
  – Cliffe & Tannen (1995)
  – Scheiman & Gwiazda (2011)

FUSIONAL RESERVE EXERCISES: COMPUTER ORTHOPTICS

• HTS
  • Wide range of vision therapy (USA)
  • For fusional reserves, amblyopia & much more (if wanted!)
  • In-office & at-home
• Orthoweb
  • Designed by Andrew Field
  • Patient “visits” web site for exercises
  • http://www.academy.org.uk
• BV Trainer
  • Designed by David Fleischmann
  • iPad or iPhone
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

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SYMPTOMS
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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 and minus for exo 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

Dr Optometry

In 2008 the Institute of Optometry launched a Doctor of Optometry degree in collaboration with London South Bank University
- 5 year part time professional doctorate
  - Year 1 has 13 taught days & 2 assignments
  - Year 2 has 8 taught days & 2 assignments
  - Years 3-5 are supervised doctoral research
  - Research most likely to be clinical, in practice
- "the ultimate HQ for UK optometrists"