

MANAGING STRABISMUS



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DIAGNOSIS AND MANAGEMENT



4 STEP MANAGEMENT of any strabismus patient

1. What is the diagnosis?
2. Is the vision normal?
3. Can we achieve binocular vision? (get rid of diplopia?)
4. Is the appearance satisfactory?

“Reclaiming Strabismus”

RF



What are the benefits?



- Look after and manage your own patients
- Take time with them, no need to rush in the middle of a busy clinic
- Chance to build a relationship with parents to try and help encourage compliance.
- Parents end up liking you more than the doctor
- Good way to make use of prescribing rights.

What can you do...?

- look after amblyopes
- Screen children
- Prescribe glasses (prisms)
- Pre-surgery measurements and testing



Definition of Amblyopia



- “a form of cerebral visual impairment characterised by abnormal neuronal numbers and connections in the visual pathway and cortex caused by a disturbance of vision during a sensitive period of development lasting up to the age of 7 years”

Hrisos, Clarke and Wright Ophthalmology 111(8), 1550-1556

- usually unilateral but may be bilateral.
- Presence of amblyogenic factor
 - Strabismus
 - Anisometropia
 - Deprivation ...3%
 - Ametropic...bilateral
- No other explanation for poor vision

Amblyopia vs. Suppression



– **Suppression** .. cortical inhibition of the visual sensations of one eye, in favour of those from the other eye, when both eyes are open.

– Occurs ONLY when viewing with both eyes.

Prevalence



It is the most prevalent visual disability in children...between 2.4% and 6.1% in children of 3-4 years. Choong, Lukman, Martin and Laws. *Eye* 2004 18, 369-375.

2-4% general population

Attebo, Mitchell, Cumming, Smith, Jolly, Sparkes. 'Prevalence and causes of amblyopia in an adult population'. *Ophthalmology* 1998;105:154-9



3.06% in adults... Vision Impairment Study, Victoria.

'Prevalence of amblyopia and associated refractive errors in an adult population in Victoria, Australia.' Brown, Weih, Fu, Dimitrov, Taylor and McCartney. *Ophthalmic Epidemiology* 2000, 7(4), 249-258

Management



- Questions?
- What to say to Parents
- Initial treatment method, duration
- Review
- What if it doesn't work? compliance
- What if it does? When do we stop
- Recurrence rate
- Side Effects of treatment
- Difficult scenarios
- When is it too late to treat?
- Screening



What to say to parents?



- First, you need to clearly explain to parents what you are trying to achieve.
 - Patching will *not* straighten their eye
 - Glasses may make the turn "worse"
 - When they take the patch off, their eye will turn
 - Clearly explain this is an ongoing treatment. Once the vision improves, it doesn't always mean the end of patching or visits.
 - We have until your child is 8 to make sure they can ...drive a car, fly a plane, whatever.

When to Review



- Usually review no sooner than 1/12 and no later than 4/12

Depends on:

- Visual acuity
- Age of child
- Hours of occlusion



Example 1: 3 year old + 6/24 + full time patching = Review in 1/12

Example 2: 6 year old + 6/12 + 2 hr occlusion = Review in 3/12

Practical Management Guidelines



VA 6/9	no treatment...review
VA = 6/12- 6/24	2-6 hours patching or Atropine every 2 nd morning
VA < 6/24	Full-time patching or atropine daily +/- optical penalization.

For the parents...

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At the outset be sure to explain....

- A “lazy” eye may mean one that turns (parents almost always use it this way) or one that doesn’t see.
- The two are not necessarily related and treating one does not fix the other.
 - Most parents believe patching will straighten the eye and that the size of the turn in some way equates with the level of vision.
- Stated aim is for good vision and straight eyes age 10.
- **Vision** is treated with glasses and patch.
- **Turn** is treated with glasses and surgery.

INFANTILE ET

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3 questions:

1. Is the patient binocular?
2. What is the potential for binocularity?
3. Are we going to do anything about it?

Four rules for vertical strabismus:

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1. Superior oblique palsy unless proved otherwise
2. Superior oblique palsies are congenital unless proved otherwise
3. Traumatic if not congenital
4. Investigate if not the above

History

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- Children usually present with an abnormal head posture.
- Adults often present at 30-40 years of age with vague history of intermittent diplopia when tired or drinking alcohol or first thing in the morning.
- Traumatic palsies know they were hit in the head and have torsional diplopia that is very troublesome

BHTT

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- **Purpose:** to differentiate a SO palsy from a contralateral SR palsy.
- Assumes the patient has a **single isolated** cyclovertical muscle palsy.
- A negative BHTT does not exclude the diagnosis
- A positive BHTT can be found in other situations such as inferior rectus restriction ie not specific

Parks MM. Isolated cyclovertical muscle palsy. Arch Ophthalmol 1958;60:1027-1035

TORSION

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How to measure:

- Double maddox rods,
- Zoran’s Torsionometer
- Synoptophore ,
- Maddox Wing
- Fundus exam,

Fourth Nerve Palsy

3 questions:

1. Is the patient binocular?
2. What is the potential for binocularity?
3. Are we going to do anything about it?

Once you are happy with the vision then consider binocular vision..

- Absent and irrecoverable



- Potentially recoverable



- Present



What can you do...?

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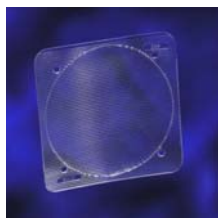
Management options:

- Prism
- Already wearing glasses
- Comitance
- Small angle

PRISMS

Suitable patients:

- binocular function
- smaller angles
- Comitant strabismus
- wear glasses



PRISMS

- How much prism can I give?
 - how tolerant is the patient
 - how keen is the patient to avoid surgery?

Horizontal 2-15[^]
Vertical 2-15[^]



What can you do...?

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PRE-OP MEASUREMENTS & BINOCULARITY

Why are these important?

1. need to know what angle to correct
2. risk of post operative diplopia

MEASUREMENT OF ANGLE

- Cycloplegic refraction
- With and without glasses
- Prism adaptation test
- Occlusion test – case study see next slide

Pre-op diplopia tests

- Binocular function – synoptophore
- Prism fusion range
- PAT/occlusion test

Binocular Vision

- **3 questions:**

1. Is the patient binocular? **NO**
2. What is the potential for binocularity? **ZERO**
3. Are we going to do anything about it? **NO**

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BOTOX

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Useful if...

1. excessive scarring from previous surgery
2. smaller angles
3. surgery undesirable
4. risk of post operative diplopia
5. over/under corrections post op
6. assessing residual lateral rectus function after VIth nerve palsy.