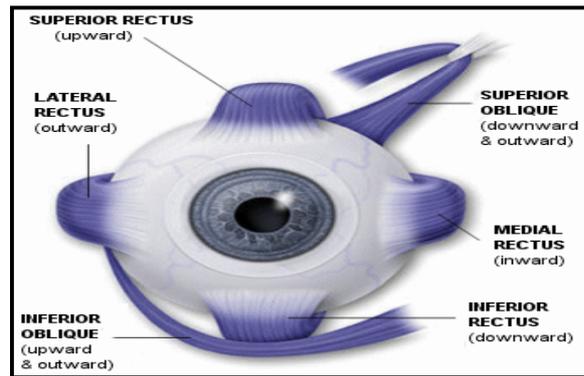


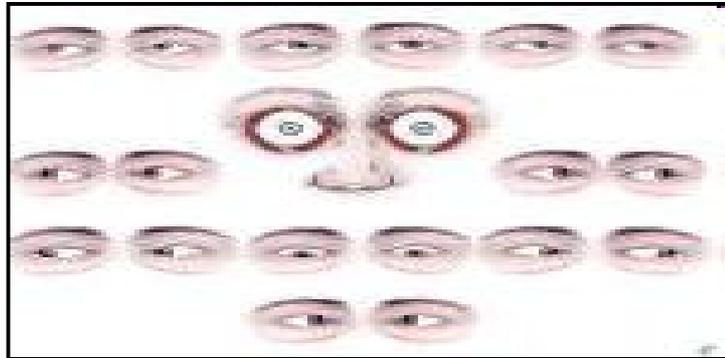
الحول عند الأطفال
د/ عمرو أبو عمارة
أخصائي طب وجراحة العيون
أستاذ مساعد قسم البصريات الطبية

DEFINITION : Squint is a disorder in which one eye misaligns with the other when focusing in a primary direction of gaze. It is an imbalance in the normal tone or coordination of one or more extra ocular muscle which results in a manifest deviation of the affected eye.

EXTRAOCULAR MUSCLES



CARDINAL GAZES



✓ CLASSIFICATION OF SQUINT ACCORRDING TO:

1. Direction of deviation:

- convergent (esotropia)
- divergent (exotropia)
- hypodeviation
- hyperdeviation

2. **Comitancy:**

- comitant or non paralytic
- incomitant or paralytic

3. **Constancy:**

- intermittent
- constant

4. **Onset:**

- childhood (congenital)
- adult (acquired)

5. **Unilateral or Alternating**

6. **Apparent (psuedostrabismus)**

Manifest (tropias)

Latent (phorias)

✓ **PSEUDOSTRABISMUS :**

Pseudoesotropia- in prominent epicanthal folds, high myopia



Pseudoexotropia- in hypertelorism



✓ ETIOLOGY :

- 1) High Refractive errors - High degree of uncorrected refractive error in children may cause deviation of the most affected eye.
- 2) Ocular conditions- causing visual axis obstruction eg. cataract, corneal opacities, retinoblastoma, ROP, macular disease etc.
- 3) Trauma
- 4) Lesions affecting the EOM's or CN's especially no. III
- 5) Systemic dis- DM, stroke, botulism

✓ PREDISPOSING FACTORS :

- ü General debility and lowered vitality
- ü Psychosis, neurosis and mental stress
- ü Inadequacy of fusional reserve
- ü Precision of job
- ü Advancing age

✓ CAUSES OF CHILDHOOD STRABISMUS :

- ü Cataract
- ü Corneal opacities
- ü ROP
- ü Retinoblastoma
- ü Traumatic brain injury
- ü Hemangioma near the eye during infancy
- ü Trisomy 18
- ü Congenital rubella
- ü Cerebral palsy

▼ SYMPTOMS :

- 1) Deviated eye
- 2) Abnormal head posture
- 3) Poor vision
- 4) Headache
- 5) Diplopia

▼ EXAMINATION :

1.HISTORY

a. Deviation: Age of onset

Description of deviation

Previous treatment

b. Pre and post natal factors

Growth and development

Family history of strabismus

2.GENERAL OBSERVATION.

Abnormal head posture

3. VISUAL ACUITY

a. Without glasses and with glasses

b. Near and distant vision

c. Amblyopia testing

4.MOTOR

a. Extra ocular movements.

b. Phorias or tropias

c. Near point of convergence and near point of accommodation.

5. MEASUREMENT OF DEVIATION.

- a. Distance and near
- b. Without glasses and with glasses(if worn)

6. SENSORY TESTS

- a. Worth 4 dot test.
- b. Stereopsis

7. FIXATION: monocular , alternating, binocular

8. SLIT LAMP EXAMINATION.

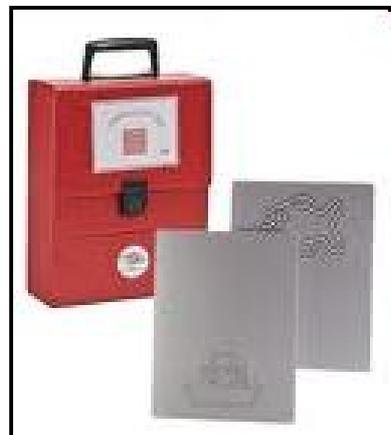
9 . FUNDUS EXAMINATION.

10 . CYCLOPLEGIC REFRACTION.

VISION TESTS

Ÿ In infants:

- fixation and following light
- Catford drum test
- preferential looking test
- Cardiff acuity test
- VER
- reflex responses



ŷ *In 1 to 2 yr old:*

- Boeck candy test
- Worth's ivory ball test

ŷ *In 2 to 3 yr old:*

- coin test
- miniature toys test
- dot visual acuity test

ŷ *In 3 to 5 yr old:*

- tumbling E test
- Landolt's C test
- Sheridan letter test



STEREOPSIS TESTS

ŷ Titmus stereo test

ŷ Random dot stereogram test

ŷ Random dot e test

ŷ TNO test

ŷ Lang test

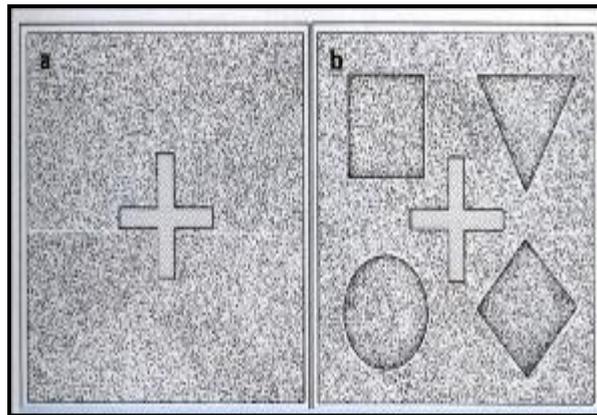
ŷ Frisby test

ŷ 2 pencil test

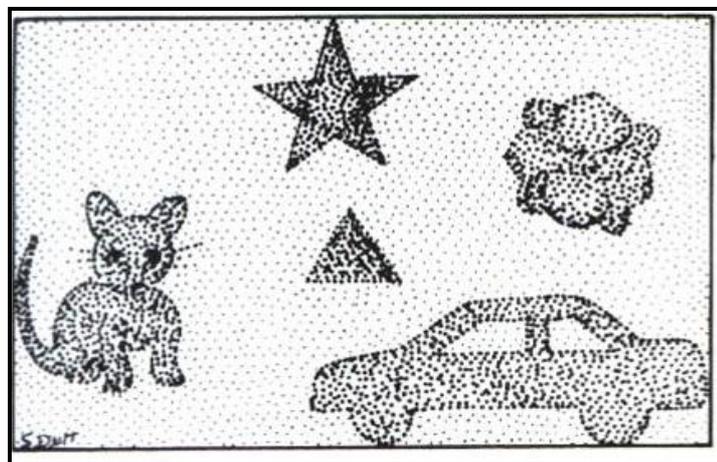
Titmus fly test



TNO test



Lang test



HEAD POSTURE

ŷ Incomitant squint

ŷ Position of head in which the eyes are in a position of no deviation or very small deviation so that fusion is possible.

ŷ 3 components:

-Chin

-Face turn

-Head tilt



TESTS TO MEASURE DEVIATION ANGLE

ŷ Hirschberg corneal reflex test

ŷ Krimsky's test

ŷ Cover test

ŷ Alternate cover uncover test

ŷ Prism bar cover test

ŷ Maddox wing test

ŷ Maddox rod test



MOTILITY TESTS

ŷ Ocular movements

- versions

- ductions

ŷ Near point of convergence- RAF rule

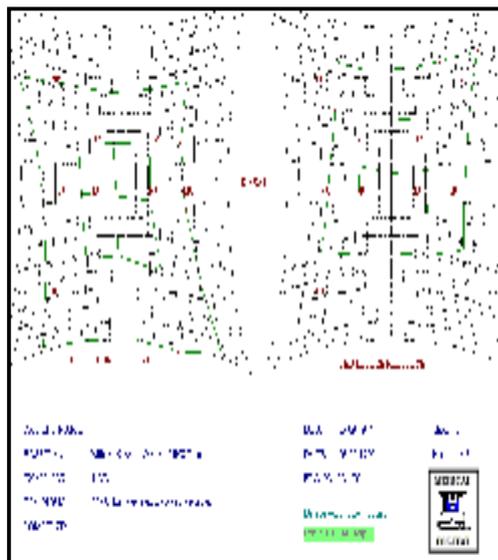
ŷ Near point of accommodation- RAF rule

ŷ Fusional amplitudes- with prism bar or synaptophore

DIPLOPIA TESTS

ŷ Hess test

ŷ Lees screen



AMBLYOPIA

- Unilateral or bilateral DOV due to form deprivation &/or abnormal binocular interaction for which there is no ocular or visual pathway pathology
- Most commonly due to squint, large uncorrected refractive errors etc.

- Treatment:

- occlusion
- penalisation



MANAGEMENT

- Refractive error correction by spectacle lenses, prisms, orthoptic exercises.
- Patching, reducing the VA or occluding the good eye so as to activate the deviated eye. This is only done in children with unilateral deviation.



- Medical :

- miotics in accommodative esotropia
- cycloplegics in accommodative esotropia
- levodopa, carbidopa in amblyopia
- botulinum toxin A (botox)



- Surgery:

- weakening procedures eg. recession, marginal myotomy, myectomy.
- strengthening procedures eg. resection, tucking, advancement.