

08- DD: Squint



Terms: 3 important terms for squint

- **Orthophoria:** Normally both eyes focused at same point
- **Squint:** Two eyes NOT directed at same point
- **Eso:** Eyes deviated in (Mnemonic: **Eso-IN**)
- **Exo:** Eyes deviated out (Mnemonic: **Exo-OUT**)
- **Pesuosquint:** Looks like squint but no squint
- **Phoria or Latent:** Squint on & off
- **Tropia or Manifest:** Squint visible all the time
- **Comitant:** Degree of squint same in all gazes
- **Incomitant:** Degree of squint

EsoTropia: Eye in & all time

EsoPhoria: Eyes in & not visible

ExoTropia: Eye out & all time

ExoPhoria: Eye out & not visible

Comitant EsoTropia: Eye in & all time & same squint amount in all gazes

Incomitant EsoTropia: Eye in & all time & squint amount changes in gazes

Basics points of squint

Nerve supply & Muscle actions

Cranial nerve	Muscle supplied	Primary action	Secondary action
3 rd Nerve (Oculomotor) Superior division	Levator palpebrae	Lid elevation	
	Superior rectus	Elevation	RAD & SIN
3 rd Nerve (Oculomotor) Inferior division	Medial rectus	Abduction	RAD & SIN
	Inferior rectus	Depression	RAD & SIN
	Inferior oblique	Elevation	RAD & SIN
4 th Nerve (Trochlear)	Superior oblique	Depression	RAD & SIN
6 th Nerve (Abducens)	Lateral rectus	Abduction	RAD & SIN
7 th Nerve (Facial)	Obicularis oculi	Closes lids	

Mnemonics

SO4LR6

**RAD: Recti are ADDuctors
except Lateral rectus
(Obliques are abductors)**

**SIN: Superiors are INTortors
(Inferiors are extortors)**

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- **Pseudostrabismus:** Looks like squint but no squint
- **Phoria or Latent:** Squint on & off
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ExoTropia: Eyes out & all time

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Comitant EsoTropia: Eye in & all time & same squint amount in all gazes









Incomitant EsoTropia: Eye in & all time & squint amount changes in gazes

What is Esotropia & Exotropia

Esotropia and exotropia is measured by hirschberg test. Hirschberg test is shining torch light to both eyes and observing the corneal reflex. If both corneal reflexes are in center then this means no squint. In esotropia and exotropia corneal reflexes are as shown. Degree of deviation from center also measures amount of squint.







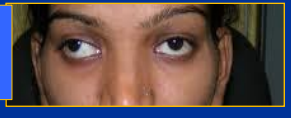

Esotropia

Hirschberg test: Corneal light reflex

Orthophoria White reflex middle of cornea (normal reflex)		
15 degree squint White reflex at temporal edge of pupil (see left eye)		
30 degree squint White reflex temporal middle of pupil (see right eye)		
45 degree squint White reflex at temporal limbus (see right eye)		

Exotropia

Hirschberg test: Corneal light reflex

Orthophoria White reflex middle of cornea (normal reflex)		
15 degree squint White reflex at temporal edge of pupil (see left eye)		
30 degree squint White reflex temporal middle of pupil (see right eye)		
45 degree squint White reflex at temporal limbus (see right eye)		

Classification of squint

Squint is classified as pseudostrabismic, Latent squint and manifest squint.

1- Pseudostrabismic:

2- Latent squint OR heterophoria: Latent squint is not visible all the time. It is visible only at times. Examiner can make it visible by covering one eye.

3- Manifest squint OR heterotropia: Manifest squint is visible all the time.

For undergraduates this is the squint you need to know

Manifest squint is called **comitant (non paralytic)** if degree of manifest squint **remains same** in different gazes.

Manifest squint is called **incomitant (paralytic)** if degree of manifest squint **increases or decreases** in different gazes.

Classification of squint

Tropia : squint all Time
Esotropia is eye in
Exotropia is eye out
Phoria : squint not always

Pseudostrabismic (looks like squint but no squint)

Latent squint OR Heterophoria (squint not visible all time)

- Esophoria (Eye in but not all the time)
- Exophoria (Eye out but not all the time)

Manifest squint OR Heterotropia (squint visible all time)

- Comitant / non-paralytic squint (Degree of squint remains same in different gazes)
 - Esotropia → Refraction corrects fully: Accommodative esotropia
 - Exotropia → Refraction corrects partially: Partially accommodative esotropia
 - Hypertropia (eye up)
 - Hypotropia (eye down)
- Incomitant / Paralytic squint (Degree of squint changes in different gazes)
 - Esotropia (6th nerve palsy: **Loss of temporal movement**)
 - Exotropia (3rd nerve palsy: **Loss of most movement with ptosis**)
 - Hypertropia
 - Hypotropia (4th nerve palsy: **Loss of down movement**)

Examination technique:

History

Vision

Cycloplegic refraction: if squint corrects with refraction mean accommodative esotropia

If squint partly corrected with refraction mean partially accommodative esotropia

If no correction with refraction mean non accommodative esotropia

Anterior and posterior segment examination

DD of squint in children & adults

Squint in Children

Common types:

Pseudosquint & Comitant squint

Tropia : squint all Time

Esotropia is eye in

Exotropia is eye out

Phoria : squint not always

Pseudosquint (looks like squint but no squint)

Latent squint OR HetroPhoria (squint not visible all time)

- Esophoria (Eye in but not all the time)
- Exophoria (Eye out but not all the time)

Manifest squint OR HetroTropia (squint visible all time)

- Comitant / non-paralytic squint (Degree of squint remains same in different gazes)
 - Esotropia (eye in towards nose)
 - Accomodative esotroia (fully corrected with glasses)
 - Partially accomodative esotropia (partially corrected with glasses)
 - Non accomodative esotropia (not corrected with glasses)
 - Exotropia (eye out towards ear)
 - Hypertropia (eye up)
 - Hypotropia (eye down)
- Incomitant / Paralytic squint (Degree of squint changes in different gazes): Rare in children

Squint in Adults

Squint in adults:

Incomitant squint/paralytic

Tropia : squint all Time

Esotropia is eye in

Exotropia is eye out

Phoria : squint not always

Pseudosquint: Rare in adults; may be facial asymetry

Latent squint OR HetroPhoria (squint not visible all time)

- Esophoria (Eye in but not all the time)
- Exophoria (Eye out but not all the time)

Manifest squint OR HetroTropia (squint visible all time)

- Comitant / non-paralytic squint (Degree of squint remains same in different gazes)
 - Esotropia (eye in towards nose)
 - Exotropia (eye out towards ear)
 - Hypertropia (eye up)
 - Hypotropia (eye down)
- Incomitant / Paralytic squint (Degree of squint changes in different gazes)
 - Incomitant Esotropia (6th nerve palsy)
 - Incomitant Exotropia (3rd nerve palsy)
 - Incomitant Hypertropia
 - Incomitant Hypotropia (4th nerve palsy)

History taking: Squint

Age is important. Squints in children are usually non paralytic (comitant) while squints in adults are paralytic (incomitant).

Double vision is important also. Usually paralytic squints in adults have sudden onset of double vision.

In children correction with glasses is important.

- if squint corrects with refraction mean accommodative esotropia
- If squint partly corrected with refraction mean partially accommodative esotropia
- If no correction with refraction mean non accommodative esotropia

Squint cases and possible MCQs

Q1- A 3 year old child is brought to clinic with eye squinting toward nose. On examination child has high hypermetropic correction with normal anterior and posterior segments. On follow up visit squint is **fully corrected** with glasses. What is your diagnosis?

Manifest squint OR Heterotropia (squint visible all time)

- Comitant / non-paralytic squint (Degree of squint remains same in different gazes)

- Esotropia
- Exotropia
- Hypertropia (eye up)
- Hypotropia (eye down)

Refraction corrects fully: Accommodative esotropia
Refraction corrects partially: Partially accommodative esotropia
No correction with refraction: Non accommodative esotropia

Explanation/answer: Squints in children are usually non paralytic/comitant. Such squints usually develop at age 2-3 years when child uses accommodation. Finally such squint corrected with glasses is **accommodative esotropia**.

Q2- A 3 year old child is brought to clinic with eye squinting toward nose. On examination child has high hypermetropic correction with normal anterior and posterior segments. On follow up visit squint is **partially corrected** with glasses. What is your diagnosis?

Explanation/answer: Squints in children are usually non paralytic/comitant. Such squints usually develop at age 2-3 years when child uses accommodation. Finally such squint if partially corrected with glasses is **partially accommodative esotropia**.

Q3- A 3 year old child is brought to clinic with eye squinting toward nose. On examination child has high hypermetropic correction with normal anterior and posterior segments. On follow up visit squint is **not corrected at all** with glasses. What is your diagnosis?

Explanation/answer: Squints in children are usually non paralytic/comitant. Such squints usually develop at age 2-3 years when child uses accommodation. Finally such squint if not corrected with glasses is **non accommodative esotropia**.

Q4- A 3 year old child is brought to clinic with eye squinting toward ear. On examination child has minimal hypermetropic correction with normal anterior and posterior segments. What type of squint is this?

Explanation/answer: When the squinting goes out toward ear it is called exotropia.

Q5- A 60 year diabetic man has attended clinic with double vision for last three days. On examination there is **limitation of movement on temporal side**. What could be cause?

- **Incomitant / Paralytic squint** (Degree of squint changes in different gazes)
 - Esotropia (6th nerve palsy: **Loss of temporal movement**)
 - Exotropia (3rd nerve palsy: **Loss of most movement with ptosis**)
 - Hypertropia
 - Hypotropia (4th nerve palsy: **Loss of down movement**)

Explanation/answer: Squints in adults are usually paralytic, present with double vision and more common in diabetes and hypertension. Loss of temporal eye movement is suggested of 6th nerve palsy so answer is **sixth nerve palsy**.

Q6- A 60 year diabetic man has attended clinic with double vision for last three days. On examination there is **limitation of movement in down gaze**. What could be cause?

Explanation/answer: Squints in adults are usually paralytic, present with double vision and more common in diabetes and hypertension. Loss of down eye movement is suggested of 4th nerve palsy so answer is **fourth nerve palsy**.

Q7- A 60 year diabetic man has attended clinic with double vision for last three days. On examination there is **limitation of movement all around except temporally along with ptosis**. What could be cause?

Explanation/answer: Squints in adults are usually paralytic, present with double vision and more common in diabetes and hypertension. Loss of most eye movement is suggested of 3rd nerve palsy. Third nerve also supplies levator muscle so ptosis is also present so answer is **sixth nerve palsy**.

Mnemonics

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