Comitant Exotropia

*Which is more common in children: comitant XT, or comitant ET?*
Comitant Exotropia

Which is more common in children: comitant XT, or comitant ET?
ET is significantly more common
Comitant Exotropia

Which is more common in children: comitant XT, or comitant ET?
ET is significantly more common

Is there a gender predilection for comitant XT?
Which is more common in children: comitant XT, or comitant ET? ET is significantly more common

Is there a gender predilection for comitant XT? Yes, it is more common in ♀
Comitant Exotropia

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Comitant Exotropia

Which is more common in children: comitant XT, or comitant ET?
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Is there a gender predilection for comitant XT?
Yes, it is more common in ♀

Is there a pattern regarding its distribution worldwide?
Which is more common in children: comitant XT, or comitant ET? ET is significantly more common.

Is there a gender predilection for comitant XT? Yes, it is more common in ♀.

Is there a pattern regarding its distribution worldwide? Yes. XT is much more common in the Middle East, Africa and Asia than in the US and/or Europe. It is also more commonly found at latitudes that receive more sun vs snow.
Comitant Exotropia

**Which is more common in children: comitant XT, or comitant ET?**
ET is significantly more common

**Is there a gender predilection for comitant XT?**
Yes, it is more common in ♀

**Is there a pattern regarding its distribution worldwide?**
Yes. XT is much more common in the Middle East, Africa and Asia than in the US and/or Europe. It is also more commonly found at latitudes that receive more **sun exposure**.
Which is more common in children: comitant XT, or comitant ET? ET is significantly more common.

Is there a gender predilection for comitant XT? Yes, it is more common in ♀.

Is there a pattern regarding its distribution worldwide? Yes. XT is much more common in the Middle East, Africa and Asia than in the US and/or Europe. It is also more commonly found at latitudes that receive more sun exposure.

Outside of the US, strabismus in general, and exotropia in particular, is frequently referred to as ‘squint’ (eg, ‘I saw a child in clinic today with a squint.’) Why?
Comitant Exotropia

Which is more common in children: comitant XT, or comitant ET? ET is significantly more common.

Is there a gender predilection for comitant XT? Yes, it is more common in ♀.

Is there a pattern regarding its distribution worldwide? Yes. XT is much more common in the Middle East, Africa and Asia than in the US and/or Europe. It is also more commonly found at latitudes that receive more sun exposure.

Outside of the US, strabismus in general, and exotropia in particular, is frequently referred to as ‘squint’ (eg, ‘I saw a child in clinic today with a squint.’) Why? One of the common characteristics of exotropia is that the child will close the deviating eye (ie, squint), especially in bright sunlight.
Comitant Exotropia

Exodeviations

Two broad categories

? ?
Comitant Exotropia

Exodeviations

Intermittent  Constant

Two broad categories
Comitant Exotropia

Exodeviations

Intermittent
Constant

Two broad categories
Comitant Exotropia

Exodeviations

Intermittent

Constant

Congenital

Sensory

Two broad categories
Comitant Exotropia

Exodeviations

- Intermittent
- Constant

  - Congenital
  - Sensory

*Congenital XT*
--Onset prior to age…
Comitant Exotropia

Exodeviations

Intermittent

Constant

Congenital

Sensory

*Congenital XT*
--Onset prior to age…6 months
Comitant Exotropia

Exodeviations

- Intermittent
- Constant

Constant
- Congenital
- Sensory

**Congenital XT**
-- Onset prior to age...6 months
-- Usually syndromic  
[two very general types of syndromes]
Comitant Exotropia

Exodeviations

- Intermittent
- Constant

**Congenital XT**
-- Onset prior to age... 6 months
-- Usually syndromic: Craniofacial syndromes, neurologic syndromes
Constant XT in Crouzon syndrome
Comitant Exotropia

Exodeviations

- Intermittent
- Constant

**Congenital XT**
-- Onset prior to age...6 months
-- Usually syndromic: Craniofacial syndromes, neurologic syndromes
-- Potential for stereopsis/bifoveation is... *good vs poor*
Comitant Exotropia

Exodeviations

Intermittent

Constant

Congenital

Sensory

**Congenital XT**
--Onset prior to age...6 months
--Usually syndromic: Craniofacial syndromes, neurologic syndromes
--Potential for stereopsis/bifoveation is...poor
Comitant Exotropia

Exodeviations

Intermittent

Constant

Congenital

Sensory

**Congenital XT**
--Onset prior to age...6 months
--Usually syndromic: **Craniofacial syndromes**, neurologic syndromes
--Potential for stereopsis/bifoveation is...poor

What are the two broad categories of craniofacial syndrome?
Comitant Exotropia

Exodeviations

- Intermittent
- Constant

**Congenital XT**
- Onset prior to age...6 months
- Usually syndromic: **Craniofacial syndromes**, neurologic syndromes
- Potential for stereopsis/bifoveation is... poor

Two categories of craniofacial syndrome:

- Craniosynostoses
- Not craniosynostoses

*What are the two broad categories of craniofacial syndrome?*
Comitant Exotropia

Exodeviations

Intermittent  Constant

Congenital  Sensory

**Congenital XT**
--Onset prior to age...6 months
--Usually syndromic: **Craniofacial syndromes**, neurologic syndromes
--Potential for stereopsis/bifoveation is...poor

Craniosynostoses  Not craniosynostoses

Which not-craniosynostosis syndromes are *addressed in the Peds book*?
Comitant Exotropia

Exodeviations

Intermittent

Constant

Congenital

Sensory

**Congenital XT**

--Onset prior to age...6 months
--Usually syndromic: Craniofacial syndromes, neurologic syndromes
--Potential for stereopsis/bifoveation is...poor

**Craniosynostoses**

--Goldenhar

**Not craniosynostoses**

--Treacher Collins
--Pierre Robin sequence
--Fetal alcohol

Which not-craniosynostosis syndromes are addressed in the Peds book?
Comitant Exotropia

Exodeviations

Intermittent

Constant

Congenital

Sensory

**Congenital XT**
--Onset prior to age...6 months
--Usually syndromic: Craniofacial syndromes, neurologic syndromes
--Potential for stereopsis/bifoveation is...poor

**Craniosynostoses**

**Not craniosynostoses**

Which craniosynostosis syndromes are addressed in the Peds book?
--- Goldenhar
--- Treacher Collins
--- Pierre Robin sequence
--- Fetal alcohol
Comitant Exotropia

Exodeviations

Intermittent

Constant

Congenital

Sensory

Congenital XT
--Onset prior to age...6 months
--Usually syndromic: Craniofacial syndromes, neurologic syndromes
--Potential for stereopsis/bifoveation is poor

Craniosynostoses
--Crouzon
--Apert
--Pfeiffer
--Saethre-Chotzen

Not craniosynostoses
--Goldenhar
--Treacher Collins
--Pierre Robin sequence
--Fetal alcohol

Which craniosynostosis syndromes are addressed in the Peds book?
Comitant Exotropia

Exodeviations

Intermittent

Constant

Cranial synostoses

Congenital

Sensory

**Congenital XT**

--Onset prior to age...6 months

--Usually syndromic: Craniofacial syndromes, neurologic syndromes

--Potential for stereopsis/bifoveation is poor

Craniofacial syndromes:

- Crouzon?
- Apert?
- Pfeiffer?
- Saethre-Chotzen?
- Goldenhar?
- Treacher Collins?
- Pierre Robin sequence?
- Fetal alcohol?

*Of these, which three are strongly associated with congenital XT?*
Comitant Exotropia

Exodeviations

Intermittent

Constant

Congenital

Sensory

**Congenital XT**

--Onset prior to age...6 months

--Usually syndromic: **Craniofacial syndromes**, neurologic syndromes

--Potential for stereopsis/bifoveation is **poor**

Craniosynostoses

Of these, which three are strongly associated with congenital XT?

Crouzon

Apert

Pfeiffer

Saethre-Chotzen

Not craniosynostoses

Goldenhar

Treacher Collins

Pierre Robin sequence

Fetal alcohol
Comitant Exotropia

Exodeviations

Intermittent

Constant

Intermittent XT
--Initially XT only when pt is...

[general state]
Congenital Sensory Comitant Exotropia

Exodeviations

- Intermittent
- Constant

Intermittent XT
-- Initially XT only when pt is...tired/ill/inattentive
-- Later, XT periods more frequent, last longer
-- If patient < 10 y.o., will develop...
  - 2 adaptive responses
-- XT frequently associated with...
-- 1/3 XT patients also have...
-- Amblyopia is...uncommon

Management
-- Give specs for myopia (but
-- Consider part-time patching of the nondeviating eye
-- Consider diplopia awareness and convergence training
-- If XT continues to progress: Surgery
Intermittent XT: Straight, and XT
Comitant Exotropia

Exodeviations

- **Intermittent XT**
  - Initially XT only when pt is...tired/ill/inattentive
  - Later, XT periods more frequent, last longer

- **Constant**
  - XT frequently associated with...HT, A/V pattern
  - 1/3 XT patients also have...IO overaction
  - Amblyopia is...uncommon

**Management**

- Give specs for myopia (but not for mild hyperopia)
- Consider part-time patching of the nondeviating eye
- Consider diplopia awareness and convergence training
- If XT continues to progress: Surgery
Comitant Exotropia

Exodeviations

- Intermittent
- Constant

Intermittent XT
-- Initially XT only when pt is... tired/ill/inattentive
-- Later, XT periods more frequent, last longer
-- If patient < 10 y.o., will develop...[2 adaptive responses]
**Comitant Exotropia**

**Exodeviations**

- **Intermittent XT**
  - Initially XT only when pt is... *tired/ill/inattentive*
  - Later, XT periods more frequent, last longer
  - If patient < 10 y.o., will develop... *suppression and ARC*

- **Constant XT**
  - Sensory
  - Congenital
Comitant Exotropia

Exodeviations

Intermittent

Intermittent XT
--Initially XT only when pt is...tired/ill/inattentive
--Later, XT periods more frequent, last longer
--If patient < 10 y.o., will develop...suppression and ARC

Constant

Sensory

Management
--Give specs for myopia (but not for mild hyperopia)
--Consider part-time patching of the nondeviating eye
--Consider diplopia awareness and convergence training
--If XT continues to progress: Surgery

What does ARC stand for in this context?

Anomalous retinal correspondence
Comitant Exotropia

Exodeviations

- **Intermittent**
  - Initially XT only when pt is tired/ill/inattentive
  - Later, XT periods more frequent, last longer
  - If patient < 10 y.o., will develop suppression and ARC

- **Constant**

**What does ARC stand for in this context?**
Anomalous retinal correspondence
Comitant Exotropia

Exodeviations

Intermittent

- Initially XT only when pt is...tired/ill/inattentive
- Later, XT periods more frequent, last longer
- If patient < 10 y.o., will develop...suppression and ARC
- XT frequently associated with...HT, A/V pattern
- 1/3 XT patients also have...IO overaction
- Amblyopia is...uncommon

Management
- Give specs for myopia (but not for mild hyperopia)
- Consider part-time patching of the nondeviating eye
- Consider diplopia awareness and convergence training
- If XT continues to progress: Surgery

Suppression and ARC are two of the three adaptations the immature visual system makes in response to misalignment. What is the other?
-- Suppression
-- Anomalous retinal correspondence

Mnemonic...
Comitant Exotropia

Exodeviations

Intermittent

Constant

Intermittent XT
--Initially XT only when pt is…tired/ill/inattentive
--Later, XT periods more frequent, last longer
--If patient < 10 y.o., will develop…suppression and ARC

Suppression and ARC are two of the three adaptations the immature visual system makes in response to misalignment. What is the other?
--Suppression
--Anomalous retinal correspondence
--M

Surgical management
--Give specs for myopia (but
not
for mild hyperopia)
--Consider part-time patching of the nondeviating eye--Consider diplopia awareness and convergence training
--If XT continues to progress: Surgery

Intermittent XT
--Initially XT only when pt is…tired/ill/inattentive
--Later, XT periods more frequent, last longer
--If patient < 10 y.o., will develop…suppression and ARC

Suppression and ARC are two of the three adaptations the immature visual system makes in response to misalignment. What is the other?
--Suppression
--Anomalous retinal correspondence
--M

Surgical management
--Give specs for myopia (but
not
for mild hyperopia)
--Consider part-time patching of the nondeviating eye--Consider diplopia awareness and convergence training
--If XT continues to progress: Surgery
Comitant Exotropia

Exodeviations

- **Intermittent**
  - Initially XT only when pt is... tired/ill/inattentive
  - Later, XT periods more frequent, last longer
  - If patient < 10 y.o., will develop...

  **Suppression and ARC**

- **Constant**
  -...

**Management**
- Give specs for myopia (but not for mild hyperopia)
- Consider part-time patching of the nondeviating eye
- Consider diplopia awareness and convergence training
- If XT continues to progress: Surgery

*Suppression and ARC are two of the three adaptations the immature visual system makes in response to misalignment. What is the other?*

-- **Suppression**
-- **Anomalous retinal correspondence**
-- **Monofixation syndrome**

**Mnemonic...** **SAM**
Comitant Exotropia

Exodeviations

Intermittent

Constant

Intermittent XT
--Initially XT only when pt is...tired/ill/inattentive
--Later, XT periods more frequent, last longer
--If patient < 10 y.o., will develop...suppression and ARC
--XT frequently associated with...[other strabismus manifestations]
Comitant Exotropia

Exodeviations

**Intermittent**

*Intermittent XT*
--Initially XT only when pt is... *tired/ill/inattentive*
--Later, XT periods more frequent, last longer
--If patient < 10 y.o., will develop... *suppression and ARC*
--XT frequently associated with... *HT, A/V pattern*

*(hypertropia)*
Comitant Exotropia

Exodeviations

Intermittent

- Initially XT only when pt is... *tired/ill/inattentive*
- Later, XT periods more frequent, last longer
- If patient < 10 y.o., will develop... suppression and ARC
- XT frequently associated with... HT, A/V pattern
- 1/3 XT patients also have... *[yet another strabismus manifestation]*
Comitant Exotropia

Exodeviations

Intermittent

Intermittent XT
--Initially XT only when pt is...tired/ill/inattentive
--Later, XT periods more frequent, last longer
--If patient < 10 y.o., will develop...suppression and ARC
--XT frequently associated with...HT, A/V pattern
--1/3 XT patients also have...IO overaction

Constant

Sensory

Congenital
Comitant Exotropia

Exodeviations
  -- Initially XT only when pt is... **tired/ill/inattentive**
  -- Later, XT periods more frequent, last longer
  -- If patient < 10 y.o., will develop... suppression and ARC
  -- XT frequently associated with... HT, A/V pattern
  -- 1/3 XT patients also have... IO overaction
  -- Amblyopia is... *[common v uncommon]*

Constant

Intermittent
Comitant Exotropia

Exodeviations

Intermittent

- Initially XT only when pt is... *tired/ill/inattentive*
- Later, XT periods more frequent, last longer
- If patient < 10 y.o., will develop... suppression and ARC
- XT frequently associated with... HT, A/V pattern
- 1/3 XT patients also have... IO overaction
- Amblyopia is... *uncommon*

Constant

Sensory

Intermittent XT
Comitant Exotropia

Exodeviations

Intermittent

- Initially XT only when pt is...tired/ill/inattentive
- Later, XT periods more frequent, last longer
- If patient < 10 y.o., will develop...suppression and ARC
- XT frequently associated with...HT, A/V pattern
- 1/3 XT patients also have...IO overaction
- Amblyopia is...uncommon

Management
- Give specs for myopia (but not for mild...)
  refractive status
  refractive status

Comitant Exotropia

Exodeviations

Intermittent

Constant

Intermittent XT
--Initially XT only when pt is... tired/ill/inattentive
--Later, XT periods more frequent, last longer
--If patient < 10 y.o., will develop... suppression and ARC
--XT frequently associated with... HT, A/V pattern
--1/3 XT patients also have... IO overaction
--Amblyopia is... uncommon

Management
--Give specs for myopia (but not for mild hyperopia)
Comitant Exotropia

Exodeviations

- Intermittent
- Constant

**Intermittent XT**
- Initially XT only when pt is...tired/ill/inattentive
- Later, XT periods more frequent, last longer
- If patient < 10 y.o., will develop...suppression and ARC
- XT frequently associated with...HT, A/V pattern
- 1/3 XT patients also have...IO overaction
- Amblyopia is...uncommon

**Management**
- Give specs for myopia (but **not** for mild hyperopia)
- Consider part-time patching of the nondeviating eye
- Consider diplopia awareness and convergence training
- If XT continues to progress: Surgery

**Why no Rx for mild hyperopia?**

*Because the near triad. That is, the accommodative effort required by the uncorrected hyperopia will induce convergence, which may offset the XT.*

*In contrast to mild hyperopia, high levels of hyperopia should be at least partially corrected*

*Why partially correct high hyperopia?*

*If the accommodative demand is too high, the patient may be unable to sustain it, and s/he will 'give up' and lose focus, with the subsequent loss of fusion causing a lapse into XT*
Comitant Exotropia

Exodeviations

Intermittent

Constant

Intermittent XT
--Initially XT only when pt is...tired/ill/inattentive
--Later, XT periods more frequent, last longer
--If patient < 10 y.o., will develop...suppression and ARC
--XT frequently associated with...HT, A/V pattern
--1/3 XT patients also have...IO overaction
--Amblyopia is...uncommon

Management
--Give specs for myopia (but not for mild hyperopia)

**Why no Rx for mild hyperopia?**
Because the near triad. That is, the accommodative effort required by the uncorrected hyperopia will induce convergence, which may offset the XT.
Comitant Exotropia

Exodeviations

Intermittent

Constant

**Intermittent XT**
--Initially XT only when pt is...tired/ill/inattentive
--Later, XT periods more frequent, last longer
--If patient < 10 y.o., will develop...suppression and ARC
--XT frequently associated with...HT, A/V pattern
--1/3 XT patients also have...IO overaction
--Amblyopia is...uncommon

**Management**
--Give specs for myopia (but not for mild hyperopia)

Why no Rx for mild hyperopia?
Because the near triad. That is, the accommodative effort required by the uncorrected hyperopia will induce convergence, which may offset the XT.

What about high hyperopia?

In contrast to mild hyperopia, high levels of hyperopia should be at least partially corrected

Why partially correct high hyperopia?
If the accommodative demand is too high, the patient may be unable to sustain it, and s/he will 'give up' and lose focus, with the subsequent loss of fusion causing a lapse into XT.
Comitant Exotropia

Exodeviations

Intermittent

Constant

**Intermittent XT**
--Initially XT only when pt is...tired/ill/inattentive
--Later, XT periods more frequent, last longer
--If patient < 10 y.o., will develop...suppression and ARC
--XT frequently associated with...HT, A/V pattern
--1/3 XT patients also have...IO overaction
--Amblyopia is...uncommon

Management
--Give specs for myopia (but *not* for mild hyperopia)

**Why no Rx for mild hyperopia?**
Because the near triad. That is, the accommodative effort required by the uncorrected hyperopia will induce convergence, which may offset the XT.

**What about high hyperopia?**
In contrast to mild hyperopia, high levels of hyperopia should be at least partially corrected
**Comitant Exotropia**

**Exodeviations**

- **Intermittent**
  - Initially XT only when pt is...tired/ill/inattentive
  - Later, XT periods more frequent, last longer
  - If patient < 10 y.o., will develop...suppression and ARC
  - XT frequently associated with...HT, A/V pattern
  - 1/3 XT patients also have...IO overaction
  - Amblyopia is...uncommon

**Management**
- Give specs for myopia (but *not* for mild hyperopia)
- Consider part-time patching of the nondeviating eye
- Consider diplopia awareness and convergence training
- If XT continues to progress: Surgery

---

*Why no Rx for mild hyperopia?*
Because the near triad. That is, the accommodative effort required by the uncorrected hyperopia will induce convergence, which may offset the XT.

*What about high hyperopia?*
In contrast to mild hyperopia, high levels of hyperopia should be at least partially corrected

*Why partially correct high hyperopia?*
Comitant Exotropia

Exodeviations

Intermittent

Constant

Intermittent XT
--Initially XT only when pt is...tired/ill/inattentive
--Later, XT periods more frequent, last longer
--If patient < 10 y.o., will develop...suppression and ARC
--XT frequently associated with...HT, A/V pattern
--1/3 XT patients also have...IO overaction
--Amblyopia is...uncommon

Management
--Give specs for myopia (but not for mild hyperopia)

Why no Rx for mild hyperopia?
Because the near triad. That is, the accommodative effort required by the uncorrected hyperopia will induce convergence, which may offset the XT.

What about high hyperopia?
In contrast to mild hyperopia, high levels of hyperopia should be at least partially corrected

Why partially correct high hyperopia?
If the accommodative demand is too high, the patient may be unable to sustain it, and s/he will 'give up' and lose focus, with the subsequent loss of fusion causing a lapse into XT.
Comitant Exotropia

Exodeviations

**Intermittent**

*Intermittent XT*
--Initially XT only when pt is... *tired/ill/inattentive*
--Later, XT periods more frequent, last longer
--If patient < 10 y.o., will develop... *suppression and ARC*
--XT frequently associated with... *HT, A/V pattern*
--1/3 XT patients also have... *IO overaction*
--Amblyopia is... *uncommon*

**Management**
--Give specs for *myopia* (but *not* for mild *hyperopia* )
--Consider nonsurgical intervention of the nondeviating eye
Comitant Exotropia

Exodeviations

Intermittent

Intermittent XT
--Initially XT only when pt is...tired/ill/inattentive
--Later, XT periods more frequent, last longer
--If patient < 10 y.o., will develop...suppression and ARC
--XT frequently associated with...HT, A/V pattern
--1/3 XT patients also have...IO overaction
--Amblyopia is...uncommon

Management
--Give specs for myopia (but not for mild hyperopia )
--Consider part-time patching of the nondeviating eye
Comitant Exotropia

Exodeviations

Intermittent

- Initially XT only when pt is...tired/ill/inattentive
- Later, XT periods more frequent, last longer
- If patient < 10 y.o., will develop...suppression and ARC
- XT frequently associated with...HT, A/V pattern
- 1/3 XT patients also have...IO overaction
- Amblyopia is...uncommon

Management
- Give specs for myopia (but not for mild hyperopia)
- Consider part-time patching of the nondeviating eye

If amblyopia is uncommon, why perform patching?
Congenital Sensory

Exodeviations

Intermittent

Constant

Sensory

If amblyopia is uncommon, why perform patching? The patching is not for amblyopia; rather, it seems to help the XT (for reasons that are not clear).
Comitant Exotropia

Exodeviations

Intermittent

Constant

**Intermittent XT**
--Initially XT only when pt is... **tired/ill/inattentive**
--Later, XT periods more frequent, last longer
--If patient < 10 y.o., will develop... suppression and ARC
--XT frequently associated with... HT, A/V pattern
--1/3 XT patients also have... IO overaction
--Amblyopia is... uncommon

**Management**
--Give specs for myopia (but not for mild hyperopia)
--Consider part-time patching of the nondeviating eye
--Consider nonsurgical intervention 2 and nonsurgical intervention 3
Comitant Exotropia

Exodeviations

Intermittent

Constant

Intermittent XT
--Initially XT only when pt is... *tired/ill/inattentive*
--Later, XT periods more frequent, last longer
--If patient < 10 y.o., will develop... *suppression and ARC*
--XT frequently associated with... *HT, A/V pattern*
--1/3 XT patients also have... *IO overaction*
--Amblyopia is... *uncommon*

Management
--Give specs for *myopia* (but *not* for mild *hyperopia*)
--Consider *part-time patching* of the nondeviating eye
--Consider *diplopia awareness* and *convergence* training
Comitant Exotropia

Exodeviations

- Intermittent
- Constant

Intermittent XT
-- Initially XT only when pt is…tired/ill/inattentive
-- Later, XT periods more frequent, last longer
-- If patient < 10 y.o., will develop…suppression and ARC
-- XT frequently associated with…HT, AV pattern

Management
-- Give specs for myopia (but not for mild hyperopia)
-- Consider part-time patching of the nondeviating eye
-- Consider diplopia awareness and convergence training
-- If XT continues to progress: Surgery

Do intermittent XT patients c/o diplopia?

-- Consider diplopia awareness
Comitant Exotropia

Exodeviations

Intermittent

Constant

Intermittent XT
--Initially XT only when pt is...tired/ill/inattentive
--Later, XT periods more frequent, last longer
--If patient < 10 y.o., will develop...suppression and ARC
XT frequently associated with...HT, AV pattern

Management
--Give specs for myopia (but not for mild hyperopia)
--Consider part-time patching of the nondeviating eye
--Consider diplopia awareness and convergence training
--If XT continues to progress: Surgery

Do intermittent XT patients c/o diplopia?
It depends. Prior to development of ARC and suppression, they will experience and c/o diplopia. However, once ARC/suppression develop, the diplopia ceases.
Comitant Exotropia

Exodeviations

Intermittent

Constant

--Initially XT only when pt is...tired/ill/inattentive
--Later, XT periods more frequent, last longer
--If patient < 10 y.o., will develop...suppression and ARC
  XT frequently associated with...HT, AV pattern

1/3 XT patients also have...IO overaction
Amblyopia is...uncommon

Management

--Give specs for myopia (but...for mild hyperopia)
--Consider part-time patching of the nondeviating eye
--Consider diplopia awareness and convergence training
--If XT continues to progress: Surgery

Do intermittent XT patients c/o diplopia?
It depends. Prior to development of ARC and suppression, they will experience
and c/o diplopia. However, once ARC/suppression develop, the diplopia ceases.
Often the ARC and suppression are facultative; that is, the patient will have
NRC and fine stereo when their eyes are straight, but ARC and suppression
when they are XT.

--Consider diplopia awareness
**Comitant Exotropia**

**Exodeviations**

![Diagram](image)

**Intermittent XT**
- Initially XT only when pt is... *tired/ill/inattentive*
- Later, XT periods more frequent, last longer
- If patient < 10 y.o., will develop... *suppression and ARC*
- XT frequently associated with... *HT, A/V pattern*
- 1/3 XT patients also have... *IO overaction*
- Amblyopia is... *uncommon*

**Management**
- Give specs for *myopia* (but *not* for mild *hyperopia* )
- Consider *part-time patching* of the nondeviating eye
- Consider *diplopia awareness* and *convergence* training
- If XT continues to progress: [*last resort*]
Comitant Exotropia

Exodeviations

Intermittent

Intermittent XT
--Initially XT only when pt is...tired/ill/inattentive
--Later, XT periods more frequent, last longer
--If patient < 10 y.o., will develop...suppression and ARC
--XT frequently associated with...HT, A/V pattern
--1/3 XT patients also have...IO overaction
--Amblyopia is...uncommon

Management
--Give specs for myopia (but not for mild hyperopia)
--Consider part-time patching of the nondeviating eye
--Consider diplopia awareness and convergence training
--If XT continues to progress: Surgery
Comitant Exotropia

Exodeviations

Intermittent

Constant

Intermittent XT
--Initially XT only when pt is...tired/ill/inattentive
--Later, XT periods more frequent, last longer
--If patient < 10 y.o., will develop...suppression and ARC
--XT frequently associated with...HT, A/V pattern
--1/3 XT patients also have...IO overaction
--Amblyopia is...uncommon

Management
--Give specs for myopia (but not for mild hyperopia )
--Consider part-time patching of the nondeviating eye
--Consider diplopia awareness and convergence training
--If XT continues to progress: Surgery

How is progression defined?

With respect to control of the XT.

Good control =
--Become XT only with cover,
--Resumes fusion w/o blink

Moderate control =
--Become XT only with cover,
--Resumes fusion only with blink

Poor control =
--Become XT spontaneously,
--Remains XT for extended period
Comitant Exotropia

Exodeviations

Intermittent

Constant

**Intermittent XT**
--Initially XT only when pt is...tired/ill/inattentive
--Later, XT periods more frequent, last longer
--If patient < 10 y.o., will develop...suppression and ARC
--XT frequently associated with...HT, A/V pattern
--1/3 XT patients also have...IO overaction
--Amblyopia is...uncommon

**Management**
--Give specs for myopia (but *not* for mild hyperopia)
--Consider part-time patching of the nondeviating eye
--Consider diplopia awareness and convergence training
--If XT continues to progress: Surgery

**How is progression defined?**
With respect to *control* of the XT
Comitant Exotropia

Exodeviations

Intermittent

Constant

**Intermittent XT**
--Initially XT only when pt is...tired/ill/inattentive
--Later, XT periods more frequent, last longer
--If patient < 10 y.o., will develop...suppression and ARC
--XT frequently associated with...HT, A/V pattern
--1/3 XT patients also have...IO overaction
--Amblyopia is...uncommon

**Management**
--Give specs for myopia (but not for mild hyperopia )
--Consider part-time patching of the nondeviating eye
--Consider diplopia awareness and convergence training
--If XT continues to progress: Surgery

**How is progression defined?**
With respect to **control** of the XT

**What are the 3 levels of control?**

--

--

--
Comitant Exotropia

Exodeviations

Intermittent

Constant

**Intermittent XT**
--Initially XT only when pt is...tired/ill/inattentive
--Later, XT periods more frequent, last longer
--If patient < 10 y.o., will develop...suppression and ARC
--XT frequently associated with...HT, A/V pattern
--1/3 XT patients also have...IO overaction
--Amblyopia is...uncommon

**Management**
--Give specs for myopia (but not for mild hyperopia)
--Consider part-time patching of the nondeviating eye
--Consider diplopia awareness and convergence training
--If XT continues to progress: Surgery

**How is progression defined?**
With respect to **control** of the XT

**What are the 3 levels of control?**

--**Good** control

--**Moderate** control

--**Poor** control
**Congenital Sensory Comitant Exotropia**

**Exodeviations**

- **Intermittent XT**
  - Initially XT only when pt is tired/ill/inattentive
  - Later, XT periods more frequent, last longer
  - If patient < 10 y.o., will develop...suppression and ARC
  - XT frequently associated with...HT, A/V pattern
  - 1/3 XT patients also have...IO overaction
  - Amblyopia is...uncommon

**Management**
- Give specs for myopia (but not for mild hyperopia)
- Consider part-time patching of the nondeviating eye
- Consider diplopia awareness and convergence training
- If XT continues to progress: Surgery

**Constant**

**How is progression defined?**
With respect to **control** of the XT

**What are the 3 levels of control?**
How is each defined?

- **Good control** =
  - 
  - 
  - **Moderate control**
  - 
  - **Poor control**
Comitant Exotropia

Exodeviations

Intermittent

- Initially XT only when pt is...tired/ill/inattentive
- Later, XT periods more frequent, last longer
- If patient < 10 y.o., will develop...suppression and ARC
- XT frequently associated with...HT, A/V pattern
- 1/3 XT patients also have...IO overaction
- Amblyopia is...uncommon

Management
- Give specs for myopia (but not for mild hyperopia)
- Consider part-time patching of the nondeviating eye
- Consider diplopia awareness and convergence training
- If XT continues to progress: Surgery

Constant

How is progression defined?
With respect to control of the XT

What are the 3 levels of control?
How is each defined?
- **Good control** =
  -- Become XT only with cover, and
  -- Resumes fusion w/o blink
- **Moderate control**
- **Poor control**
Comitant Exotropia

Exodeviations

**Intermittent**

--- Initially XT only when pt is...tired/ill/inattentive
--- Later, XT periods more frequent, last longer
--- If patient < 10 y.o., will develop...suppression and ARC
--- XT frequently associated with...HT, A/V pattern
--- 1/3 XT patients also have...IO overaction
--- Amblyopia is...uncommon

**Management**
--- Give specs for myopia (but not for mild hyperopia )
--- Consider part-time patching of the nondeviating eye
--- Consider diplopia awareness and convergence training
--- If XT continues to progress: Surgery

**Constant**

--- Initially XT only when pt is...tired/ill/inattentive
--- Later, XT periods more frequent, last longer
--- If patient < 10 y.o., will develop...suppression and ARC
--- XT frequently associated with...HT, A/V pattern
--- 1/3 XT patients also have...IO overaction
--- Amblyopia is...uncommon

**How is progression defined?**
With respect to control of the XT

**What are the 3 levels of control?**
How is each defined?

--- **Good control** =
  --- Become XT only with cover, and
  --- Resumes fusion w/o blink

--- **Moderate control** =
  ---
  ---

--- **Poor control**
Comitant Exotropia

Exodeviations

Intermittent

Constant

Intermittent XT
--Initially XT only when pt is…tired/ill/inattentive
--Later, XT periods more frequent, last longer
--If patient < 10 y.o., will develop…suppression and ARC
--XT frequently associated with…HT, A/V pattern
--1/3 XT patients also have…I/O overaction
--Amblyopia is…uncommon

Management
--Give specs for myopia (but not for mild hyperopia )
--Consider part-time patching of the nondeviating eye
--Consider diplopia awareness and convergence training
--If XT continues to progress: Surgery

How is progression defined?
With respect to control of the XT

What are the 3 levels of control?
How is each defined?
--Good control =
  --Become XT only with cover, and
  --Resumes fusion w/o blink
--Moderate control =
  --Become XT only with cover, and
  --Resumes fusion only with blink
--Poor control
**Comitant Exotropia**

**Exodeviations**

**Intermittent XT**
- Initially XT only when pt is...tired/ill/inattentive
- Later, XT periods more frequent, last longer
- If patient < 10 y.o., will develop...suppression and ARC
- XT frequently associated with...HT, A/V pattern
- 1/3 XT patients also have...IO overaction
- Amblyopia is...uncommon

**Management**
- Give specs for myopia (but *not* for mild hyperopia)
- Consider part-time patching of the nondeviating eye
- Consider diplopia awareness and convergence training
- If XT continues to progress: Surgery

**Constant XT**

**How is progression defined?**
With respect to **control** of the XT

**What are the 3 levels of control?**
How is each defined?

- **Good control** =
  - Become XT only with cover, **and**
  - Resumes fusion w/o blink

- **Moderate control** =
  - Become XT only with cover, **and**
  - Resumes fusion only **with** blink

- **Poor control** =
  - --
  - --
**Comitant Exotropia**

**Exodeviations**

- **Intermittent**
  - Initially XT only when pt is...tired/ill/inattentive
  - Later, XT periods more frequent, last longer
  - If patient < 10 y.o., will develop...suppression and ARC
  - XT frequently associated with...HT, A/V pattern
  - 1/3 XT patients also have...IO overaction
  - Amblyopia is...uncommon

**Management**
- Give specs for myopia (but *not* for mild hyperopia)
- Consider part-time patching of the nondeviating eye
- Consider diplopia awareness and convergence training
- If XT continues to progress: Surgery

**Constant**

**How is progression defined?**
With respect to *control* of the XT

**What are the 3 levels of control?**
How is each defined?

- **Good control** =
  - Become XT only with cover, *and*
  - Resumes fusion w/o blink

- **Moderate control** =
  - Become XT only with cover, *and*
  - Resumes fusion only *with* blink

- **Poor control** =
  - Become XT spontaneously, *and*
  - Remains XT for extended period
Comitant Exotropia

Exodeviations

Intermittent

Constant

Intermittent XT
--Initially XT only when pt is...tired/ill/inattentive
--Later, XT periods more frequent, last longer
--If patient < 10 y.o., will develop...suppression and ARC
--XT frequently associated with...HT, A/V pattern

Management
--Give specs for myopia (but not for mild hyperopia)
--Consider part-time patching of the nondeviating eye
--Consider diplopia awareness and convergence training
--If XT continues to progress: Surgery

How is progression defined?
With respect to control of the XT

What are the 3 levels of control?
How is each defined?
--Good control =
  --Become XT only with cover, and
  --Resumes fusion w/o blink
--Moderate control =
  --Become XT only with cover, and
  --Resumes fusion only with blink
--Poor control =
  --Become XT spontaneously, and
  --Remains XT for extended period

Additionally, be aware that several quantitative scales for assessing intermittent exotropia have been developed (the Peds book refers by name to the Newcastle Control Score for Intermittent Exotropia)
Comitant Exotropia

Exodeviations

Intermittent

Constant

Bilateral LR recession is performed, and the patient is 10Δ ET 2 weeks post-op. What should you do?

Intermittent XT
--Initially XT only when pt is…tired/ill/inattentive
--Later, XT periods more frequent, last longer
--If patient < 10 y.o., will develop…suppression and ARC
--XT frequently associated with…HT, A/V pattern
--1/3 XT patients also have…IO overaction
--Amblyopia is…uncommon

Management
--Give specs for myopia (but not for mild hyperopia)
--Consider part-time patching of the nondeviating eye
--Consider diplopia awareness and convergence training
--If XT continues to progress: Surgery

Sensory

Congenital
Comitant Exotropia

Exodeviations

Intermittent

Constant

Congenital

Sensory

Intermittent XT
--Initially XT only when pt is...tired/ill/inattentive
--Later, XT periods more frequent, last longer
--If patient < 10 y.o., will develop...suppression and ARC
--XT frequently associated with...HT, A/V pattern
--1/3 XT patients also have...IO overaction
--Amblyopia is...uncommon

Management
--Give specs for myopia (but not for mild hyperopia)
--Consider part-time patching of the nondeviating eye
--Consider diplopia awareness and convergence training
--If XT continues to progress: Surgery

Bilateral LR recession is performed, and the patient is 10Δ ET 2 weeks post-op. What should you do?
Nothing. A small overcorrection (up to ~15Δ) after XT surgery is desirable. Prisms can be considered if the ET persists beyond a month or so.
Comitant Exotropia

Exodeviations

- Intermittent
- Constant

Intermittent XT
-- Initially XT only when pt is...tired/ill/inattentive
-- Later, XT periods more frequent, last longer
-- If patient < 10 y.o., will develop...suppression and ARC
-- XT frequently associated with...HT, A/V pattern
-- 1/3 XT patients also have...IO overaction
-- Amblyopia is...uncommon

Management
-- Give specs for myopia (but not for mild hyperopia)
-- Consider part-time patching of the nondeviating eye
-- Consider diplopia awareness and convergence training
-- If XT continues to progress: Surgery

Bilateral LR recession is performed, and the patient is 10 Δ ET 2 weeks post-op. What should you do? Nothing. A small overcorrection (up to ~15 Δ) after XT surgery is desirable. Prisms can be considered if the ET persists beyond a month or so. Surgical correction should not be considered for at least 4-6 months (unless a slipped muscle is the culprit, in which case an immediate re-op is indicated).
Comitant Exotropia

Exodeviations

Intermittent

Constant

Congenital

Sensory

One logical way to divvy these up based on a key clinical finding
Comitant Exotropia

Exodeviations

Intermittent

Constant

Congenital

Sensory

One logical way to divvy these up based on a key clinical finding

Hint: This ‘key clinical finding’ is determined via an exam maneuver performed very early in the initial evaluation of a child with intermittent XT, that being…
Comitant Exotropia

Exodeviations

- Intermittent
  - $XT > XT'$
  - $XT \approx XT'$
  - $XT < XT'$

- Constant
  - Congenital
  - Sensory

One logical way to divvy these up based on a key clinical finding

Hint: This ‘key clinical finding’ is determined via an exam maneuver performed very early in the initial evaluation of a child with intermittent $XT$, that being… Measuring the magnitude of the deviation at both distance and near
Comitant Exotropia

Exodeviations

Intermittent

- $XT > XT'$
- $XT \approx XT'$
- $XT < XT'$

Constant

- Congenital
- Sensory

A descriptive name for each
Comitant Exotropia

Exodeviations

Intermittent

- $XT > XT'$: "Divergence excess"
- $XT \approx XT'$: "Basic XT"
- $XT < XT'$: "Convergence insufficiency"

Constant

- Congenital
- Sensory
Comitant Exotropia

Exodeviations

- Intermittent
  - $XT > XT'$: ‘Divergence excess’
  - $XT \approx XT'$: ‘Basic XT’
  - $XT < XT'$: ‘Convergence insufficiency’

- Constant
  - Congenital
  - Sensory

How close do the distance and near measurements have to be for an intermittent XT to qualify as ‘basic’?
Comitant Exotropia

Exodeviations

Intermittent

XT > XT'  XT ≈ XT'  XT < XT'
‘Divergence excess’  ‘Basic XT’  ‘Convergence insufficiency’

Constant

Congenital  Sensory

How close do the distance and near measurements have to be for an intermittent XT to qualify as ‘basic’? Less than 10Δ difference
Comitant Exotropia

Exodeviations

Intermittent

- $XT > XT'$: 'Divergence excess'
  - Two subtypes
- $XT \approx XT'$: 'Basic XT'
- $XT < XT'$: 'Convergence insufficiency'

Constant

- Congenital
- Sensory
Comitant Exotropia

Exodeviations

Intermittent

- $XT > XT'$
  - ‘Divergence excess’
  - Two subtypes

- $XT \approx XT'$
  - ‘Basic XT’

- $XT < XT'$
  - ‘Convergence insufficiency’

Constant

- Congenital
- Sensory

Hint: Determining which of the two subtypes is present is done via an exam maneuver performed in the initial evaluation of a child with divergence-excess intermittent XT, that being…
Comitant Exotropia

Exodeviations

Intermittent

\( XT > XT' \)

‘Divergence excess’

\( XT \approx XT' \)

‘Basic XT’

\( XT < XT' \)

‘Convergence insufficiency’

Constant

Congenital

Sensory

Hint: Determining which of the two subtypes is present is done via an exam maneuver performed in the initial evaluation of a child with divergence-excess intermittent XT, that being… Re-measurement of the magnitude of the deviation at both distance and near after three words
Comitant Exotropia

Exodeviations

Intermittent

- $XT > XT'$
  - ‘Divergence excess’
  - Two subtypes

- $XT \approx XT'$
  - ‘Basic XT’

- $XT < XT'$
  - ‘Convergence insufficiency’

Constant

- Congenital
- Sensory

Hint: Determining which of the two subtypes is present is done via an exam maneuver performed in the initial evaluation of a child with divergence-excess intermittent XT, that being… Re-measurement of the magnitude of the deviation at both distance and near after prolonged monocular occlusion
Comitant Exotropia

Why must the deviation be re-measured after prolonged monocular occlusion?

Hint: Determining which of the two subtypes is present is done via an exam maneuver performed in the initial evaluation of a child with divergence-excess intermittent XT, that being… Re-measurement of the magnitude of the deviation at both distance and near after prolonged monocular occlusion
Comitant Exotropia

Why must the deviation be re-measured after prolonged monocular occlusion? To determine whether a phenomenon called tenacious proximal fusion (TPF) is the cause of the distance vs near disparity in deviation size.

\[ XT > XT' \]

\[ XT \approx XT' \]

\[ XT < XT' \]

Congenital

Sensory

Two subtypes

‘Divergence excess’

‘Basic XT’

‘Convergence insufficiency’

Hint: Determining which of the two subtypes is present is done via an exam maneuver performed in the initial evaluation of a child with divergence-excess intermittent XT, that being… Re-measurement of the magnitude of the deviation at both distance and near after prolonged monocular occlusion.
Comitant Exotropia

Why must the deviation be re-measured after prolonged monocular occlusion?
To determine whether a phenomenon called tenacious proximal fusion (TPF) is the cause of the distance vs near disparity in deviation size.

X{T} > X{T'}

‘Divergence excess’

2 subtypes

X{T} ≈ X{T'}

‘Basic X{T}’

X{T} < X{T'}

‘Convergence insufficiency’

Congenital

Sensory

Re-measurement of the magnitude of the deviation at both distance and near after prolonged monocular occlusion

Hint: Determining which of the two subtypes is present is done via an exam maneuver performed in the initial evaluation of a child with divergence-excess intermittent X{T}, that being…
**Comitant Exotropia**

Why must the deviation be re-measured after prolonged monocular occlusion?
To determine whether a phenomenon called **tenacious proximal fusion** (TPF) is the cause of the distance vs near disparity in deviation size. TPF represents a ‘proximal fusion aftereffect’—a tendency for the fusional convergence induced by near vision to persist. Because of TPF, attempts to break fusion-mediated convergence with an alternate-cover test may be unsuccessful, and initial measurements will produce the incorrect impression that the near deviation is significantly less than the distance deviation. **Occluding one eye for an extended period allows TPF (if present) to dissipate.**

\[
\begin{align*}
XT > XT' & \quad \text{‘Divergence excess’} \\
XT \approx XT' & \quad \text{‘Basic XT’} \\
XT < XT' & \quad \text{‘Convergence insufficiency’}
\end{align*}
\]

**Hint:** Determining which of the two subtypes is present is done via an exam maneuver performed in the initial evaluation of a child with divergence-excess intermittent XT, that being… Re-measurement of the magnitude of the deviation at both distance and near after **prolonged monocular occlusion**
Comitant Exotropia

Why must the deviation be re-measured after prolonged monocular occlusion?
To determine whether a phenomenon called tenacious proximal fusion (TPF) is the cause of the deviation for "an extended period," how long are we talking about?

When we say monocular occlusion for "an extended period," how long are we talking about?

Occluding one eye for an extended period allows TPF (if present) to dissipate. Upon re-measurement after prolonged monocular occlusion, if the magnitude of the \( XT > XT' \) difference is unchanged, the pt has a true divergence-excess \( XT \). But if the magnitude after prolonged occlusion is less than 10D, the pt has pseudodivergence-excess \( XT \).

Hint: Determining which of the two subtypes is present is done via an exam maneuver performed in the initial evaluation of a child with divergence-excess intermittent \( XT \), that being...

Re-measurement of the magnitude of the deviation at both distance and near after prolonged monocular occlusion...
Comitant Exotropia

Why must the deviation be re-measured after prolonged monocular occlusion?
To determine whether a phenomenon called tenacious proximal fusion (TPF) is the cause of the deviation.

When we say monocular occlusion for “an extended period,” how long are we talking about? Back in the day, the child would be patched up to 24 hours; however, this was found to be unnecessarily long. Current practice is to patch the child for 30-60 minutes.

Occluding one eye for an extended period allows TPF (if present) to dissipate.

XT > XT’
‘Divergence excess’

XT ≈ XT’
‘Basic XT’

XT < XT’
‘Convergence insufficiency’

Two subtypes

?   ?

Congenital

Sensory

Hint: Determining which of the two subtypes is present is done via an exam maneuver performed in the initial evaluation of a child with divergence-excess intermittent XT, that being…

Re-measurement of the magnitude of the deviation at both distance and near after prolonged monocular occlusion...
Comitant Exotropia

Why must the deviation be re-measured after prolonged monocular occlusion?
To determine whether a phenomenon called tenacious proximal fusion (TPF) is the cause of the distance vs near disparity in deviation size. TPF represents a ‘proximal fusion aftereffect’—a tendency for the fusional convergence induced by near vision to persist. Because of TPF, attempts to break fusion-mediated convergence with an alternate-cover test may be unsuccessful, and initial measurements will produce the incorrect impression that the near deviation is significantly less than the distance deviation. Occluding one eye for an extended period allows TPF (if present) to dissipate. Upon re-measurement after prolonged monocular occlusion, if the magnitude of the XT>XT’ difference is unchanged, the pt has a true divergence-excess XT.

\[ XT > XT' \]
‘Divergence excess’

\[ XT \approx XT' \]
‘Basic XT’

\[ XT < XT' \]
‘Convergence insufficiency’

Congenital

Sensory

True divergence-excess XT

Two subtypes

Hint: Determining which of the two subtypes is present is done via an exam maneuver performed in the initial evaluation of a child with divergence-excess intermittent XT, that being… Re-measurement of the magnitude of the deviation at both distance and near after prolonged monocular occlusion.
Comitant Exotropia

Why must the deviation be re-measured after prolonged monocular occlusion?
To determine whether a phenomenon called tenacious proximal fusion (TPF) is the cause of the distance vs near disparity in deviation size. TPF represents a ‘proximal fusion aftereffect’--a tendency for the fusional convergence induced by near vision to persist. Because of TPF, attempts to break fusion-mediated convergence with an alternate-cover test may be unsuccessful, and initial measurements will produce the incorrect impression that the near deviation is significantly less than the distance deviation. Occluding one eye for an extended period allows TPF (if present) to dissipate. Upon re-measurement after prolonged monocular occlusion, if the magnitude of the XT>XT’ difference is unchanged, the pt has a true divergence-excess XT.
But if the magnitude after occlusion is less than 10Δ, the pt has pseudo-divergence-excess XT.

Hint: Determining which of the two subtypes is present is done via an exam maneuver performed in the initial evaluation of a child with divergence-excess intermittent XT, that being… Re-measurement of the magnitude of the deviation at both distance and near after prolonged monocular occlusion
Comitant Exotropia

Why must the deviation be re-measured after prolonged monocular occlusion?

To determine whether a phenomenon called tenacious proximal fusion (TPF) is the cause of the distance vs near disparity in deviation size. TPF represents a ‘proximal fusion aftereffect’--a tendency for the fusional convergence induced by near vision to persist. Because of TPF, attempts to break fusion-mediated convergence with an alternate-cover test may be unsuccessful, and initial measurements will produce the incorrect impression that the near deviation is significantly less than the distance deviation. Occluding one eye for an extended period allows TPF (if present) to dissipate. Upon re-measurement after prolonged monocular occlusion, if the magnitude of the XT>XT’ difference is unchanged, the pt has a true divergence-excess XT. But if the magnitude after occlusion is less than 10Δ, the pt has pseudo-divergence-excess XT.

True divergence-excess XT

Pseudo-divergence-excess XT

Two subtypes

XT > XT’ ‘Divergence excess’

XT ≈ XT’ ‘Basic XT’

XT < XT’

Congenital Sensory

Remember this?

How close do the distance and near measurements have to be for an intermittent XT to qualify as “basic”? Less than 10Δ difference
Comitant Exotropia

**Why must the deviation be re-measured after prolonged monocular occlusion?**

To determine whether a phenomenon called tenacious proximal fusion (TPF) is the cause of the distance vs near disparity in deviation size. TPF represents a ‘proximal fusion aftereffect’--a tendency for the fusional convergence induced by near vision to persist. Because of TPF, attempts to break fusion-mediated convergence with an alternate-cover test may be unsuccessful, and initial measurements will produce the incorrect impression that the near deviation is significantly less than the distance deviation.

**Occluding one eye for an extended period allows TPF (if present) to dissipate.**

Upon re-measurement after prolonged monocular occlusion, if the magnitude of the XT>XT’ difference is unchanged, the pt has a true divergence-excess XT.

But if the magnitude after occlusion is less than 10Δ, the pt has pseudo-divergence-excess XT.

**XT > XT’**  
‘Divergence excess’

**XT ≈ XT’**  
‘Basic XT’

**XT < XT’**  
Congenital

Sensory

**True divergence-excess XT**

**Pseudo-divergence-excess XT**

Two subtypes

Remember this?

So in essence, Pseudo-divergence-excess XT is like Basic XT, but with tenacious proximal fusion leading to the false impression of a significant near-vs-distance difference in deviation size.

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How close do the distance and near measurements have to be for an intermittent XT to qualify as “basic”? **Less than 10Δ difference**
**Comitant Exotropia**

**Exodeviations**

- **Intermittent**
  - $XT > XT'$
  - ‘Divergence excess’
  - Two subtypes
    - True divergence-excess $XT$
    - Pseudo-divergence-excess $XT$
  - ‘Divergence excess’
  - ‘Basic $XT$’
- $XT \approx XT'$
- $XT < XT'$
- ‘Convergence insufficiency’

- **Constant**
  - Congenital
  - Sensory

In true divergence-excess $XT$, what is the underlying mechanism of the $XT$ vs $XT'$ disparity?
Comitant Exotropia

Exodeviations

Intermittent

- $XT > XT'$
  - 'Divergence excess'
    - Two subtypes
      - True divergence-excess XT
      - Pseudo-divergence-excess XT

- $XT \approx XT'$
  - 'Basic XT'

- $XT < XT'$
  - 'Convergence insufficiency'

Constant

- Congenital
- Sensory

In true divergence-excess XT, what is the underlying mechanism of the $XT$ vs $XT'$ disparity? This has not been completely elucidated, but in at least half of cases the cause seems to be...
Comitant Exotropia

Exodeviations

Intermittent

\( XT > XT' \)

‘Divergence excess’

True divergence-excess XT

Two subtypes

\( XT \approx XT' \)

‘Basic XT’

Pseudo-divergence-excess XT

\( XT < XT' \)

‘Convergence insufficiency’

In true divergence-excess XT, what is the underlying mechanism of the XT vs XT’ disparity?

This has not been completely elucidated, but in at least half of cases the cause seems to be high AC/A ratio

Constant

Congenital

Sensory
Comitant Exotropia

Exodeviations

1. In true divergence-excess XT, what is the underlying mechanism of the XT vs XT' disparity? This has not been completely elucidated, but in at least half of cases the cause seems to be a high AC/A ratio.
Comitant Exotropia

Exodeviations

Intermittent Constant 'XT'

'Convergence insufficiency'

What is the AC/A ratio?
The near triad consists of convergence, accommodation and miosis.

XT > XT'

'Divergence excess'

Two subtypes

True divergence-excess XT

Pseudo-divergence-excess XT

In true divergence-excess XT, what is the underlying mechanism of the XT vs XT' disparity?

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Comitant Exotropia

Exodeviations

Intermittent Constant 'Basic XT'

Convergence insufficiency

Exodeviations

XT > XT'

'Divergence excess'

Two subtypes

True divergence-excess XT

Pseudo-divergence-excess XT

What is the AC/A ratio? The near triad consists of convergence, accommodation and miosis.

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Comitant Exotropia

Exodeviations

What is the AC/A ratio?
The near triad consists of convergence, accommodation and miosis. The act of convergence induces a certain amount of accommodation (this is why your vision gets blurry when you intentionally cross your eyes). Likewise, the act of accommodation induces a certain degree of convergence. The quantitative relationship between the amplitude of convergence (AC) and the amount of accommodation (A) is represented by the AC/A ratio.

In true divergence-excess XT, what is the underlying mechanism of the XT vs XT' disparity? This has not been completely elucidated, but in at least half of cases the cause seems to be a high AC/A ratio.
Comitant Exotropia

Exodeviations

What is the AC/A ratio?
The near triad consists of convergence, accommodation and miosis. The act of convergence induces a certain amount of accommodation (this is why your vision gets blurry when you intentionally cross your eyes). Likewise, the act of accommodation induces a certain degree of convergence. The quantitative relationship between the amplitude of convergence (AC) and the amount of accommodation (A) is represented by the AC/A ratio. For some individuals, the ‘factory setting’ of the AC/A ratio is too high, so their eyes over-converge when they accommodate. Because near vision elicits more accommodation than distance vision, their eyes are significantly less exotropic at near.

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Comitant Exotropia

Exodeviations

Intermittent Constant 'Basic XT'

Convergence insufficiency

XT > XT'

'Divergence excess'

Two subtypes

True divergence-excess XT

Pseudo-divergence excess XT

What is the AC/A ratio?
The near triad consists of convergence, accommodation and miosis. The act of convergence induces a certain amount of accommodation (this is why your vision gets blurry when you intentionally cross your eyes). Likewise, the act of accommodation induces a certain degree of convergence. The quantitative relationship between the amplitude of convergence (AC) and the amount of accommodation (A) is represented by the AC/A ratio. For some individuals, the ‘factory setting’ of the AC/A ratio is too high, so their eyes over-converge when they accommodate. Because near vision elicits more accommodation than distance vision, their eyes are significantly less exotropic at near.

What are the units for:
--AC?
--A?

high AC/A ratio

In true divergence-excess XT, what is the underlying mechanism that causes the disparity? This has not been completely elucidated, but in at least half of cases it seems to be a high AC/A ratio.
Comitant Exotropia

Exodeviations

Intermittent Constant 'Basic XT' Convergence insufficiency

XT > XT'

'Divergence excess'

Two subtypes

True divergence-excess XT

Pseudo-divergence excess XT

What is the AC/A ratio?
The **near triad** consists of convergence, accommodation and miosis. The act of convergence induces a certain amount of accommodation (this is why your vision gets blurry when you intentionally cross your eyes). Likewise, the act of accommodation induces a certain degree of convergence. The quantitative relationship between the amplitude of convergence (AC) and the amount of accommodation (A) is represented by the AC/A ratio. For some individuals, the ‘factory setting’ of the AC/A ratio is too high, so their eyes over-converge when they accommodate. Because near vision elicits more accommodation than distance vision, their eyes are significantly less exotropic at near.

What are the units for:
--AC? Prism diopters
--A? Diopters

In true divergence-excess XT, what is the underlying mechanism of the XT vs XT' disparity? This has not been completely elucidated, but in at least half of cases the cause seems to be a high AC/A ratio.
Comitant Exotropia

Exodeviations

What is the AC/A ratio?
The *near triad* consists of convergence, accommodation and miosis. The act of convergence induces a certain amount of accommodation (this is why your vision gets blurry when you intentionally cross your eyes). Likewise, the act of accommodation induces a certain degree of convergence. The quantitative relationship between the amplitude of convergence (AC) and the amount of accommodation (A) is represented by the AC/A ratio. For some individuals, the ‘factory setting’ of the AC/A ratio is too high, so their eyes over-converge when they accommodate. Because near vision elicits more accommodation than distance vision, their eyes are significantly less exotropic at near.

What are the units for:
- AC? Prism diopters
- A? Diopters

What is a normal AC/A?

In true divergence-excess XT, what is the underlying mechanism of the XT vs XT’ disparity? This has not been completely elucidated, but in at least half of cases the cause seems to be a high AC/A ratio.
Comitant Exotropia

Exodeviations

**What is the AC/A ratio?**

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**What are the units for:**

--AC? Prism diopters
--A? Diopters

**What is a normal AC/A?**

Around 3:1 to 5:1

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In true divergence-excess XT, what is the underlying mechanism of the XT vs XT’ disparity?

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Comitant Exotropia

Exodeviations

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The near triad consists of convergence, accommodation, and miosis. The act of convergence induces a certain amount of accommodation (this is why your vision gets blurry when you intentionally cross your eyes); likewise, the act of accommodation induces a certain degree of convergence. The quantitative relationship between the amplitude of convergence (AC) and the amount of accommodation (A) is represented by the AC/A ratio. For some individuals, the 'factory setting' of the AC/A ratio is too high, so their eyes over-converge when they accommodate. Because near vision elicits more accommodation than distance vision, their eyes are significantly less exotropic at near.

How is the AC/A ratio measured?
The gradient method is probably the most commonly-employed technique in clinical practice. The child's deviation is measured while gazing at a near (33 cm) target. The child is then re-measured while wearing a +3D add, the addition of which should obviate any accommodative effort on the child's part to see a target at 33 cm. The change in XT is divided by 3 (the power of the add); the result is the child's AC/A ratio.

\[
\text{AC/A ratio} = \frac{\text{XT'} \text{ without add} - \text{XT'} \text{ with add}}{3}
\]

What are the units for:
- AC? Prism diopters
- A? Diopters

What is a normal AC/A?
Around 3:1 to 5:1

high AC/A ratio

In true divergence-excess XT, what is the underlying mechanism of the XT vs XT' disparity?
Comitant Exotropia

Exodeviations

XT > XT’
‘Divergence excess’

Two subtypes

True divergence-excess XT
Pseudo-divergence excess XT

What is the AC/A ratio?

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AC/A ratio = (XT’ with add - XT’ without add)/3

If the result is greater than 5, the child has a high AC/A ratio.

In true divergence-excess XT, what is the underlying mechanism of the XT vs XT’ disparity?
This has not been completely elucidated, but in at least half of cases the cause seems to be a high AC/A ratio.

What are the units for:
--AC? Prism diopters
--A? Diopters

What is a normal AC/A?
Around 3:1 to 5:1
Comitant Exotropia

Exodeviations

Instead of formally calculating the AC/A ratio, some strabismologists simply note how much the XT' increases with the 3D add, and use a value of $\Delta > 20$ as the cutoff for concluding that a child has a high AC/A ratio.

How is the AC/A ratio measured?
The gradient method is probably the most commonly-employed technique in clinical practice. The child’s deviation is measured with +3D addition, the addition of which should obviate any accommodative effort on the child’s part to see a target at 33 cm. The change in XT is divided by 3 (the power of the +3D add) to get the AC/A ratio. The child is then re-measured while wearing the add; the result is the child’s AC/A ratio.

AC/A ratio = \frac{XT' with add - XT' without add)}{3}

If the result is greater than 5, the child has a high AC/A ratio.

In true divergence-excess XT, what is the underlying mechanism of the XT vs XT' disparity?
This has not been completely elucidated, but in at least half the cases, the underlying mechanism seems to be high AC/A ratio.

What are the units for:
- AC? Prism diopters
- A? Diopters

What is a normal AC/A?
Around 3:1 to 5:1
Comitant Exotropia

Exodeviations

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**How is the AC/A ratio measured?**
The gradient method is probably the most commonly-employed technique in clinical practice. The child’s deviation is measured +3D add, the addition of which should obviate any accommodative effort on the child's part to see the target at 33 cm. The change in XT is divided by 3 (the power of which gives the effective 33 cm target). The child is then re-measured while wearing a +3D add; the result is the child’s AC/A ratio.

\[
\text{AC/A ratio} = \frac{\text{XT}' \text{ with add} - \text{XT}' \text{ without add}}{3}
\]

If the result is greater than 5, the child has a high AC/A ratio.

**What are the units for:**

- **AC?** Prism diopters
- **A?** Diopters

**What is a normal AC/A?**

Around 3:1 to 5:1

In true divergence-excess XT, what is the underlying mechanism of the XT vs XT’ disparity?

This has not been completely elucidated, but in at least half of cases the cause seems to be a high AC/A ratio.
Comitant Exotropia

Exodeviations

**Intermittent Constant XT**

'Convergence insufficiency'

**Divergence excess**

Two subtypes

True divergence-excess XT

Pseudo-divergence excess XT

*XT > XT'*

In true divergence-excess XT, what is the underlying mechanism of the XT vs XT' disparity? This has not been completely elucidated, but in at least half of cases the cause seems to be a high AC/A ratio.

*What is the AC/A ratio?*

The near triad consists of convergence, accommodation and miosis. The act of convergence induces a certain amount of accommodation (this is why your vision gets blurry when you intentionally cross your eyes); likewise, the act of accommodation induces a certain degree of convergence. The quantitative relationship between the amplitude of convergence (AC) and the amount of accommodation (A) is represented by the AC/A ratio. For some individuals, the 'factory setting' of the AC/A ratio is too high, so their eyes over-converge when they accommodate. Because near vision elicits more accommodation than distance vision, their eyes are significantly less exotropic at near.

**How is the AC/A ratio measured?**

The gradient method is probably the most commonly-employed technique in clinical practice. The child's deviation is measured while gazing at a near (33 cm) target. The child is then re-measured while wearing a +3D add, the addition of which should obviate any accommodative effort on the child's part to see a target at 33 cm. The change in XT is divided by 3 (the power of the add); the result is the child's AC/A ratio.

\[
\text{AC/A ratio} = \frac{\text{XT'} \text{ without add} - \text{XT'} \text{ with add}}{3}
\]

If the result is greater than 5, the child has a high AC/A ratio.

**What is the normal AC/A ratio?**

Around 3:1 to 5:1

*Can a high AC/A ratio be a component of an esotropia?*

Yes

*Is high AC/A ratio more likely to be associated with ET, or with XT?*

ET (by a lot)
Comitant Exotropia

Exodeviations

**Intermittent Convergence Insufficiency**

\[ \text{XT} > \text{XT}' \]

**Divergence excess**

Two subtypes

- True divergence-excess XT
- Pseudo-divergence excess XT

In true divergence-excess XT, what is the underlying mechanism of the XT vs XT' disparity? This has not been completely elucidated, but in at least half of cases the cause seems to be a high AC/A ratio.

What is AC/A ratio?

The near triad consists of convergence, accommodation, and miosis. The act of convergence induces a certain amount of accommodation (this is why your vision gets blurry when you intentionally cross your eyes); likewise, the act of accommodation induces a certain degree of convergence. The quantitative relationship between the amplitude of convergence (AC) and the amount of accommodation (A) is represented by the AC/A ratio. For some individuals, the 'factory setting' of the AC/A ratio is too high, so their eyes over-converge when they accommodate. Because near vision elicits more accommodation than distance vision, their eyes are significantly less exotropic at near.

How is the AC/A ratio measured?

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\[ \text{AC/A ratio} = (\text{XT}' \text{ without add} - \text{XT}' \text{ with add})/3 \]

If the result is greater than 5, the child has a high AC/A ratio.

Can a high AC/A ratio be a component of an esotropia?

Yes

Is high AC/A ratio more likely to be associated with ET, or with XT?

ET (by a lot)

What are the units for:

- AC? Prism diopters
- A? Diopters

What is a normal AC/A?

Around 3:1 to 5:1
Comitant Exotropia

Exodeviations

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What are the units for:

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What is a normal AC/A?

Around 3:1 to 5:1

In true divergence-excess XT, what is the underlying mechanism of the XT vs XT' disparity?

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How is the AC/A ratio measured?

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AC/A ratio = \frac{(XT' \text{ without add} - XT' \text{ with add})}{3}

If the result is greater than 5, the child has a high AC/A ratio.
Comitant Exotropia

Exodeviations

Intermittent Constant 'Basic XT'....Convergence insufficiency

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XT > XT’

'Divergence excess'

Two subtypes

True divergence-excess XT

Pseudo-divergence excess XT

Can a high AC/A ratio be a component of an esotropia?

Yes

Is high AC/A ratio more likely to be associated with ET, or with XT?

ET (by a lot)

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Is high AC/A ratio more likely to be associated with ET, or with XT?

ET (by a lot)

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AC/A ratio = (XT’ without add - XT’ with add)/3

If the result is greater than 5, the child has a high AC/A ratio.

What are the units for:

--AC? Prism diopters
--A? Diopters

What is a normal AC/A?

Around 3:1 to 5:1

high AC/A ratio
Comitant Exotropia

Exodeviations

Intermittent Constant

XT > XT’

‘Divergence excess’

Two subtypes

True divergence-excess XT

Pseudo-divergence-excess XT

Can a high AC/A ratio be a component of an esotropia?
Yes

How is AC/A ratio measured?
The gradient method is probably the most commonly-employed technique in clinical practice. The child is measured while gazing at a near (33 cm) target. The child is then re-measured while wearing a +3D add, the addition of which should obviate any accommodative effort on the child’s part to see a target at 33 cm. The change in XT is divided by 3 (the power of the add): the result is the child’s AC/A ratio.

AC/A ratio = (XT’ without add - XT’ with add)/3

If the result is greater than 5, the child has a high AC/A ratio.

Is high AC/A ratio more likely to be associated with ET, or with XT?
ET (by a lot)

Is low AC/A ratio a thing?
Yes

Is low AC/A ratio more likely to be associated with ET, or with XT?
XT (by a lot)

What are the units for:

- AC? Prism diopters
- A? Diopters

What is a normal AC/A?
Around 3:1 to 5:1

In true divergence-excess XT, what is the underlying mechanism of the XT vs XT’ disparity?
This has not been completely elucidated, but in at least half of cases the cause seems to be high AC/A ratio.

low AC/A ratio
Comitant Exotropia

Exodeviations

**Intermittent Constant XT**

- **Convergence insufficiency**
- **Divergence excess**

**‘Divergence excess’**

Two subtypes:
- True divergence-excess XT
- Pseudo-divergence-excess XT

**XT > XT’**

In true divergence-excess XT, what is the underlying mechanism of the XT vs XT’ disparity? This has not been completely elucidated, but in at least half of cases the cause seems to be high AC/A ratio.

What is the AC/A ratio?

- The near triad consists of convergence, accommodation, and miosis. The act of convergence induces a certain amount of accommodation (this is why your vision gets blurry when you intentionally cross your eyes); likewise, the act of accommodation induces a certain degree of convergence. The quantitative relationship between the amplitude of convergence (AC) and the amount of accommodation (A) is represented by the AC/A ratio.

- For some individuals, the ‘factory setting’ of the AC/A ratio is too high, so their eyes over-converge when they accommodate. Because near vision elicits more accommodation than distance vision, their eyes are significantly less exotropic at near.

How is the AC/A ratio measured?

- The gradient method is probably the most commonly-employed technique in clinical practice. The child’s deviation is measured while gazing at a near (33 cm) target. The child is then re-measured while wearing a +3D add, the addition of which should obviate any accommodative effort on the child’s part to see a target at 33 cm. The change in XT is divided by 3 (the power of the add); the result is the child’s AC/A ratio.

\[
\text{AC/A ratio} = \frac{\text{XT’ without add} - \text{XT’ with add}}{3}
\]

- If the result is greater than 5, the child has a high AC/A ratio.

Can a high AC/A ratio be a component of an esotropia?
- Yes

Is high AC/A ratio more likely to be associated with ET, or with XT?
- ET (by a lot)

Is low AC/A ratio a thing?
- Yes

Is low AC/A ratio more likely to be associated with ET, or with XT?
- XT (by a lot)

What are the units for:
- AC? Prism diopters
- A? Diopters

What is a normal AC/A ratio?
- Around 3:1 to 5:1
Comitant Exotropia

Exodeviations

**Intermittent Constant 'XT'**

\[ XT > XT' \]

'Divergence excess'

**Two subtypes**

True divergence-excess XT

Pseudo-divergence-excess XT

In true divergence-excess XT, what is the underlying mechanism of the XT vs XT’ disparity? This has not been completely elucidated, but in at least half of cases the cause seems to be high AC/A ratio.

**Can a high AC/A ratio be a component of an esotropia?**

Yes

**How is the AC/A ratio measured?**

The near triad consists of convergence, accommodation, and miosis. The act of convergence induces a certain amount of accommodation (this is why your vision gets blurry when you intentionally cross your eyes); likewise, the act of accommodation induces a certain degree of convergence. The quantitative relationship between the amplitude of convergence (AC) and the amount of accommodation (A) is represented by the AC/A ratio.

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\[ \text{AC/A ratio} = \frac{\text{XT'} \text{ without add} - \text{XT'} \text{ with add}}{3} \]

If the result is greater than 5, the child has a high AC/A ratio.

**Is high AC/A ratio more likely to be associated with ET, or with XT?**

ET (by a lot)

**Is low AC/A ratio a thing?**

Yes

**Is low AC/A ratio more likely to be associated with ET, or with XT?**

XT (by a lot)

What are the units for:

- AC? Prism diopters
- A? Diopters

What is a normal AC/A ratio?

Around 3:1 to 5:1

^Low AC/A ratio
Comitant Exotropia

Exodeviations

Intermittent Constant 'XT'

'Convergence insufficiency'

'Basic XT'

\[ XT > XT' \]
\[ XT < XT' \]
\[ XT \approx XT' \]

'Divergence excess'

Two subtypes

Congenital Sensory Pseudo-divergence-excess XT

True divergence-excess XT

In true divergence-excess XT, what is the underlying mechanism of the XT vs XT' disparity?

This has not been completely elucidated, but in at least half of cases the cause seems to be high AC/A ratio.

What is the AC/A ratio?

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What are the units for:

- AC?
  - Prism diopters

- A?
  - Diopters

What is a normal AC/A?

Around 3:1 to 5:1

How is the AC/A ratio measured?

The gradient method is probably the most commonly-employed technique in clinical practice. The child's deviation is measured while gazing at a near (33 cm) target. The child is then re-measured while wearing a +3D add, the addition of which should obviate any accommodative effort on the child's part to see a target at 33 cm. The change in XT is divided by 3 (the power of the add): the result is the child's AC/A ratio.

\[
\text{AC/A ratio} = \frac{\text{XT} \text{ without add} - \text{XT} \text{ with add}}{3}
\]

If the result is greater than 5, the child has a high AC/A ratio.

Can a high AC/A ratio be a component of an esotropia?

Yes

Is high AC/A ratio more likely to be associated with ET, or with XT?

ET (by a lot)

Is low AC/A ratio a thing?

Yes

Is low AC/A ratio more likely to be associated with ET, or with XT?

XT, by a lot. (More on this shortly)

In true divergence-excess XT, what is the underlying mechanism of the XT vs XT' disparity?

This has not been completely elucidated, but in at least half of cases the cause seems to be high AC/A ratio.
Comitant Exotropia

Exodeviations

Intermittent

- $XT > X'T$
  - ‘Divergence excess’
    - True divergence-excess XT
    - Pseudo-divergence-excess XT

- $XT \approx X'T$
  - ‘Basic XT’

- $XT < X'T$
  - ‘Convergence insufficiency’
    - Two subtypes
    - ?
    - ?

Constant

- Congenital
- Sensory
Comitant Exotropia

Exodeviations

Intermittent

- $XT > XT'$: ‘Divergence excess’
  - True divergence-excess XT
  - Pseudo-divergence-excess XT

- $XT \approx XT'$: ‘Basic XT’

- $XT < XT'$: ‘Convergence insufficiency’
  - Low AC/A ratio XT
  - Isolated convergence insufficiency

Constant

- Congenital
- Sensory

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Comitant Exotropia

Exodeviations

Intermittent Constant 'XT'

Convergence insufficiency

'XT > XT''

'Divergence excess'

True divergence-excess XT

'XT ≈ XT''

'Basic XT'

Pseudo-divergence-excess XT

'XT < XT''

'Convergence insufficiency'

Low AC/A ratio XT

Isolated convergence insufficiency

Congenital

Sensory

Compared to pts with other forms of intermittent XT:

--Are isolated CI pts more likely or less likely to be older at presentation?

--Is the XT in isolated CI typically larger, or smaller?

Smaller; the typical pt will be ortho at distance.

--Is the XT' in isolated CI typically larger, or smaller?

Smaller; frequently, they will have an X'.

--Is the isolated CI pt more likely or less likely to c/o diplopia at near?

That’s a good question! With their larger XT', you might expect a pt with one of the other intermittent XT conditions to report diplopia; however, they usually enjoy the benefit of a diplopia-blocking suppression scotoma, while CI pts do not. Thus, the CI pt is probably more likely to experience diplopia.
Comitant Exotropia

Compared to pts with other forms of intermittent XT:

--Are isolated CI pts more likely or less likely to be older at presentation?

**More** likely. They usually present as teens or adults.

---

\[ XT > XT' \]

'**Divergence excess'**

- True divergence-excess XT
- Pseudo-divergence-excess XT

\[ XT \approx XT' \]

'**Basic XT'**

\[ XT < XT' \]

'**Convergence insufficiency'**

- Low AC/A ratio XT
- Isolated convergence insufficiency

Congenital

Sensory
Comitant Exotropia

Compared to pts with other forms of intermittent XT:

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--Is the XT in isolated CI typically larger, or smaller?

XT > XT'  XT ≈ XT’  XT < XT’

‘Divergence excess’  ‘Basic XT’  ‘Convergence insufficiency’

True divergence-excess XT  Pseudo-divergence-excess XT  Low AC/A ratio XT

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Congenital  Sensory

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Comitant Exotropia

Exodeviations

Intermittent Constant

'Basic XT'

Convergence insufficiency'

Two subtypes

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Exodeviations

Intermittent

Constant

'Basic

XT'

'Convergence

insufficiency'

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\[
\begin{array}{c|c|c|c}
\text{XT} & \text{XT’} & \text{XT} \approx \text{XT’} & \text{XT} < \text{XT’} \\
\hline
\text{‘Divergence excess’} & \text{‘Basic XT’} & \text{‘Convergence insufficiency’} & \\
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\end{array}
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Comitant Exotropia

Exodeviations

Intermittent Constant

'Basis

XT'

Convergence
insufficiency'

'Divergence excess'

'Two subtypes'

True

divergence-

excess XT

Pseudo-
divergence-

excess XT

Low AC/A

ratio XT

Isolated

convergence

insufficiency

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Comitant Exotropia

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True divergence-excess XT

Pseudo-divergence-excess XT

Low AC/A ratio XT

Isolated convergence insufficiency

Congenital

Sensory

Two subtypes
Comitant Exotropia

Exodeviations

Intermittent Constant

'Basic

XT'

Convergence
insufficiency

134

\( XT > XT' \)

'\textit{Divergence excess}'

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Comitant Exotropia

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How do isolated CI pts present?

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Congenital

Sensory

True divergence-excess XT
Pseudo-divergence-excess XT
Low AC/A ratio XT

Isolated convergence insufficiency
Comitant Exotropia

Compared to pts with other forms of intermittent XT:
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How do isolated CI pts present?
Usually with complaints revolving around difficulty performing near work (eg, reading; computer work)

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Low AC/A ratio XT

Isolated convergence insufficiency

Two subtypes

Congenital

Sensory
Comitant Exotropia

Exodeviations

Intermittent Constant 'XT'

Divergence insufficiency

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Congenital

Sensory

Orthoptic exercises (ie, 'pencil pushups') are first-line treatment. Some pts may require base-out prisms.

Rarely, bilateral medial-rectus resections are indicated.
Comitant Exotropia

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What is the classic finding on exam?

---

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Congenital

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Comitant Exotropia

Exodeviations

Intermittent Constant

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A remote near point

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Two subtypes

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Comitant Exotropia

Exodeviations

Intermittent Constant 'Basic XT'

Convergence insufficiency

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How is isolated CI managed?

How do isolated CI pts present?

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What do they complain of?

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How is isolated CI managed?
Comitant Exotropia

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Comitant Exotropia

Exodeviations

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  - Low AC/A ratio XT
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Constant

- Congenital
- Sensory

Note that the BCSC Peds book (in my possession) refers to these as Convergence Weakness Exotropia.
Comitant Exotropia

Exodeviations

Intermittent

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Constant

- Congenital
- Sensory

Speaking of the BCSC Peds book--it does not delve into the Low AC/A ratio subtype, so neither will we here.