An A or V pattern strabismus is simply one that
A/V Strabismus

A-pattern esotropia
A/V Strabismus

V-pattern exotropia
An A or V pattern strabismus is simply one that changes magnitude in up- and downgaze.
An A or V pattern strabismus is simply one that changes magnitude in up- and downgaze. It occurs in about 20% of strabismus cases.
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An A or V pattern strabismus is simply one that changes magnitude in up- and downgaze. Occurs in about 20% of strabismus cases.

Can be secondary to:

1) **EOM problem** dysfunction
2) a different EOM problem dysfunction
3) serious congenital problem w/ secondary EOM effects
An A or V pattern strabismus is simply one that changes magnitude in up- and downgaze. Occurs in about 20% of strabismus cases. Can be secondary to:

1) **Oblique** dysfunction
2) **Horizontal or vertical rectus** dysfunction
3) **Craniosynostosis**
An **A or V pattern** strabismus is simply one that changes magnitude in up- and downgaze. This occurs in about 20% of strabismus cases and can be secondary to:

1. **Oblique dysfunction**
2. Horizontal or vertical rectus dysfunction
3. **Craniosynostosis**

Which pattern (A vs V) is associated with which oblique overaction?
---
**SO** overaction causes...
---
**IO** overaction causes...

**Q**
An A or V pattern strabismus is simply one that changes magnitude in up- and downgaze. It occurs in about 20% of strabismus cases.

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An A or V pattern strabismus is simply one that changes magnitude in up- and downgaze. It occurs in about 20% of strabismus cases. Can be secondary to:

1) Oblique dysfunction
2) Horizontal or vertical rectus dysfunction
3) Craniosynostosis

To what does the term craniosynostosis refer?

Premature closure produces abnormal growth patterns of the skull and face. Depending upon which suture(s) closes prematurely, specific and well-recognized patterns of craniofacial malformation may result.
An A or V pattern strabismus is simply one that changes magnitude in up- and downgaze. Occurs in about 20% of strabismus cases. Can be secondary to:

1) Oblique dysfunction
2) Horizontal or vertical rectus dysfunction
3) Craniosynostosis

To what does the term craniosynostosis refer?
To the premature closing of cranial suture(s)
An A or V pattern strabismus is simply one that changes magnitude in up- and downgaze. Occurs in about 20% of strabismus cases. Can be secondary to:

1) Oblique dysfunction
2) Horizontal or vertical rectus dysfunction
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To what does the term craniosynostosis refer? To the premature closing of cranial suture(s).

What results from premature suture closing? Craniosynostosis
An A or V pattern strabismus is simply one that changes magnitude in up- and downgaze. Occurs in about 20% of strabismus cases. Can be secondary to:

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3) Craniosynostosis

To what does the term craniosynostosis refer?
To the premature closing of cranial suture(s)

What results from premature suture closing?
Premature closure produces abnormal growth patterns of the skull and face. Depending upon which suture(s) closes prematurely, specific and well-recognized patterns of craniofacial malformation may result.

What is the other broad category of craniofacial syndrome?
A/V Strabismus

- An A or V pattern strabismus is simply one that changes magnitude in up- and downgaze.
- Occurs in about 20% of strabismus cases.
- Can be secondary to:
  1) Oblique dysfunction
  2) Horizontal or vertical rectus dysfunction
  3) Craniosynostosis

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To the premature closing of cranial suture(s)

What results from premature suture closing?
Premature closure produces abnormal growth patterns of the skull and face. Depending upon which suture(s) closes prematurely, specific and well-recognized patterns of craniofacial malformation may result.

Two categories of craniofacial syndrome

Craniosynostoses Not craniosynostoses

What is the other broad category of craniofacial syndrome?
**Q**

- An A or V pattern strabismus is simply one that changes magnitude in up- and downgaze.
- Occurs in about 20% of strabismus cases.
- Can be secondary to:
  1. Oblique dysfunction
  2. Horizontal or vertical rectus dysfunction
  3. Craniosynostosis

---

**A/V Strabismus**

- To what does the term craniosynostosis refer?
  - To the premature closing of cranial suture(s)

- What results from premature suture closing?
  - Premature closure produces abnormal growth patterns of the skull and face. Depending upon which suture(s) closes prematurely, specific and well-recognized patterns of craniofacial malformation may result.

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Two categories of craniofacial syndrome

Craniosynostoses

- Which not-craniosynostosis craniofacial malformations are addressed in the Peds book?

Not craniosynostoses

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An A or V pattern strabismus is simply one that changes magnitude in up- and downgaze. Occurs in about 22% of strabismus cases. Can be secondary to:

1) Oblique dysfunction
2) Horizontal or vertical rectus dysfunction
3) Craniosynostosis

To what does the term craniosynostosis refer?
To the premature closing of cranial suture(s)

What results from premature suture closing?
Premature closure produces abnormal growth patterns of the skull and face. Depending upon which suture(s) closes prematurely, specific and well-recognized patterns of craniofacial malformation may result.

Two categories of craniofacial syndrome

Craniosynostoses

Not craniosynostoses

Which not-craniosynostosis craniofacial malformations are addressed in the Peds book?

---Goldenhar
---Treacher Collins
---Pierre Robin sequence
---Fetal alcohol
An A or V pattern strabismus is simply one that changes magnitude in up- and downgaze. It occurs in about 20% of strabismus cases.

Can be secondary to:
1) Oblique dysfunction
2) Horizontal or vertical rectus dysfunction
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To what does the term craniosynostosis refer?
To the premature closing of cranial suture(s)

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Premature closure produces abnormal growth patterns of the skull and face. Depending upon which suture(s) closes prematurely, specific and well-recognized patterns of craniofacial malformation may result.

What craniosynostosis syndromes are addressed in the Peds book?
- Goldenhar
- Treacher Collins
- Pierre Robin sequence
- Fetal alcohol
A/V Strabismus

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  1. Oblique dysfunction
  2. Horizontal or vertical rectus dysfunction
  3. Craniosynostosis

To what does the term craniosynostosis refer?
To the premature closing of cranial suture(s)

What results from premature suture closing?
Premature closure produces abnormal growth patterns of the skull and face. Depending upon which suture(s) closes prematurely, specific and well-recognized patterns of craniofacial malformation may result.

Craniosynostoses

- Crouzon
- Apert
- Pfeiffer
- Saethre-Chotzen

Not craniosynostoses

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

Two categories of craniofacial syndrome

Which craniosynostosis syndromes are addressed in the Peds book?
An A or V pattern strabismus is simply one that changes magnitude in up- and downgaze. It occurs in about 20% of strabismus cases. It can be secondary to:

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2. Horizontal or vertical rectus dysfunction
3. Craniosynostosis

What strabismus pattern are craniosynostoses usually associated with?
A

- An A or V pattern strabismus is simply one that changes magnitude in up- and downgaze.
- Occurs in about 20% of strabismus cases.
- Can be secondary to:
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  2) Horizontal or vertical rectus dysfunction
  3) Craniosynostosis

What strabismus pattern are craniosynostoses usually associated with?
V-pattern XT
An A or V pattern strabismus is simply one that changes magnitude in up- and downgaze. It occurs in about 20% of strabismus cases. It can be secondary to:

1. Oblique dysfunction
2. Horizontal or vertical rectus dysfunction
3. Craniosynostosis

What strabismus pattern are craniosynostoses usually associated with? V-pattern XT

What are the three most common craniosynostoses associated with V-pattern XT? --

--
An A or V pattern strabismus is simply one that changes magnitude in up- and downgaze. Occurs in about 20% of strabismus cases. Can be secondary to:
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What are the three most common craniosynostoses associated with V-pattern XT?
--Crouzon syndrome
--Apert syndrome
--Pfeiffer syndrome
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What strabismus pattern are craniosynostoses usually associated with? V-pattern XT

What are the three most common craniosynostoses associated with V-pattern XT?

--Crouzon syndrome
--Apert syndrome
--Pfeiffer syndrome

All three craniosynostoses have similar facies. How can they be differentiated?

Crouzon syndrome: Characteristic facies
Apert syndrome: Facies + syndactyly of hands and feet
Pfeiffer syndrome: Facies + broad thumbs and broad big toes
An A/V pattern strabismus is simply one that changes magnitude in up- and downgaze. It occurs in about 20% of strabismus cases. It can be secondary to:

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What are the three most common craniosynostoses associated with V-pattern XT?

- Crouzon syndrome
- Apert syndrome
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Crouzon syndrome: Characteristic facies
A/V Strabismus

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What strabismus pattern are craniosynostoses usually associated with?
V-pattern XT

What are the three most common craniosynostoses associated with V-pattern XT?
--Crouzon syndrome
--Apert syndrome
--Pfeiffer syndrome
A/V Strabismus

An A/V or V/A pattern strabismus is simply one that changes magnitude in up- and downgaze.

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What strabismus pattern are craniosynostoses usually associated with?
V-pattern XT

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Apert syndrome: Characteristic facies and marked syndactyly
An A or V pattern strabismus is simply one that changes magnitude in up- and downgaze. It occurs in about 20% of strabismus cases.

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- **Crouzon syndrome**: Characteristic facies only
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**Mnemonics**: ‘Patients with Apert syndrome can’t get their fingers and toes *apert*’ (apart)

What strabismus pattern are craniosynostoses usually associated with?

- **V-pattern XT**

What are the three most common craniosynostoses associated with V-pattern XT?

- **Crouzon syndrome**
- **Apert syndrome**
- **Pfeiffer syndrome**
Q

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**A/V Strabismus**

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**Mnemonics:**

- ‘Patients with Apert syndrome can’t get their fingers and toes apert’ (apart)

What strabismus pattern are craniosynostoses usually associated with?
V-pattern XT

What are the three most common craniosynostoses associated with V-pattern XT?
- Crouzon syndrome
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A/V Strabismus

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Pfeiffer syndrome: Facies + broad thumbs and broad big toes

Mnemonic:
‘Patients with Apert syndrome can’t get their fingers and toes apert’ (apart)

Crouzon syndrome: Characteristic facies only
Apert syndrome: Facies + syndactyly of hands and feet
Pfeiffer syndrome: Facies + broad thumbs and broad big toes
Pfeiffer syndrome: Characteristic facies, broad thumbs/great toes
An A or V pattern strabismus is simply one that changes magnitude in up- and downgaze. Occurs in about 20% of strabismus cases. Can be secondary to:

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- **Pfeiffer syndrome**: Facies + broad thumbs and broad big toes

**Mnemonics**:

- ‘Patients with Apert syndrome can’t get their fingers and toes **apert**’ (apart)
- ‘Michelle **Pfeiffer** has huge thumbs and toes’ (not really)

What strabismus pattern are craniosynostoses usually associated with?

V-pattern XT

What are the three most common craniosynostoses associated with V-pattern XT?

--Crouzon syndrome
--Apert syndrome
--Pfeiffer syndrome
Mnemonics:
- Patients with Apert syndrome can't get their fingers and toes "apert" (apart)
- Michelle Pfeiffer has huge thumbs and toes

**Q**

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In addition to V-pattern XT, what other ocular abnormalities are often present in pts with craniosynostosis?
- --
- --
- --
- --

3) **Craniosynostosis**

What strabismus pattern are craniosynostoses usually associated with?
- V-pattern XT

What are the three most common craniosynostoses associated with V-pattern XT?
- --Crouzon syndrome
- --Apert syndrome
- --Pfeiffer syndrome
**3) Craniosynostosis**

*What strabismus pattern are craniosynostoses usually associated with?*

- V-pattern XT

*What are the three most common craniosynostoses associated with V-pattern XT?*

- Crouzon syndrome
- Apert syndrome
- Pfeiffer syndrome

---

**A/V Strabismus**

*All three craniosynostoses have similar facies. How can they be differentiated?*

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- **Pfeiffer syndrome**: Facies + broad thumbs and broad big toes

---

*In addition to V-pattern XT, what other ocular abnormalities are often present in pts with craniosynostosis?*

- Hypertelorism
- Telecanthus
- Shallow orbits
- Extorsion of the orbits
- Papilledema

---

**Mnemonics**

- Patients with Apert syndrome can't get their fingers and toes ‘apert’ (apart)
- Michelle Pfeiffer has huge thumbs and toes
Q

- An A or V pattern strabismus is simply one that changes magnitude in up- and downgaze. Occurs in about 20% of strabismus cases. Can be secondary to:
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In addition to V-pattern XT, what other ocular abnormalities are often present in pts with craniosynostosis?
- Hypertelorism
- Telecanthus
- Shallow orbits
- Extorsion of the orbits
- Papilledema

What is the difference between hypertelorism and telecanthus?
- Hypertelorism refers to an abnormally increased distance between the medial orbital walls;
- Telecanthus refers to an abnormally increased distance between the medial canthi.

Which manifests as an increased interpupillary distance?
- Hypertelorism

Mnemonics:
- 'Patients with Apert syndrome can't get their fingers and toes apart'
- 'Michelle Pfeiffer has huge thumbs and toes'

3) Craniosynostosis

What strabismus pattern are craniosynostoses usually associated with?
- V-pattern XT

What are the three most common craniosynostoses associated with V-pattern XT?
- Crouzon syndrome
- Apert syndrome
- Pfeiffer syndrome
A/V Strabismus

What strabismus pattern are craniosynostoses usually associated with?
V-pattern XT

What are the three most common craniosynostoses associated with V-pattern XT?
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Craniosynostosis

What strabismus pattern are craniosynostoses usually associated with?
V-pattern XT

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In addition to V-pattern XT, what other ocular abnormalities are often present in pts with craniosynostosis?
--hypertelorism
--telecanthus
--shallow orbits
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--papilledema

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What is the difference between hypertelorism and telecanthus?
Hypertelorism refers to an abnormally increased distance between the medial orbital walls; telecanthus refers to an abnormally increased distance between the medial canthi.

All three craniosynostoses have similar facies. How can they be differentiated?
Crouzon syndrome: Characteristic facies
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What strabismus pattern are craniosynostoses usually associated with?
V-pattern XT

What are the three most common craniosynostoses associated with V-pattern XT?
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In addition to V-pattern XT, what other ocular abnormalities are often present in pts with craniosynostosis?
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--telecanthus
--shallow orbits
--extorsion of the orbits
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What is the difference between hypertelorism and telecanthus?
Hypertelorism refers to an abnormally increased distance between the medial orbital walls; telecanthus refers to an abnormally increased distance between the medial canthi.
**A/V Strabismus**

An A or V pattern strabismus is simply one that changes magnitude in up-and-down gaze. It occurs in about 20% of strabismus cases and can be secondary to:

1. Oblique dysfunction
2. Horizontal or vertical rectus dysfunction
3. Craniosynostosis

In addition to V-pattern XT, other ocular abnormalities often present in pts with craniosynostosis include:

- Hypertelorism
- Telecanthus
- Shallow orbits
- Extorsion of the orbit
- Papilledema

### Craniosynostosis

What strabismus pattern are craniosynostoses usually associated with?

V-pattern XT

What are the three most common craniosynostoses associated with V-pattern XT?

- Crouzon syndrome
- Apert syndrome
- Pfeiffer syndrome

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In addition to V-pattern XT, what other ocular abnormalities are often present in pts with craniosynostosis?

- Hypertelorism
- Telecanthus
- Shallow orbits
- Extorsion of the orbit
- Papilledema

What is the difference between hypertelorism and telecanthus?

**Hypertelorism** refers to an abnormally increased distance between the medial orbital walls; **telecanthus** refers to an abnormally increased distance between the medial canthi.

Which manifests as an increased interpupillary distance?

**Hypertelorism**
A/V Strabismus

An A or V pattern strabismus is simply one that changes magnitude in up- and downgaze. It occurs in about 20% of strabismus cases. It can be secondary to:

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2) Horizontal or vertical rectus dysfunction
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What strabismus pattern are craniosynostoses usually associated with?
V-pattern XT

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--telecanthus
--shallow orbits
--extortion of the orbits
--papilledema

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Hypertelorism refers to an abnormally increased distance between the medial orbital walls; telecanthus refers to an abnormally increased distance between the medial canthi.

Which manifests as an increased interpupillary distance?
Hypertelorism

What strabismus pattern are craniosynostoses usually associated with?
V-pattern XT

What are the three most common craniosynostoses associated with V-pattern XT?
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- **Pfeiffer syndrome**: Facies + broad thumbs and broad big toes

In addition to V-pattern XT, what other ocular abnormalities are often present in pts with craniosynostosis?

- hypertelorism
- telecanthus
- shallow orbits
- extorsion of the orbits
- papilledema

What serious sequelae can result from shallow orbits?

Shallow orbits produce proptosis, which may lead to exposure keratopathy.

What strabismus pattern are craniosynostoses usually associated with?

V-pattern XT

What are the three most common craniosynostoses associated with V-pattern XT?

- Crouzon syndrome
- Apert syndrome
- Pfeiffer syndrome
A/V Strabismus

A

• An A or V pattern strabismus is simply one that changes magnitude in up- and downgaze.

• Occurs in about 20% of strabismus cases.

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  1) Oblique dysfunction
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--extorsion of the orbits
--papilledema

What serious sequelae can result from shallow orbits?
Shallow orbits produce proptosis, which may lead to exposure keratopathy

In addition to V-pattern XT, what other craniosynostosis cases occur?

All three craniosynostoses have similar facies. How can they be differentiated?
Crouzon syndrome: Characteristic facies
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What are the three most common craniosynostoses associated with V-pattern XT?
--Crouzon syndrome
--Apert syndrome
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Mnemonics:
'Patients with Apert syndrome can't get their fingers and toes apart' (apart)
'Michelle Pfeiffer has huge thumbs and toes'

What strabismus pattern are craniosynostoses usually associated with?
V-pattern XT

3) Craniosynostosis
Q

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3) Craniosynostosis

- What strabismus pattern are craniosynostoses usually associated with?
  - V-pattern XT

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A/V Strabismus

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In addition to V-pattern XT, what other ocular abnormalities are often present in pts with craniosynostosis?

- hypertelorism
- telecanthus
- shallow orbits
- extorsion of the orbits
- papilledema

What are the sequelae of orbital extorsion?

- The location of the rectus muscles are extorted as well. For example, the medial recti are located in the superonasal orbit. Thus, when the eyes adduct they also elevate, giving the impression of IO overaction (called pseudo-IO overaction).

- Orbital extorsion contributes to the overall V-pattern XT.
A/V Strabismus

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- Crouzon syndrome: Characteristic facies
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In addition to V-pattern XT, what other ocular abnormalities are often present in pts with craniosynostosis?
- hypertelorism
- telecanthus
- shallow orbits
- extorsion of the orbits
- papilledema

What are the sequelae of orbital extorsion?
The location of the rectus muscles are extorted as well. For example, the medial recti are located in the superonasal orbit. Thus, when the eyes adduct they also elevate, giving the impression of IO overaction (called pseudo-IO overaction). Orbital extorsion contributes to the overall V-pattern XT.

What strabismus pattern are craniosynostoses usually associated with?
V-pattern XT

What are the three most common craniosynostoses associated with V-pattern XT?
- Crouzon syndrome
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A/V Strabismus

All three craniosynostoses have similar facies. How can they be differentiated?

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Why do craniosynostosis patients get papilledema?

Premature suture closure leads to elevated ICP, thereby producing papilledema
A/V Strabismus

- An A or V pattern strabismus is simply one that changes magnitude in up- and downgaze.

- Occurs in about 20% of strabismus cases.

- Can be secondary to:
  1. Oblique dysfunction
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Mnemonics:

- ‘Patients with Apert syndrome can’t get their fingers and toes apart’ (apart)
- ‘Michelle Pfeiffer has huge thumbs and toes’
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**Management of A/V pattern strabismus**

--Correct oblique overaction if present

--Focus on primary and reading positions

If no oblique overaction, correct by displacing the medial and lateral recti according to the mnemonic MALE:

- Transpose the Medial recti toward the Apex
- and the Lateral recti toward the Empty space

--Plan and correct the horizontal deviation independently
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