Retinal Detachment Overview

Retinal Detachment

Two broad categories

Rhegmatogenous (RRD)  Non-rhegmatogenous
Retinal Detachment Overview

Retinal Detachment

Rhegmatogenous (RRD)

Non-rhegmatogenous

Two categories

? ?
Retinal Detachment Overview

Retinal Detachment

Rhegmatogenous (RRD)  Non-rhegmatogenous

Two categories

Tractional (TRD)  Exudative (ERD)
Retinal Detachment

Rhegmatogenous (RRD)  Non-rhegmatogenous

Tractional (TRD)  Exudative (ERD)

Which of these is/are associated with trauma?
Retinal Detachment Overview

Retinal Detachment

- Rhegmatogenous (RRD)
- Non-rhegmatogenous
  - Tractional (TRD)
  - Exudative (ERD)

Which of these is/are associated with trauma?
Both RRD and TRD are associated with a history of trauma
Which of these is/are associated with trauma?
Both RRD and TRD are associated with a history of trauma.

Any differences in their respective trauma histories?
Retinal Detachment

Rhegmatogenous (RRD)

Non-rhegmatogenous

Tractional (TRD)

Exudative (ERD)

Which of these is/are associated with trauma?
Both RRD and TRD are associated with a history of trauma

Any differences in their respective trauma histories?
Yes—RRD is associated with blunt trauma, whereas TRD is associated with penetrating trauma
What are the classic ophthalmoscopic descriptors of each RD type?

RRD: like a tin roof, like a belly dancer
TRD:  
ERD:  

Retinal Detachment Overview

Retinal Detachment

Rhegmatogenous (RRD)

Non-rhegmatogenous

Tractional (TRD)

Exudative (ERD)

What are the classic ophthalmoscopic descriptors of each RD type?

**RRD**: Corrugated, undulating

**TRD**: 

**ERD**: 

Rhegmatogenous RD
What are the classic ophthalmoscopic descriptors of each RD type?

**RRD:** Corrugated, undulating

**TRD:** convex vs concave

**ERD:** dome-shaped, gravity-dependent

Retinal Detachment Overview

- **Rhegmatogenous (RRD):** Corrugated, undulating
- **Non-rhegmatogenous:**
  - **Tractional (TRD):** Convex vs concave
  - **Exudative (ERD):** Dome-shaped, gravity-dependent
Retinal Detachment Overview

Retinal Detachment

Rhegmatogenous (RRD)

Non-rhegmatogenous

Tractional (TRD)

Exudative (ERD)

What are the classic ophthalmoscopic descriptors of each RD type?

RRD: Corrugated, undulating
TRD: Concave, taut
ERD:
Retinal Detachment Overview

Tractional RD
What are the classic ophthalmoscopic descriptors of each RD type?

**RRD:** Corrugated, undulating

**TRD:** Concave, taut

**ERD:** something-shaped, something-dependent
What are the classic ophthalmoscopic descriptors of each RD type?

**RRD**: Corrugated, undulating

**TRD**: Concave, taut

**ERD**: Dome-shaped, gravity-dependent
Retinal Detachment Overview

Exudative RD
Retinal Detachment Overview

Retinal Detachment

Rhegmatogenous (RRD)

What does the prefix rhegma mean?

Non-rhegmatogenous

Tractional (TRD)

Exudative (ERD)
Retinal Detachment Overview

Retinal Detachment

Rhegmatogenous (RRD)

Non-rhegmatogenous

Tractional (TRD)
Exudative (ERD)

What does the prefix rhegma mean? It translates as break or tear.
Retinal Detachment Overview

Retinal Detachment

- Rhegmatogenous (RRD)
- Non-rhegmatogenous
  - Tractional (TRD)
  - Exudative (ERD)

The essential difference is that RRD is associated with a full-thickness retinal break…
Retinal Detachment Overview

Retinal Detachment

Rhegmatogenous (RRD)

Non-rhegmatogenous

Trational (TRD)

Exudative (ERD)

The essential difference is that RRD is associated with a full-thickness retinal break…

…and TRD/ERD aren’t
The essential difference is that RRD is associated with a **full-thickness retinal break**...

What are the three types of retinal breaks?
Rhegmatogenous (RRD)

The essential difference is that RRD is associated with a **full-thickness retinal break**...

- Tears
- Holes
- Dialyses

Non-rhegmatogenous

- Tractional (TRD)
- Exudative (ERD)
The essential difference is that RRD is associated with a **full-thickness retinal break**...

Which of these is most commonly implicated in RRD?
Retinal Detachment Overview

- Rhegmatogenous (RRD)
- Non-rhegmatogenous
  - Tractional (TRD)
  - Exudative (ERD)

The essential difference is that RRD is associated with a **full-thickness retinal break**...

- **Tears**
- **Holes**
- **Dialyses**

*Which of these is most commonly implicated in RRD?*
Retinal Detachment Overview

Retinal Detachment

Rhegmatogenous (RRD)

Non-rhegmatogenous

Tractional (TRD)

Exudative (ERD)

The essential difference is that RRD is associated with a full-thickness retinal break…

Tears

Holes

Dialyses

Which of these is most commonly implicated in RRD?

Specifically, these are known as...
The essential difference is that RRD is associated with a full-thickness retinal break…

Which of these is most commonly implicated in RRD?

Specifically, these are known as horseshoe tears.
The essential difference is that RRD is associated with a **full-thickness retinal break**...

Which of these is most commonly implicated in RRD?

Specifically, these are known as **horseshoe tears**.

Why are they called ‘horseshoe’ tears?

Because of their shape (see above)

Where are they typically found?

In the far periphery, near the *ora serrata*

How do they develop?

A tongue of attached vitreous extends beyond the normal limit of the vitreous base, onto the peripheral retina. Tension on the vitreous gets focused at this site, and the tongue of vitreous tears the retina anteriorly, producing the flap.
Retinal Detachment Overview

Retinal Detachment

Rhegmatogenous (RRD)

The essential difference is that RRD is associated with a full-thickness retinal break...

Non-rhegmatogenous (non-RRD) (Exudative and Tractional)

Tractional (TRD)

Why are they called ‘horseshoe’ tears? Because of their shape (see above)

Which of these is most commonly implicated in RRD?

Specifically, these are known as horseshoe tears.
Retinal Detachment Overview

Rhegmatogenous (RRD)

The essential difference is that RRD is associated with a full-thickness retinal break...

Which of these is most commonly implicated in RRD?

Specifically, these are known as horseshoe tears.

Why are they called ‘horseshoe’ tears?
Because of their shape (see above)

Where are they typically found?
In the far periphery, near the ora serrata

How do they develop?
A tongue of attached vitreous extends beyond the normal limit of the vitreous base, onto the peripheral retina. Tension on the vitreous gets focused at this site, and the tongue of vitreous tears the retina anteriorly, producing the flap.

Tractional (TRD)

Tears
Holes
Dialyses

‘The flap’
Anterior
Posterior
(The black part is the tear itself)
Retinal Detachment Overview

Rhegmatogenous (RRD)

The essential difference is that RRD is associated with a full-thickness retinal break...

Non-rhegmatogenous (Exudative, Tractional)

Tears

Holes

Dialyses

Why are they called ‘horseshoe’ tears?
Because of their shape (see above)

Where are they typically found?
In the far periphery, near the ora serrata

Which of these is most commonly implicated in RRD?

Specifically, these are known as horseshoe tears
Retinal Detachment Overview

Rhegmatogenous (RRD)

The essential difference is that RRD is associated with a full-thickness retinal break...

Tears

Holes

Dialysis

Non-rhegmatogenous

Exudative (ERD)

Tractional (TRD)

‘The flap’

(The black part is the tear itself)

Why are they called ‘horseshoe’ tears?
Because of their shape (see above)

Where are they typically found?
In the far periphery, near the ora serrata

What is the ora serrata?

Which of these is most commonly implicated in RRD?
Specifically, these are known as horseshoe tears
Retinal Detachment Overview

Rhegmatogenous (RRD)

- The essential difference is that RRD is associated with a **full-thickness retinal break**...
- Which of these is most commonly implicated in RRD? 
  - Specifically, these are known as **horseshoe tears**

Non-Rhegmatogenous

- **Exudative** (ERD)
- **Tractional** (TRD)

Tractional (TRD)

- Why are they called ‘horseshoe’ tears? Because of their shape (see above)
- Where are they typically found? In the far periphery, near the **ora serrata**

What is the ora serrata? 
- The location where the peripheral retina and the pars plana meet

Dialysis

- ‘The flap’
- (The black part is the tear itself)

Anterior

Posterior
Ora serrata

Pars plana of ciliary body

Peripheral retina
Retinal Detachment Overview

Retinal Detachment

Rhegmatogenous (RRD)

The essential difference is that RRD is associated with a **full-thickness retinal break**...

Tears

Holes

Dialyses

Why are they called ‘horseshoe’ tears?
Because of their shape (see above)

Where are they typically found?
In the far periphery, near the ora serrata

How do they develop?
A tongue of attached vitreous extends beyond the normal limit of the vitreous base, onto the peripheral retina. Tension on the vitreous gets focused at this site, and the tongue of vitreous tears the retina anteriorly, producing the flap.

Non-rhegmatogenous (ERD, TRD)

‘The flap’

(The black part is the tear itself)

Anterior

Posterior

Which of these is most commonly implicated in RRD?
Specifically, these are known as **horseshoe tears**
Retinal Detachment Overview

Retinal Detachment

Rhegmatogenous (RRD)

The essential difference is that RRD is associated with a full-thickness retinal break...

Tears

Holes

Dialyses

Which of these is most commonly implicated in RRD?

Specifically, these are known as horseshoe tears

Non-rhegmatogenous

Exudative (ERD)

Tractional (TRD)

‘The flap’

(The black part is the tear itself)

Why are they called ‘horseshoe’ tears?
Because of their shape (see above)

Where are they typically found?
In the far periphery, near the ora serrata

How do they develop?
A tongue of attached vitreous extends beyond the normal limit of the vitreous base, onto the peripheral retina. Tension on the vitreous gets focused at this site, and the tongue of vitreous tears the retina anteriorly, producing the flap.
Retinal Detachment Overview

Horseshoe tear
Retinal Detachment

Rhegmatogenous (RRD)

The essential difference is that RRD is associated with a full-thickness retinal break...

Tears  Holes  Dialyses

Which of these is most commonly implicated in RRD?

Specifically, these are known as horseshoe tears

Technically, this is incorrect. What is the correct name of the structure that gets torn?

The flap (The black part is the tear itself)

Anterior  U  Posterior

Retina

and the tongue of vitreous tears the retina anteriorly, producing the flap.

Neurosensory retina

Refers to the multilayered structure from the photoreceptors inward, whereas the retina is composed of the neurosensory retina and the RPE.

That said, like most ophthos, the term retina here will mean the neurosensory portion unless otherwise specified.
Retinal Detachment Overview

Retinal Detachment

Rhegmatogenous (RRD)

The essential difference is that RRD is associated with a full-thickness retinal break...

Which of these is most commonly implicated in RRD?

Specifically, these are known as horseshoe tears

Technically, this is incorrect. What is the correct name of the structure that gets torn?

The neurosensory retina

and the tongue of vitreous tears the retina anteriorly, producing the flap.

‘The flap’

(The black part is the tear itself)
Retinal Detachment Overview

Retinal Detachment

Rhegmatogenous (RRD)

The essential difference is that RRD is associated with a full-thickness retinal break...

Tears
Holes
Dialyses

Which of these is most commonly implicated in RRD?

Specifically, these are known as horseshoe tears

Technically, this is incorrect. What is the correct name of the structure that gets torn?
The neurosensory retina

What? Aren’t the terms retina and neurosensory retina interchangeable?

and the tongue of vitreous tears the retina anteriorly, producing the flap.

‘The flap’
(The black part is the tear itself)
Retinal Detachment

Rhegmatogenous (RRD)

The essential difference is that RRD is associated with a full-thickness retinal break...

Tears  Holes  Dialyses

Which of these is most commonly implicated in RRD?

Specifically, these are known as horseshoe tears

Technically, this is incorrect. What is the correct name of the structure that gets torn?
The neurosensory retina

What? Aren’t the terms retina and neurosensory retina interchangeable? Again, technically no. Neurosensory retina refers to the multilayered structure from the photoreceptors inward, whereas the retina is composed of the neurosensory retina and the RPE.

and the tongue of vitreous tears the retina anteriorly, producing the flap.

‘The flap’ (The black part is the tear itself)

Anterior

Posterior
Retinal Detachment Overview

The essential difference is that RRD is associated with a full-thickness retinal break...

Tears
Holes
Dialyses

Which of these is most commonly implicated in RRD?
Specifically, these are known as horseshoe tears

Technically, this is incorrect. What is the correct name of the structure that gets torn?
The neurosensory retina

What? Aren’t the terms retina and neurosensory retina interchangeable? Again, technically no. Neurosensory retina refers to the multilayered structure from the photoreceptors inward, whereas the retina is composed of the neurosensory retina and the RPE.

That said, most ophthos most of the time are referring to the neurosensory portion when they say ‘retina,’ and the same is true in this slide-set.

‘The flap’
(The black part is the tear itself)

Retinal Detachment

Rhegmatogenous
(RRD)

U

Anterior
Posterior

and the tongue of vitreous tears the retina anteriorly, producing the flap.
Retinal Detachment Overview

Rhegmatogenous (RRD)

The essential difference is that RRD is associated with a **full-thickness retinal break**...

Non-rhegmatogenous (Non-RRD)

Exudative (ERD)

Tractional (TRD)

Which of these is most commonly implicated in RRD?

Specifically, these are known as **horseshoe tears**.

Why are they called 'horseshoe' tears? Because of their shape (see above)

Where are they typically found? In the far periphery, near the **ora serrata**

How do they develop? A tongue of attached vitreous extends beyond the normal limit of the vitreous base, onto the peripheral retina. **Tension on the vitreous gets focused at this site** and the tongue of vitreous tears the retina anteriorly, producing the flap.

What event most commonly precipitates this tension?

A posterior vitreous detachment
The essential difference is that RRD is associated with a full-thickness retinal break...

Why are they called ‘horseshoe’ tears? Because of their shape (see above)

Where are they typically found? In the far periphery, near the ora serrata

What event most commonly precipitates this tension? A posterior vitreous detachment

Beyond the normal limit of the vitreous base, onto the peripheral retina. Tension on the vitreous gets focused at this site and the tongue of vitreous tears the retina anteriorly, producing the flap.

Which of these is most commonly implicated in RRD? Specifically, these are known as horseshoe tears.
Retinal Detachment Overview

The essential difference is that RRD is associated with a full-thickness retinal break...

Retinal Detachment

Rhegmatogenous (RRD)

Much more on PVDs later in the slide-set

Tractional (TRD)

What event most commonly precipitates this tension?
A posterior vitreous detachment

Tears
Holes
Dialyses

Which of these is most commonly implicated in RRD?
Specifically, these are known as horseshoe tears

‘The flap’
(The black part is the tear itself)

U
Anterior
Posterior

Why are they called ‘horseshoe’ tears?
Because of their shape (see above)

Where are they typically found?
In the far periphery, near the ora serrata

How do they develop?
A tongue of attached vitreous extends beyond the normal limit of the vitreous base, onto the peripheral retina. Tension on the vitreous gets focused at this site, and the tongue of vitreous tears the retina anteriorly, producing the flap.
Retinal Detachment Overview

Rhegmatogenous (RRD)

The essential difference is that RRD is associated with a full-thickness retinal break...

Non-rhegmatogenous
- Exudative (ERD)
- Tractional (TRD)

Tears

Which of these is most commonly implicated in RRD?

Specifically, these are known as horseshoe tears.

Why are they called ‘horseshoe’ tears?
Because of their shape (see above)

Where are they typically found?
In the far periphery, near the ora serrata

How do they develop?
A tongue of attached vitreous extends beyond the normal limit of the vitreous base, onto the peripheral retina. Tension on the vitreous gets focused at this site, and the tongue of vitreous tears the retina anteriorly, producing the flap.
Retinal Detachment Overview

Rhegmatogenous (RRD)

The essential difference is that RRD is associated with a full-thickness retinal break...

Non-rhegmatogenous

Exudative (ERD)

Tractional (TRD)

Which of these is most commonly implicated in RRD?

Specifically, these are known as horseshoe tears.

Why are they called 'horseshoe' tears?
Because of their shape (see above)

Where are they typically found?
In the far periphery, near the ora serrata

How do they develop?
A tongue of attached vitreous extends beyond the normal limit of the vitreous base, onto the peripheral retina. Tension on the vitreous gets focused at this site, and the tongue of vitreous tears the retina anteriorly, producing the flap.

What other location is a common site of retinal tears leading to RRD?
At the edge of lattice degeneration
Retinal Detachment Overview

Non-rhegmatogenous Exudative (ERD)
Tractional (TRD)

The essential difference is that RRD is associated with a full-thickness retinal break...

Lattice will also be covered in detail later in the slide-set.

What other location is a common site of retinal tears leading to RRD?
At the edge of lattice degeneration.

Which of these is most commonly implicated in RRD?
Specifically, these are known as horseshoe tears.

Tear
Hole
Dialysis

Why are they called 'horseshoe' tears?
Because of their shape (see above).

Where are they typically found?
In the far periphery, near the ora serrata.

What caused the flap?
A tongue of attached vitreous extends beyond the normal limit of the vitreous base, onto the peripheral retina. Tension on the vitreous gets focused at this site, and the tongue of vitreous tears the retina anteriorly, producing the flap.

‘The flap’
(The black part is the tear itself)
Retinal Detachment Overview

Rhegmatogenous (RRD)

The essential difference is that RRD is associated with a full-thickness retinal break...

Giant Tears

What is a giant retinal tear?

Non-rhegmatogenous

Tractional (TRD)

Exudative (ERD)

Tears

Holes

Dialyses
Retinal Detachment Overview

Retinal Detachment

Rhegmatogenous (RRD)

Non-rhegmatogenous

Tractional (TRD)

Exudative (ERD)

The essential difference is that RRD is associated with a full-thickness retinal break...

Giant Tears

What is a giant retinal tear?
A circumferential tear extending at least 90° (3 clock-hours).
Retinal Detachment Overview

Rhegmatogenous (RRD)

The essential difference is that RRD is associated with a full-thickness retinal break...

Giant Tears

What is a giant retinal tear? Where are they located?
A circumferential tear extending at least 90° (3 clock-hours).
Retinal Detachment Overview

- Rhegmatogenous (RRD)
- Non-rhegmatogenous
  - Tractional (TRD)
  - Exudative (ERD)

The essential difference is that RRD is associated with a full-thickness retinal break...

Giant Tears

What is a giant retinal tear? Where are they located?
A circumferential tear extending at least 90° (3 clock-hours). In the far periphery.
The essential difference is that RRD is associated with a full-thickness retinal break...

What is a giant retinal tear? Where are they located? What is the cause?
A circumferential tear extending at least 90° (3 clock-hours). In the far periphery.
The essential difference is that RRD is associated with a full-thickness retinal break...

**Giant Tears**

What is a giant retinal tear? Where are they located? What is the cause?

A circumferential tear extending at least 90° (3 clock-hours). In the far periphery. Blunt trauma, usually.
The essential difference is that RRD is associated with a full-thickness retinal break...

The mechanism underlying giant retinal tears is essentially the same as that of horseshoe tears: Tension causes the posterior attachment of the vitreous base to tear the peripheral retina anteriorly. **The main difference is simply the extent of retina involved.**

Giant Tears

What is a giant?
A circumferential tear extending at least 90º (3 clock-hours). In the far periphery. Blunt trauma, usually.
Giant retinal tear
Retinal Detachment Overview

Retinal Detachment

Rhegmatogenous (RRD)

Non-rhegmatogenous

Tractional (TRD)

Exudative (ERD)

The essential difference is that RRD is associated with a **full-thickness retinal break**...

Tears  Holes  Dialyses

What are the two types of retinal holes?
Retinal Detachment Overview

Retinal Detachment

Rhegmatogenous (RRD)

Non-rhegmatogenous

Tractional (TRD)

Exudative (ERD)

The essential difference is that RRD is associated with a full-thickness retinal break...

Tears

Holes

Dialyses

Atrophic

Operculated

What are the two types of retinal holes?
Retinal Detachment Overview

Retinal Detachment

Rhegmatogenous (RRD)

The essential difference is that RRD is associated with a full-thickness retinal break...

Non-rhegmatogenous

Tractional (TRD)

Holes
- Atrophic
- Operculated

Tears

Dialyses

What does operculated mean?

It means, 'covered by an operculum'

OK, so what's an operculum?

An operculum is a lid, or a cover. Thus, an operculated retinal hole is a full-thickness break in the retina with the missing piece of retina suspended within the vitreous above the break.

How do operculated holes come about?

They often (but not always) start as horseshoe tears, with subsequent amputation of the flap (i.e., the operculum is the amputated flap; see above)
Retinal Detachment Overview

**Rhegmatogenous (RRD)**

The essential difference is that RRD is associated with a **full-thickness retinal break**...

- **Tears**
- **Holes**
  - Atrophic
  - Operculated

**Non-rhegmatogenous**

- **Tractional (TRD)**

**What does operculated mean?**

It means, ‘covered by an operculum’.
Retinal Detachment Overview

Rhegmatogenous (RRD)

The essential difference is that **RRD** is associated with a **full-thickness retinal break**...

Non-rhegmatogenous

Tractional (TRD)

What does operculated mean? It means, ‘covered by an operculum’

OK, so what’s an operculum?

Holes

- Atrophic
- Operculated
Retinal Detachment Overview

Retinal Detachment

Rhegmatogenous (RRD)

The essential difference is that RRD is associated with a **full-thickness retinal break**...

Non-rhegmatogenous

Tractional (TRD)

...and TRD/ERD aren't

What does operculated mean?
It means, ‘covered by an operculum’

OK, so what’s an operculum?
An operculum is a lid, or a cover. Thus, an operculated retinal hole is a full-thickness break in the retina with the missing piece of retina suspended within the vitreous above the break.

Tears

Holes

- Atrophic
- Operculated

Dialyses
Retinal Detachment Overview

Operculated retinal hole
Retinal Detachment Overview

The essential difference is that RRD is associated with a full-thickness retinal break...

What does operculated mean?
It means, ‘covered by an operculum’

OK, so what’s an operculum?
An operculum is a lid, or a cover. Thus, an operculated retinal hole is a full-thickness break in the retina with the missing piece of retina suspended within the vitreous above the break.

How do operculated holes come about?

Retinal Detachment

Rhegmatogenous (RRD)

Non-rhegmatogenous

Tractional (TRD)

Tears

Holes

- Atrophic
- Operculated

Dialyses

Retinal Detachment Overview

**Rhegmatogenous (RRD)**

The essential difference is that RRD is associated with a **full-thickness retinal break**...

**Non-rhegmatogenous**

**Tractional (TRD)**

What does **operculated** mean?
It means, ‘covered by an operculum’

OK, so what’s an **operculum**?
An operculum is a lid, or a cover. Thus, an operculated retinal hole is a full-thickness break in the retina with the missing piece of retina suspended within the vitreous above the break.

How do **operculated holes** come about?
They often (but not always) start as horseshoe tears, with subsequent amputation of the flap (i.e., the operculum is the amputated flap; see above)

‘The operculum’
(floating in the vitreous just above the hole)

(The **black part** is the hole itself)
The essential difference is that RRD is associated with a **full-thickness retinal break**. The *Retina* book say surprisingly little about atrophic holes, and what little is said is somewhat contradictory. One mention states atrophic holes have “not been linked to an increased risk of retinal detachment.”
Retinal Detachment Overview

Atrophic retinal hole
Retinal Detachment Overview

Rhegmatogenous (RRD)

The essential difference is that RRD is associated with a full-thickness retinal break.

Tears

Holes
- Atrophic
- Operculated

Non-rhegmatogenous

Tractional
- Exudative

The Retina book says surprisingly little about atrophic holes, and what little is said is somewhat contradictory. One mention states that atrophic holes have “not been linked to an increased risk of retinal detachment.” But another mention asserts that atrophic holes within an area of lattice degeneration are an ‘uncommon cause of retinal detachment.’ Caveat emptor.
The essential difference is that RRD is associated with a full-thickness retinal break.

What is a retinal dialysis?

- Tears
- Holes
- Dialyses
Retinal Detachment Overview

Retinal Detachment

Rhegmatogenous (RRD)

Non-rhegmatogenous

Tractional

Exudative

The essential difference is that RRD is associated with a full-thickness retinal break...

A circumferential disinsertion of the peripheral retina from the ora serrata

What is a retinal dialysis?

Tears

Holes

Dialyses
The essential difference is that RRD is associated with a full-thickness retinal break…

What is a retinal dialysis?
A circumferential disinsertion of the peripheral retina from the ora serrata.

What is the inciting event?

Tears
Holes
Dialyses
Retinal Detachment

Rhegmatogenous (RRD)

Non-rhegmatogenous

Tractional

Exudative

What is a retinal dialysis?
A circumferential disinsertion of the peripheral retina from the ora serrata

What is the inciting event?
Usually blunt trauma (although it can occur spontaneously in predisposed eyes)

Tears Holes Dialyses

The essential difference is that RRD is associated with a full-thickness retinal break...
‘A circumferential disinsertion of the peripheral retina due to blunt trauma’ sounds an awful lot like ‘a circumferential tear in the far periphery due to blunt trauma,’ i.e., a giant retinal tear. Are these simply two names for the same thing?

The essential difference is that RRD is associated with a full-thickness retinal break…

Here’s a comparison:

**Giant Tears**
- What is a giant retinal tear? Where are they located? What is the cause?
- **A circumferential tear** extending at least 90° (3 clock-hours).
- **In the far periphery.**
- **Blunt trauma,** usually.

**Holes**
- What is a retinal dialysis? What is the inciting event?
- **A circumferential disinsertion of the peripheral retina** from the ora serrata.
- Usually **blunt trauma** (although it can occur spontaneously in predisposed eyes).

**Dialyses**
Retinal Detachment Overview

The essential difference is that RRD is associated with a full-thickness retinal break...

Retinal Detachment

‘A circumferential disinsertion of the peripheral retina due to blunt trauma’ sounds an awful lot like ‘a circumferential tear in the far periphery due to blunt trauma,’ ie, a giant retinal tear. Are these simply two names for the same thing?

Definitely not. Recall that in a giant retinal tear, tension produced by the vitreous causes a rent in the retina as the posterior attachment of the vitreous ‘peels’ anteriorly.

What is a retinal dialysis?
A circumferential disinsertion of the peripheral retina from the ora serrata

What is the inciting event?
Usually blunt trauma (although it can occur spontaneously in predisposed eyes)

Giant Tears

What is a giant retinal tear? Where are they located? What is the cause?
A circumferential tear extending at least 90° (3 clock-hours). In the far periphery.

Blunt trauma, usually.
The essential difference is that RRD is associated with a full-thickness retinal break…

What is a giant retinal tear? Where are they located? What is the cause?
A circumferential tear in the far periphery due to blunt trauma, ‘ie, a giant retinal tear. Are these simply two names for the same thing?

Definitely not. Recall that in a giant retinal tear, tension produced by the vitreous causes a rent in the retina as the posterior attachment of the vitreous ‘peels’ anteriorly. In contrast, in retinal dialysis the tension applied by the vitreous causes the retina at the ora to peel posteriorly.

What is a retinal dialysis?
A circumferential disinsertion of the peripheral retina from the ora serrata

What is the inciting event?
Usually blunt trauma (although it can occur spontaneously in predisposed eyes)

What is a giant retinal tear? Where are they located? What is the cause?
A circumferential tear extending at least 90° (3 clock-hours). In the far periphery.

Giant Tears  Holes  Dialyses
Retinal Dialysis: Retina peels away from vitreous base

Horseshoe Tear: Retina peels toward vitreous base

Retinal Detachment Overview
**Retinal Detachment Overview**

*Retinal Detachment*

The essential difference is that RRD is associated with a full-thickness retinal break...

Tears - Holes - Dialyses

**Rhegmatogenous (RRD)**

Retinal Detachment Overview

What is a giant retinal tear? Where are they located? What is the cause?

A circumferential tear extending at least 90° (3 clock-hours). In the far periphery. Blunt trauma, usually.

**What is a retinal dialysis?**

A circumferential disinsertion of the peripheral retina from the ora serrata.

**What is the inciting event?**

Usually blunt trauma (although it can occur spontaneously in predisposed eyes).

 Uncertain about the anatomy of the vitreous? No worries—it will be covered in detail shortly.

\[ A \text{circumferential disinsertion of the peripheral retina due to blunt trauma} \text{ sounds an awful lot like a } \text{circumferential tear in the far periphery due to blunt trauma.} \text{ ie, a giant retinal tear. Are these simply two names for the same event?} \text{ Definitely not. Recall that in a giant retinal tear, tension caused by the vitreous } \text{causes a rent in the retina as the posterior attachment of the vitreous 'peels' anteriorly. In contrast, in retinal dialysis the tension applied by the vitreous causes the retina at the ora to peel posteriorly.} \]

Uncertain about the anatomy of the vitreous? No worries—it will be covered in detail shortly.
The AAO Preferred Practice Pattern for RRD lists five risk factors—what are they?

- Posterior vitreous detachment (PVD)
- Myopia
- Lattice degeneration
- Cataract surgery
- Trauma
- Hx RRD in fellow eye
The AAO Preferred Practice Pattern for RRD lists five risk factors--what are they?
--Posterior vitreous detachment (PVD)
--Myopia
--Lattice degeneration
--Cataract surgery
--Trauma
--Hx RRD in fellow eye
The AAO Preferred Practice Pattern for RRD lists five risk factors—what are they?
--Posterior vitreous detachment (PVD)?
--Myopia?
--Lattice degeneration?
--Cataract surgery?
--Trauma?
--Hx RRD in fellow eye?

Of these, which is the biggest risk factor?
The AAO Preferred Practice Pattern for RRD lists five risk factors--what are they?

--Posterior vitreous detachment (PVD)
--Myopia
--Lattice degeneration
--Cataract surgery
--Trauma
--Hx RRD in fellow eye

Of these, which is the biggest risk factor? PVD
Retinal Detachment Overview

Retinal Detachment

Rhegmatogenous (RRD)

Non-rhegmatogenous

The AAO Preferred Practice Pattern for RRD lists five risk factors--what are they?

--Posterior vitreous detachment (PVD)
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--Cataract surgery
--Trauma
--Hx RRD in fellow eye

What are the five major locations of vitreous attachment in the eye?

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--Cataract surgery
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--Hx RRD in fellow eye

What are the five major locations of vitreous attachment in the eye?
--The posterior lens capsule
--The ora serrata
--Retinal vessels
--The macula
--The optic nerve head
Retinal Detachment Overview

- Rhegmatogenous (RRD)
- Non-rhegmatogenous

Rhegmatogenous (RRD)

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What are the five major locations of vitreous attachment in the eye?
- The posterior lens capsule
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In what manner (configuration) is the vitreous attached to the lens capsule?
Retinal Detachment Overview

Retinal Detachment

Rhegmatogenous (RRD)

Non-rhegmatogenous

The AAO Preferred Practice Pattern for RRD lists five risk factors—what are they?
--Posterior vitreous detachment (PVD)
--Myopia
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What are the five major locations of vitreous attachment in the eye?
--The posterior lens capsule

In what manner (configuration) is the vitreous attached to the lens capsule?
In the form of a ring
Retinal Detachment Overview

Retinal Detachment

Rhegmatogenous (RRD)

Non-rhegmatogenous

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--Trauma
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What are the five major locations of vitreous attachment in the eye?

--The posterior lens capsule
--The ora serrata

In what manner (configuration) is the vitreous attached to the lens capsule?

In the form of a ring

What is the eponymous name for this ring-shaped attachment?
Retinal Detachment Overview

Retinal Detachment

Rhegmatogenous (RRD)

Non-rhegmatogenous

The AAO Preferred Practice Pattern for RRD lists five risk factors--what are they?

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--Trauma
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What are the five major locations of vitreous attachment in the eye?

--The posterior lens capsule
--The ora serrata

In what manner (configuration) is the vitreous attached to the lens capsule?

--In the form of a ring

What is the eponymous name for this ring-shaped attachment?

--Wiegert’s ligament
Retinal Detachment Overview

Vitreous attachments

- Vitreous base
- Weigert's ligament
- Berger's space
- Cloquet's canal
- Space of Martegiani
Retinal Detachment Overview

Rhegmatogenous (RRD)

Non-rhegmatogenous

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What are the five major locations of vitreous attachment in the eye?
- The posterior lens capsule
- The ora serrata
- Retinal vessels
- The macula
- The optic nerve head

In what manner (configuration) is the vitreous attached to the ora serrata?

In a band-like manner extending 2 mm anteriorly (ie, onto the pars plana of the ciliary body) and 3 mm posteriorly (ie, onto the peripheral retina)

What is the name for this band-shaped attachment?
The vitreous base
Retinal Detachment Overview

Rhegmatogenous (RRD)

Non-rhegmatogenous

The AAO Preferred Practice Pattern for RRD lists five risk factors—what are they?
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In what manner (configuration) is the vitreous attached to the ora serrata?
In a band-like manner extending # mm anteriorly (ie, onto the pars plana of the ciliary body) and # mm posteriorly (ie, onto the peripheral retina).
Retinal Detachment Overview

Rhegmatogenous (RRD)

Non-rhegmatogenous

In what manner (configuration) is the vitreous attached to the ora serrata?
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The AAO Preferred Practice Pattern: RRD

- Posterior vitreous detachment
- Myopia
- Lattice degeneration
- Cataract surgery
- Trauma
- Hx RRD in fellow eye

The ora serrata
- Retinal vessels
- The macula
- The optic nerve head
Retinal Detachment Overview

Rhegmatogenous
(RRD)

Non-rhegmatogenous

The AAO Preferred Practice Pattern
--Posterior vitreous detachment
--Myopia
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What is the name for this band-shaped attachment?
The vitreous base

The ora serrata
--Retinal vessels
--The macula
--The optic nerve head
Retinal Detachment Overview

Rhegmatogenous (RRD)

Non-rhegmatogenous

The AAO Preferred Practice Pattern

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Retinal Detachment Overview
Retinal Detachment Overview

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- Trauma
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What are the five major locations of vitreous attachment in the eye?

- The posterior lens capsule?
- The ora serrata?
- Retinal vessels?
- The macula?
- The optic nerve head?

In what order do these sites detach in a typical PVD?

Rhegmatogenous (RRD)

Non-rhegmatogenous (Exudative (ERD) or Tractional (TRD))
Retinal Detachment Overview

Retinal Detachment

The AAO Preferred Practice Pattern for RRD lists five risk factors—what are they?

--Posterior vitreous detachment (PVD)
--Myopia
--Lattice degeneration
--Cataract surgery
--Trauma
--Hx RRD in fellow eye

What are the five major locations of vitreous attachment in the eye?

--The posterior lens capsule
--The ora serrata
-- Retinal vessels: 1st
--The macula: 2nd
--The optic nerve head: 3rd

In what order do these sites detach in a typical PVD?

Rhegmatogenous (RRD)
Exudative (ERD)
Tractional (TRD)
Retinal Detachment Overview

Retinal Detachment

The AAO Preferred Practice Pattern for RRD lists five risk factors -- what are they?

-- Posterior vitreous detachment (PVD)
-- Myopia
-- Lattice degeneration
-- Cataract surgery
-- Trauma
-- Hx RRD in fellow eye

What are the five major locations of vitreous attachment in the eye?

-- The posterior lens capsule?
-- The ora serrata?

1st Retinal vessels
2nd The macula
3rd The optic nerve head

In what order do these sites detach in a typical PVD?

What about Wiegert’s ligament and the base? When do they detach in a PVD?

They don’t. The base never detaches (except in cases of severe blunt trauma).

As for Wiegert’s ligament: Given its extremely anterior location, it shouldn’t be surprising that it is spared in a posterior vitreous detachment.
Retinal Detachment Overview

The AAO Preferred Practice Pattern for RRD lists five risk factors—what are they?

- Posterior vitreous detachment (PVD)
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Vitreous body of a 9 month old child. The vitreous is very much a formed body early in life.
Retinal Detachment Overview

Posterior vitreous detachment process
Retinal Detachment Overview

Rhegmatogenous (RRD)
- Posterior vitreous detachment (PVD)
- Myopia
- Lattice degeneration
- Cataract surgery
- Trauma
- Hx RRD in fellow eye

What are the five major locations of vitreous attachment in the eye?
- The posterior lens capsule?
- The ora serrata?
- Retinal vessels
- The macula
- The optic nerve head

OK then, is there such a thing as an anterior vitreous detachment?
Retinal Detachment Overview

Retinal Detachment

Rhegmatogenous (RRD)
- Posterior vitreous detachment (PVD)
- Myopia
- Lattice degeneration
- Cataract surgery
- Trauma
- Hx RRD in fellow eye

What are the five major locations of vitreous attachment in the eye?
- The posterior lens capsule?
- The ora serrata
- Retinal vessels
- The macula
- The optic nerve head

OK then, is there such a thing as an anterior vitreous detachment?
Yes. As noted above, the base never detaches.

The anterior vitreous detachment (PVD)

Under what circumstances does such an anterior detachment occur?
Usually in the course of an intracapsular cataract extraction (ICCE), which has long fallen out of favor except under the most unusual of clinical circumstances.
Retinal Detachment Overview

Retinal Detachment

OK then, is there such a thing as an anterior vitreous detachment?
Yes. As noted above, the base never detaches. However, there are occasions when Wiegert’s lets go, and this is the definition of an anterior detachment.

What are the five major locations of vitreous attachment in the eye?
--The posterior lens capsule
--The ora serrata
--Retinal vessels
--The macula
--The optic nerve head

Rhegmatogenous (RRD)
Non-rhegmatogenous (ERD)
Tractional (TRD)

The AAO Preferred Practice Pattern for RRD lists five risk factors--what are they?
--Posterior vitreous detachment (PVD)
--Myopia
--Lattice degeneration
--Cataract surgery
--Trauma
--Hx RRD in fellow eye
Retinal Detachment Overview

Retinal Detachment

OK then, is there such a thing as an anterior vitreous detachment?
Yes. As noted above, the base never detaches. However, there are occasions when Wiegert’s lets go, and this is the definition of an anterior detachment.

Under what circumstances does such an anterior detachment occur?

What are the five major locations of vitreous attachment in the eye?
--The posterior lens capsule
--The ora serrata
--Retinal vessels
--The macula
--The optic nerve head

The AAO Preferred Practice Pattern for RRD lists five risk factors—

Posterior vitreous detachment (PVD)
--Myopia
--Lattice degeneration
--Cataract surgery
--Trauma
--Hx RRD in fellow eye

Under what circumstances does such an anterior detachment occur?

Usually in the course of an intracapsular cataract extraction (ICCE), which has long fallen out of favor except under the most unusual of clinical circumstances.
Retinal Detachment Overview

**Retinal Detachment**

OK then, *is there such a thing as an anterior vitreous detachment?*

Yes. As noted above, the base never detaches. However, there are occasions when Wiegert’s lets go, and this is the definition of an anterior detachment.

*Under what circumstances does such an anterior detachment occur?*

Usually in the course of an intracapsular cataract extraction (ICCE), which has long fallen out of favor except under the most unusual of clinical circumstances.

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What are the five major locations of vitreous attachment in the eye?

--The posterior lens capsule
--The ora serrata
--Retinal vessels
--The macula
--The optic nerve head

---

The **Rhegmatogenous** and **Nonrhegmatogenous** Exudative (ERD) Tractional (TRD)
Retinal Detachment Overview

When (ie, in what age range) do PVDs typically occur?

The AAO Preferred Practice Pattern for RRD lists five risk factors--what are they?

--- Posterior vitreous detachment (PVD)
--- Myopia
--- Lattice degeneration
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--- Hx RRD in fellow eye
Retinal Detachment Overview

When (ie, in what age range) do PVDs typically occur?
45-65

The AAO Preferred Practice Pattern for RRD lists five risk factors--what are they?
--Posterior vitreous detachment (PVD)
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--Hx RRD in fellow eye
Retinal Detachment Overview

When (ie, in what age range) do PVDs typically occur?
45-65

What group of otherwise normal eyes often detach at a younger age?

The AAO Preferred Practice Pattern for RRD lists five risk factors--what are they?

--Posterior vitreous detachment (PVD)
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Retinal Detachment Overview

When (ie, in what age range) do PVDs typically occur?
45-65

What group of otherwise normal eyes often detach at a younger age?
Myopic eyes

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Retinal Detachment Overview

Retinal Detachment

When (i.e., in what age range) do PVDs typically occur?
45-65

What group of otherwise normal eyes often detach at a younger age?
Myopic eyes

PVDs can be divided into two groups based on an important clinical characteristic.
What are these groups?

The AAO Preferred Practice Pattern for RRD lists five risk factors--what are they?
--Posterior vitreous detachment (PVD)
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When (ie, in what age range) do PVDs typically occur?
45-65

What group of otherwise normal eyes often detach at a younger age?
Myopic eyes

PVDs can be divided into two groups based on an important clinical characteristic. What are these groups?
Symptomatic and asymptomatic

The AAO Preferred Practice Pattern for RRD lists five risk factors--what are they?
--Posterior vitreous detachment (PVD)
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--Trauma
--Hx RRD in fellow eye
Retinal Detachment Overview

Retinal

When (ie, in what age range) do PVDs typically occur? 45-65

Why is the symptomatic/asymptomatic distinction clinically important?

PVDs can be divided into two groups based on an important clinical characteristic. What are these groups?

Symptomatic and asymptomatic

The AAO Preferred Practice Pattern for RRD lists five risk factors--what are they?

--Posterior vitreous detachment (PVD)
--Myopia
--Lattice degeneration
--Cataract surgery
--Trauma
--Hx RRD in fellow eye
Retinal Detachment Overview

**Retinal**

When (ie, in what age range) do PVDs typically occur?

- 45-65

**Why is the symptomatic/asymptomatic distinction clinically important?**

Because symptomatic pts are at significantly higher risk of an RRD

PVDs can be divided into two groups based on an important clinical characteristic.

**What are these groups?**

- **Symptomatic**
- and asymptomatic

**The AAO Preferred Practice Pattern for RRD lists five risk factors—what are they?**

--- **Posterior vitreous detachment (PVD)**
--- Myopia
--- Lattice degeneration
--- Cataract surgery
--- Trauma
--- Hx RRD in fellow eye
Retinal Detachment Overview

Retinal Detachment

The AAO Preferred Practice Pattern for RRD lists five risk factors—what are they?

- Posterior vitreous detachment (PVD)
- Myopia
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- Cataract surgery
- Trauma
- Hx RRD in fellow eye

When (ie, in what age range) do PVDs typically occur?
45-65

Why is the symptomatic/asymptomatic distinction clinically important?
Because symptomatic pts are at significantly higher risk of an RRD

What symptoms are being referenced here?
Photopsias and floaters

PVDs can be divided into two groups based on an important clinical characteristic.
What are these groups?
Symptomatic and asymptomatic
The AAO Preferred Practice Pattern for RRD lists five risk factors--what are they?

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Retinal Detachment Overview

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When (ie, in what age range) do PVDs typically occur?

45-65

Why is the symptomatic/asymptomatic distinction clinically important?

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What symptoms are being referenced here?

Photopsias and floaters

What are photopsias?

Flashes of light

What causes photopsias?

Mechanical stimulation of the retina (this is why you 'see stars' if you bang your head or rub your eyes)

What is the source of mechanical stimulation in PVD?

Vitreous traction, ie, the vitreous tugging on the retina

Are photopsias more noticeable under bright, or low-light conditions?

Low light

Photopsias

Symptomatic
When (i.e., in what age range) do PVDs typically occur? 45-65

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Retinal Detachment Overview
Retinal Detachment Overview

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45-65

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What symptoms are being referenced here?
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**What group of otherwise normal eyes often detach at a younger age?**
Myopic eyes

What symptoms are being referenced here?

**Symptomatic**
Retinal Detachment Overview

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Photopsias

Symptomatic
Retinal Detachment Overview

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What is the source of mechanical stimulation in PVD?

Vitreous traction, ie, the vitreous tugging on the retina

Are photopsias more noticeable under bright, or low-light conditions?

Low light

The AAO Preferred Practice Pattern for RRD lists five risk factors--what are they?

--Posterior vitreous detachment (PVD)

--Myopia

--Lattice degeneration

--Cataract surgery

--Trauma

--Hx RRD in fellow eye
The AAO Preferred Practice Pattern for RRD lists five risk factors—what are they?

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--Trauma
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When pts report seeing floaters, are they actually seeing floaters?

No—physically impossible to see floaters.

Why is it impossible to see floaters?

For two reasons:

1. Floaters are located within the vitreous, there is no incident light reflected from them toward the macula.
2. Even if incident light was present, there is no refractive apparatus between the floaters and the fovea to produce an image.

OK then, what are pts seeing when they report floaters?

They are seeing the shadows floaters produce when they block light heading towards the macula.
Retinal Detachment Overview

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When (ie, in what age range) do PVDs typically occur?
45-65

Why is the symptomatic/asymptomatic distinction clinically important?
Because symptomatic pts are at significantly higher risk of an RRD

What symptoms are being referenced here?
Photopsias and floaters

PVDs can be divided into symptomatic and asymptomatic

The AAO Preferred Practice Pattern for RRD lists five risk factors--what are they?
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What are these groups?
Symptomatic and asymptomatic

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# Retinal Detachment Overview

The AAO Preferred Practice Pattern for RRD lists five risk factors—what are they?---

**Posterior vitreous detachment (PVD)**

---Myopia
---Lattice degeneration
---Cataract surgery
---Trauma
---Hx RRD in fellow eye

---There are three main types of floaters. What are they?

---Symptomatic and asymptomatic

---Posterior vitreous detachment (PVD)

---Photopsias and floaters

---PVDs can be divided into two groups based on an important clinical characteristic. What are these groups?---

---Symptomatic and asymptomatic

---When (ie, in what age range) do PVDs typically occur?

---45-65

---What group of otherwise normal eyes often detach at a younger age?

---Myopic eyes

---What symptoms are being referenced here?

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---There are three main types of floaters. What are they?

---Heme
---Clumps of pigment/pigmented cells
---Epipapillary glial tissue
Retinal Detachment Overview

There are three main types of floaters. What are they?

- Heme
- Clumps of pigment/pigmented cells
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What symptoms are being referenced here?
Photopsias and floaters

PVDs can be divided into two groups based on an important clinical characteristic. What are these groups?

- Symptomatic
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Retinal Detachment Overview

Non-rhegmatogenous (ERD)  
Tractional (TRD)

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Photopsias and floaters

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- Clumps of pigment/pigmented cells
- Epipapillary glial tissue

What is the source of the heme?

Torn retinal vessels

Is there a relationship between the amount of vitreous heme and the risk of a retinal tear?

Yes—there is a direct proportionality to it

What is the source of the pigment/pigmented cells?

The RPE

How does a retinal tear result in pigment/pigmented cells floating in the vitreous cavity?

The cells/pigment are liberated from their normal location by the tearing away of the retina

What is the colorful description for the appearance of pigment/pigmented cells in the anterior vitreous?

'Tobacco dust'

What is the eponymous name for finding pigment/pigmented cells in the anterior vitreous?

Shafer’s sign. It is very important to record the status of Shafer’s sign (positive or negative) on all acute PVD pts!

What does ‘epipapillary glial tissue’ refer to?

The attachment of the posterior vitreous face to the retina encircling the optic disc. When it comes loose during a PVD, this tissue often forms a large ring-shaped floater.

What is the eponymous name for this ring-shaped floater?

A Weiss ring
Retinal Detachment Overview

Non-rhegmatogenous (ERD)
- Tractional (TRD)

Rhegmatogenous (RRD)

AAO Preferred Practice Pattern for RRD lists five risk factors:
- Posterior vitreous detachment (PVD)
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When do PVDs typically occur?
45-65 years

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Weiss ring
Retinal Detachment Overview

Retinal Detachment
- Non-rhegmatogenous
- Exudative (ERD)
- Tractional (TRD)

Rhegmatogenous (RRD)

The AAO Preferred Practice Pattern for RRD lists five risk factors—what are they?
- Posterior vitreous detachment (PVD)
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- Trauma
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When (ie, in what age range) do PVDs typically occur?
45-65

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Symptomatic and asymptomatic

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Retinal Detachment Overview

Non-rhegmatogenous (ERD) Exudative (TRD)

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--Posterior vitreous detachment (PVD)
--Myopia
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--Trauma
--Hx RRD in fellow eye

When (i.e., in what age range) do PVDs typically occur?

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Non-rhegmatogenous (ERD)

Tractional (TRD)

Rhegmatogenous (RRD)

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Retinal Detachment Overview

1. Rhegmatogenous (RRD)
2. Non-rhegmatogenous
   - Exudative (ERD)
   - Tractional (TRD)

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When do PVDs typically occur?
45-65

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Tractional (TRD)

Rhegmatogenous (RRD)

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The RPE

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The AAO Preferred Practice Pattern lists five risk factors--what are they?

- Posterior vitreous detachment
- Myopia
- Lattice degeneration
- Cataract surgery
- Trauma
- Hx RRD in fellow eye

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A Weiss ring
Retinal Detachment Overview

**Non-rhegmatogenous (ERD)**
- **Tractional (TRD)**

The AAO Preferred Practice Pattern for RRD lists five risk factors—what are they?
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What symptoms are being referenced here?
- Photopsias and floaters

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What is the eponymous name for this ring-shaped floater?
- A Weiss ring
Retinal Detachment Overview

Rhegmatogenous (RRD)

Non-rhegmatogenous (ERD)

Tractional (TRD)

The AAO Preferred Practice Pattern for RRD lists five risk factors:

- Posterior vitreous detachment (PVD)
- Myopia
- Lattice degeneration
- Cataract surgery
- Trauma
- Hx RRD in fellow eye

What are these groups?

- Symptomatic
- Asymptomatic

Why is the symptomatic/asymptomatic distinction clinically important?

Because symptomatic pts are at significantly higher risk of an RRD

What symptoms are being referenced here?

Photopsias and floaters

There are three main types of floaters.

- Heme
- Clumps of pigment/pigmented cells
- Epipapillary glial tissue

What is the source of the heme?

Torn retinal vessels

Is there a relationship between the amount of vitreous heme and the risk of a retinal tear?

Yes--the risk is directly proportional to it

What is the source of the pigment/pigmented cells?

The RPE

How does a retinal tear result in pigment/pigmented cells floating in the vitreous cavity?

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What is the colorful description for the appearance of pigment/pigmented cells in the anterior vitreous?

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What is the eponymous name for this ring-shaped floater?

A Weiss ring

PVDs can be divided into two groups based on an important clinical characteristic.

What are these groups?

- Symptomatic
- Asymptomatic

The source of the pigment/pigmented cells is the RPE.
Retinal Detachment Overview

Non-rhegmatogenous (ERD)
Tractional (TRD)

Rhegmatogenous (RRD)

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Is there a relationship between the amount of vitreous heme and the risk of a retinal tear? Yes--the risk is directly proportional to it

What is the source of the heme?
Torn retinal vessels

What is the source of the pigment/pigmented cells?
The RPE

How does a retinal tear result in pigment/pigmented cells floating in the vitreous cavity?
The cells/pigment are liberated from their normal location by the tearing away of the retina

What is the colorful description for the appearance of pigment/pigmented cells in the anterior vitreous?
‘Tobacco dust’

What is the eponymous name for finding pigment/pigmented cells in the anterior vitreous?
Shafer’s sign. It is very important to record the status of Shafer’s sign (positive or negative) on all acute PVD pts!

What does ‘epipapillary glial tissue’ refer to?
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What is the eponymous name for this ring-shaped floater?
A Weiss ring
Retinal Detachment Overview

Retinal Detachment

Non-rhegmatogenous (ERD)
Tractional (TRD)

The AAO Preferred Practice Pattern for RRD lists five risk factors—what are they?

- Posterior vitreous detachment (PVD)
- Myopia
- Lattice degeneration
- Cataract surgery
- Trauma
- Hx RRD in fellow eye

When (i.e., in what age range) do PVDs typically occur?

45-65

What group of otherwise normal eyes often detach at a younger age?

Myopic eyes

PVDs can be divided into two groups based on an important clinical characteristic. What are these groups?

Symptomatic and asymptomatic

Why is the symptomatic/asymptomatic distinction clinically important?

Because symptomatic pts are at significantly higher risk of an RRD

What symptoms are being referenced here?

Photopsias and floaters

There are three main types of floaters. What are they?

- Heme
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Retinal Detachment Overview

Rhegmatogenous (RRD)
Non-rhegmatogenous
Exudative (ERD)
Tractional (TRD)

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Retinal Detachment Overview

Non-rhegmatogenous Exudative (ERD)

Rhegmatogenous (RRD)

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Retinal Detachment Overview

Non-rhegmatogenous (ERD)

Rhegmatogenous (RRD)

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Retinal Detachment Overview

Weiss ring
The AAO Preferred Practice Pattern for RRD lists five risk factors:
- Posterior vitreous detachment (PVD)
- Myopia
- Lattice degeneration
- Cataract surgery
- Trauma
- Hx RRD in fellow eye

Is myopia a significant risk factor? Yeah buddy. Over half of RRDs occur in myopic eyes!

Is RRD risk proportional to the degree of myopia? Yes

Is RRD risk proportional to axial length (which is of course proportional to the degree of myopia)? Yes
Retinal Detachment Overview

Retinal Detachment

Rhegmatogenous (RRD)

Non-rhegmatogenous

The AAO Preferred Practice Pattern for RRD lists five risk factors--what are they?
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Retinal Detachment Overview

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--Myopia
--Lattice degeneration
--Cataract surgery
--Trauma
--Hx RRD in fellow eye
Retinal Detachment Overview

Retinal Detachment

Rhegmatogenous (RRD)

Non-rhegmatogenous

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- Cataract surgery
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Retinal Detachment Overview

Rhegmatogenous (RRD)

Non-rhegmatogenous
Retinal Detachment Overview

Rhegmatogenous (RRD)

Non-rhegmatogenous

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Retinal Detachment Overview

Retinal Detachment

Rhegmatogenous (RRD)

Non-rhegmatogenous

The AAO Preferred Practice Pattern for RRD lists five risk factors:

- Posterior vitreous detachment (PVD)
- Myopia
- Lattice degeneration
- Cataract surgery
- Trauma
- Hx RRD in fellow eye

How prevalent is lattice in the population?
Quite
it is found in 5-10% of the population

How prevalent is lattice in pts with an RRD?
It is found in 1/5 to 1/3 of eyes with an RRD

Is it more common in myopic, or hyperopic eyes?
Myopic

Is it sporadic, or familial?
While not inevitable, a familial predisposition is often found
Retinal Detachment Overview

Retinal Detachment

Rhegmatogenous (RRD)

Non-rhegmatogenous

The AAO Preferred Practice Pattern for RRD lists five risk factors:

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Retinal Detachment

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Retinal Detachment Overview

Lattice degeneration
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- Myopia
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Retinal Detachment

Rhegmatogenous (RRD)

Non-rhegmatogenous

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Retinal Detachment

Rhegmatogenous
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Non-rhegmatogenous

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Retinal Detachment

- Rhegmatogenous (RRD)
- Non-rhegmatogenous

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Retinal Detachment

Rhegmatogenous

Non-rhegmatogenous

There are three clinically important aspects to the structure of lattice degeneration—what are they?
1) A focal area of retina for which the internal limiting membrane is missing;
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Retinal Detachment

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Myopia

Lattice degeneration

Cataract surgery

Trauma

Hx RRD in fellow eye
Retinal Detachment Overview

Retinal Detachment

Rhegmatogenous

Non-rhegmatogenous

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--Myopia
--Lattice degeneration
--Cataract surgery
--Trauma
--Hx RRD in fellow eye
Retinal Detachment Overview

Retinal Detachment

Rhegmatogenous

Non-rhegmatogenous

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Retinal Detachment

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Retinal Detachment

(Rhegmatogenous)  Non-rhegmatogenous

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--- Myopia
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Retinal tears (with subsequent rhegmatogenous RD) result from traction on these abnormal vitreo-retinal adhesions

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Retinal Detachment Overview

Retinal tear at the posterior edge of lattice
Retinal Detachment Overview

Retinal Detachment

Rhegmatogenous (RRD)

Non-rhegmatogenous

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- Posterior vitreous detachment (PVD)
- Myopia
- Lattice degeneration
- Cataract surgery
- Trauma
- Hx RRD in fellow eye

Who is at greater risk for RRD after cataract surgery…

- Males, or females?
Retinal Detachment Overview

Retinal Detachment

Rhegmatogenous (RRD)

Non-rhegmatogenous

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Retinal Detachment Overview

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- Myopia
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- Cataract surgery
- Trauma
- Hx RRD in fellow eye

Who is at greater risk for RRD after cataract surgery…
- Males, or females? **Males**
- Younger, or older individuals?
Retinal Detachment Overview

The AAO Preferred Practice Pattern for RRD lists five risk factors—what are they?
--Posterior vitreous detachment (PVD)
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Retinal Detachment Overview

Retinal Detachment

Rhegmatogenous (RRD)

Non-rhegmatogenous

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Retinal Detachment Overview

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Retinal Detachment Overview

Retinal Detachment

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What intraop event significantly increases the risk of RRD?
Retinal Detachment Overview

Retinal Detachment

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What intraop event significantly increases the risk of RRD?
Rupture of the posterior capsule
Retinal Detachment Overview

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- Posterior vitreous detachment (PVD)
- Myopia
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- Trauma

Are we talking about blunt, or penetrating trauma?

Young people have a higher rate of eye trauma than do older individuals. If a young person sustains a break-producing injury, is it expected that they will have an RRD soon thereafter? No, only about 10% present in the immediate post-injury period. Only about 50% will present within the first 8 months. Why the delay? Because young people's vitreous is formed (i.e., not yet liquefied), it is not able to flow through an open retinal break. Only later, if/when trauma-induced vitreous damage leads to liquefaction, will a young person experience an RRD.
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Retinal Detachment Overview

Retinal

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*What effect does a history of nontraumatic RRD in one eye have on the lifetime risk of experiencing a nontraumatic RRD in the fellow eye?*
The AAO Preferred Practice Pattern for RRD lists five risk factors—what are they?

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What effect does a history of nontraumatic RRD in one eye have on the lifetime risk of experiencing a nontraumatic RRD in the fellow eye?
It increases it by about 10%
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What is the underlying pathophysiology in TRD?
What is the underlying pathophysiology in TRD? Vitreoretinal elements pulling hard enough on the neurosensory retina to distract it from its normal position apposing the RPE
What is the underlying pathophysiology in TRD?

**Vitreoretinal elements** pulling hard enough on the neurosensory retina to distract it from its normal position apposing the RPE.
What is the underlying pathophysiology in TRD?

Vitreoretinal elements pulling hard enough on the neurosensory retina to distract it from its normal position apposing the RPE

What is the most common cause of these vitreoretinal membrane?
Proliferative retinopathy (eg, PDR; CRVO; BRVO)

Retinal Detachment Overview

Non-rhegmatogenous

Rhegmatogenous (RRD)

Exudative (ERD)

Tractional (TRD)
Retinal Detachment Overview

What is the most common cause of these vitreoretinal membrane?
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What is another, completely different sort of common cause?

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Retinal Detachment Overview

Retinal Detachment
Non-rhegmatogenous

Non-Rhegmatogenous

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Retinal Detachment Overview

Retinal Detachment

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What is the most common cause of these vitreoretinal membrane?

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Does penetrating trauma lead to proliferative retinopathy?

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Retinal Detachment Overview

How does proliferative retinopathy lead to TRD?

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Rhegmatogenous (RRD)

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Tractional (TRD)
Retinal Detachment Overview

How does proliferative retinopathy lead to TRD?
Recall that, by definition, PDR vessels break through the internal limiting membrane (ILM), and thus are in contact with the posterior hyaloid face. Some vessels will use the posterior hyaloid as a ‘scaffold’ on which to grow. Further, remember that proliferative vessels don’t travel solo--they bring glial and other fibroblastic-type cells along. These fellow-travelers provide a contractile element to the neovascular fronds.

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So, contraction of these fibrovascular elements leads to TRD?

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So, contraction of these fibrovascular elements leads to TRD?
It contributes, but is not the main source of traction

What is the main source of traction?
Our old friend PVD—or more correctly, a partial PVD. New vessels crawling on the posterior hyaloid face induces a partial PVD. Some vessels prevent the PVD from propagating (hence its partial status); others are suspended between the contracting vitreous and the retina, resulting in traction on the retina.
What is the most common cause of the vitreoretinal membrane?

**Proliferative retinopathy** (e.g., PDR, CRVO, BRVO)

What is another, completely different sort of common cause?

Penetrating trauma

Does penetrating trauma lead to proliferative retinopathy?

No, it leads to proliferative vitreoretinopathy

What is the underlying pathophysiology in TRD?

**Vitreoretinal elements** pulling hard enough on the neurosensory retina to distract it from its normal position apposing the RPE

How does proliferative retinopathy lead to TRD?

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Retinal Detachment Overview

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What is the most common cause of these vitreoretinal membrane?
Proliferative retinopathy (e.g., PDR; CRVO; BRVO)

What is another, completely different sort of common cause?
Penetrating trauma

Does penetrating trauma lead to proliferative retinopathy?
No, it leads to proliferative vitreoretinopathy
TRD. Note the vessels crawling up on and into the vitreous
To be clear: When we refer to penetrating trauma, what structure specifically is being penetrated?

What is another, completely different sort of common cause? **Penetrating trauma**

Does penetrating trauma lead to proliferative retinopathy?
No, it leads to proliferative vitreoretinopathy

What is the underlying pathophysiology in TRD? **Vitreoretinal elements** pulling hard enough on the neurosensory retina to distract it from its normal position apposing the RPE

Non-rhegmatogenous

- Tractional (TRD)
- Exudative (ERD)
To be clear: When we refer to penetrating trauma, what structure specifically is being penetrated? The neurosensory (NS) retina

Does penetrating trauma lead to proliferative retinopathy?
No, it leads to proliferative vitreoretinopathy

What is another, completely different sort of common cause?
Penetrating trauma

Non-rhegmatogenous

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What is proliferative vitreoretinopathy? 

What is another, completely different sort of common cause? Penetrating trauma

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To be clear: When we refer to penetrating trauma, what structure specifically is being penetrated?
The neurosensory (NS) retina

What is proliferative vitreoretinopathy?
The term can refer to the formation of vitreous membranes secondary to a break in the NS retina, or to the membranes themselves.

What is another, completely different sort of common cause?
Penetrating trauma

Does penetrating trauma lead to proliferative retinopathy?
No, it leads to proliferative vitreoretinopathy

How does a break in the NS retina lead to the formation of vitreous membranes?
Such a break provides a pathway for certain cells (ie, RPE; glial) to enter the space internal to the NS retina. Once they find themselves in this space, these cells reproduce and migrate along the NS retina, across the face of the posterior hyaloid, and into the vitreous body itself. Once established on or in the vitreous, contraction of these membranes puts the NS retina under traction, which can be strong enough to distract the NS retina away from its position apposite the RPE; ie, cause a TRD.

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What is the most common cause of these vitreoretinal membrane?
Proliferative retinopathy (eg, PDR; CRVO; BRVO)

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Exudative (ERD)

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So you can see how penetrating (NS retina) trauma can lead to PVR and TRD—the traumatic break provides the pathway by which the contractile cells can access the vitreous.

What is another, completely different sort of common cause?
Penetrating trauma

Does penetrating trauma lead to proliferative retinopathy?
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What is the most common cause of these vitreoretinal membranes?
Proliferative retinopathy (e.g., PDR; CRVO; BRVO)

What unhappy role does PVR play in the long-term outcome of surgery to repair RRD?
PVR is the most common cause of long-term RRD surgery failure.

RRD involves a break in the retina. Why doesn’t PVR develop after RRD?
In fact it does, frequently.
To be clear: When we refer to penetrating trauma, what structure specifically is being penetrated? The neurosensory (NS) retina

What is proliferative vitreoretinopathy? The term can refer to the formation of vitreous membranes secondary to a break in the NS retina, or to the membranes themselves.

How does a break in the NS retina lead to the formation of PVR and TRD? Such a break provides a pathway for certain cells (e.g., RPE; glial) to enter the space internal to the NS retina. Once they find themselves in this space, these cells reproduce and migrate along the NS retina, across the face of the posterior hyaloid, and into the vitreous, contraction of these membranes puts the NS retina under traction, which can be strong enough to distract the NS retina away from its position apposing the RPE; i.e., cause a TRD.

So you can see how penetrating (NS retina) trauma can lead to PVR and TRD—the traumatic break provides the pathway by which the contractile cells can access the vitreous.

Wait--RRD involves a break in the retina. Why doesn't PVR develop after RRD?

Rhegmatogenous (RRD)

Does penetrating trauma lead to proliferative retinopathy? No, it leads to proliferative vitreoretinopathy.

Exudative (ERD)

What is the underlying pathophysiology in TRD? Vitreoretinal elements pulling hard enough on the neurosensory retina to distract it from its normal position apposing the RPE.
What is the underlying pathophysiology in TRD?
The vitreoretinal elements pulling hard enough on the neurosensory retina to distract it from its normal position apposing the RPE

Vitreoretinal elements

What is the most common cause of these vitreoretinal membranes?
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What is proliferative vitreoretinopathy?
The term can refer to the formation of vitreous membranes secondary to a break in the NS retina, or to the membranes themselves

How does a break in the NS retina lead to the formation of vitreous membranes?
Such a break provides a pathway for certain cells (e.g., RPE; glial) to enter the space internal to the NS retina. Once they find themselves in this space, they migrate across the face of the posterior hyaloid, and into the vitreous. Contraction of these membranes puts the NS retina under traction, which can be strong enough to distract the NS retina away from its position apposing the RPE; i.e., cause a TRD.

So you can see how penetrating (NS retina) trauma can lead to PVR and TRD—the traumatic break provides the pathway by which the contractile cells can access the vitreous.

Wait--RRD involves a break in the retina. Why doesn't PVR develop after RRD?
In fact it does, frequently

What unhappy role does PVR play in the long-term outcome of surgery to repair RRD?
PVR is the most common cause of long-term RRD surgery failure
What is the underlying pathophysiology in TRD?

The neurosensory (NS) retina

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Wait--RRD involves a break in the retina. Why doesn't PVR develop after RRD?

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What is the most common cause of these vitreoretinal membrane?

Proliferative retinopathy (e.g., PDR; CRVO; BRVO)

What is another, completely different sort of common cause?

Penetrating trauma

Does penetrating trauma lead to proliferative vitreoretinopathy?

No, it leads to **proliferative vitreoretinopathy.**

To be clear: When we refer to penetrating trauma, what structure specifically is being penetrated?

The neurosensory (NS) retina

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In fact it does, frequently.

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PVR is the most common cause of long-term RRD surgery failure.

What is the underlying pathophysiology in TRD?
Vitreoretinal elements pulling hard enough on the neurosensory retina to distract it from its normal position apposing the RPE.

Rhegmatogenous
(RRD)

Penetrating

Does penetrating trauma lead to proliferative retinopathy?
No, it leads to proliferative vitreoretinopathy

Tractional
(TRD)

Exudative
(ERD)
In a nutshell, what is going on in ERD?

Retinal Detachment Overview

Rhegmatogenous (RRD)

In a nutshell, what is going on in ERD?

The accumulation of fluid in the potential space between the NS retina and the RPE

Under normal circumstances, what prevents fluid from accumulating there?

The pumping action of the RPE

This implies what about the underlying pathophysiology of ERD?

That it is due to either:

- a rate of fluid accumulation too high for the RPE to keep up;
- or a failure of RPE pumping function

(or a combo of both)
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What two broad categories of dz are commonly associated with hyperexudation?
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Under normal circumstances, what prevents fluid from accumulating there?
The pumping action of the RPE.

What two broad categories of dz are commonly associated with hyperexudation?
-- Inflammatory
-- Neoplastic

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What inflammatory conditions are associated with ERD?

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What inflammatory conditions are associated with ERD?
--Vogt-Koyanagi-Harada (VKH)
--Posterior scleritis
--Malignant hypertension
--Toxemia of pregnancy
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And given VKH is in the DDx, what other condition must be considered as well?

What inflammatory conditions are associated with ERD?
--- Vogt-Koyanagi-Harada (VKH)
--- Posterior scleritis
--- Malignant hypertension
--- Toxemia of pregnancy

--- Nonrhegmatogenous
--- Exudative (ERD)
--- Tractional (TRD)

Hyper-exudation

Exudative (ERD)

Inflammation

Neoplasm

RPE dysfunction
In a nutshell, what is going on in ERD? 
The accumulation of fluid in the potential space between the NS retina and the RPE

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The pumping action of the RPE

What two broad categories of dz are commonly associated with hyperexudation?

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And given VKH is in the DDx, what other condition must be considered as well?
SO--sympathetic ophthalmia. (If you don’t understand why SO must be included, check out the VKH/SO slide-set.)

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--a rate of fluid accumulation too high for the RPE to keep up; or
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(or a combo of both)

Which broad categories of neoplasms are associated with ERD?
--
--

Retinal Detachment Overview
In a nutshell, what is going on in ERD?
The accumulation of fluid in the potential space between the NS retina and the RPE

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The pumping action of the RPE

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--Inflammatory
--Neoplastic

--a rate of fluid accumulation too high for the RPE to keep up; or
--a failure of RPE pumping function
(or a combo of both)

Which broad categories of neoplasms are associated with ERD?
--Choroidal
--Metastases
Retinal Detachment Overview

**In a nutshell, what is going on in ERD?**
The accumulation of fluid in the potential space between the NS retina and the RPE

**Under normal circumstances, what prevents fluid from accumulating there?**
The pumping action of the RPE

What two broad categories of dz are commonly associated with hyperexudation?
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Which broad categories of neoplasms are associated with ERD?
What are the two most common causes for each?
--Choroidal, especially ? and ?
--Metastases, especially ? and ?

Exudative (ERD)

Hyper-exudation

RPE dysfunction

Inflammation

Neoplasm

Choroidal

Metastatic
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--Neoplastic

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--a failure of RPE pumping function (or a combo of both)

Which broad categories of neoplasms are associated with ERD?
**What are the two most common causes for each?**
--Choroidal, especially hemangioma and melanoma
--Metastases, especially breast and lung
Retinal Detachment Overview

In a nutshell, what is going on in ERD?
The accumulation of fluid in the potential space between the NS retina and the RPE

Under normal circumstances, what prevents fluid from accumulating there?
The pumping action of the RPE

This implies what about the underlying pathophysiology of ERD?
What condition, often but not always associated with ERD, is a classic example of RPE dysfunction?
--a failure of RPE pumping function
(or a combo of both)

Exudative (ERD)

RPE dysfunction

Hyper-exudation

Inflammation

Neoplasm

Choroidal

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In a nutshell, what is going on in ERD?
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Central serous chorioretinopathy (CSC)

--a failure of RPE pumping function
(or a combo of both)
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---a failure of RPE pumping function
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(Note: ERD in CSC is not due solely to RPE dysfunction—choroidal hyperpermeability is a component as well)
We can’t talk about ERD without mentioning an extremely OKAP-worthy condition associated with it…Questions about this condition could be Retina-based or Peds-based…That condition is… two words.
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Coats disease: ERD
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--Age of presentation? **5 years**
--Gender?
Retinal Detachment Overview

Retinal Detachment

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--Age of presentation? 5 years
--Gender? Male
--Laterality?
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--Presenting sign?
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Retinal Detachment Overview

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- **Can Coats present in adulthood?**
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--What percent of cases are male? About 70-80%
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What percent of cases are unilateral?
Retinal Detachment Overview

Retinal Detachment

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What feared condition is Coats on the DDx for?
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- Age of presentation? 5 years
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- Laterality? **Unilateral**
- Presenting sign? **Leukocoria**

What feared condition is Coats on the DDx for? **Retinoblastoma**
Is it Coats, or exophytic Rb?
**Coats.** Note the vascular anomalies
In Coats, the retinal vessels are dilated, with microaneurysms and telangiectasias. (Note also the yellow hue.)

In Rb, the retinal vessels are normal in appearance.