Rhegmatogenous RD Repair

What three things **must** be accomplished to successfully repair a rhegmatogenous RD?

1) Find all **two words**
What three things must be accomplished to successfully repair a rhegmatogenous RD?

1) Find all retinal breaks
Rhegmatogenous RD Repair

What three things must be accomplished to successfully repair a rhegmatogenous RD?

1) Find all retinal breaks
2) Induce an inflammation in the immediately surrounding the break
What three things **must** be accomplished to successfully repair a rhegmatogenous RD?

1) Find all **retinal breaks**

2) Induce an **inflammatory response** in the **chorioretinal tissue** immediately surrounding the break
What three things must be accomplished to successfully repair a rhegmatogenous RD?

1) Find all retinal breaks
2) Induce an inflammatory response in the chorioretinal tissue immediately surrounding the break
3) Bring the inflamed choroid and retinal tissue into apposition long enough to allow formation of a which will act as a barrier between the break and the subretinal space. Note that accomplishing this requires eliminating any that may be present.
What three things \textit{must} be accomplished to successfully repair a rhegmatogenous RD?

1) Find all \texttt{retinal breaks}

2) Induce an \texttt{inflammatory response} in the \texttt{chorioretinal tissue} immediately surrounding the break

3) Bring the inflamed choroid and retinal tissue into apposition long enough to allow formation of a \texttt{chorioretinal scar}, which will act as a barrier between the break and the subretinal space. Note that accomplishing this requires eliminating any \texttt{vitreoretinal traction} that may be present.
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Failing to accomplish one (or more) of these is the most common cause of RD surgery failure in the early post-op period!
What three things must be accomplished to successfully repair a rhegmatogenous RD?

1) Find all retinal breaks

Regarding finding retinal breaks, to what does the term Lincoff rules refer?
What three things **must** be accomplished to successfully repair a rhegmatogenous RD?

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Per Lincoff’s rules, there are # RD configurations.
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*Per Lincoff’s rules, there are four RD configurations.*

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If the RD is superior but doesn’t cross 12 o’clock, where is the break?

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*If the RD is superior but doesn’t cross 12 o’clock, where is the break?*
It is within 1.5 clock-hours of the uppermost border of whichever side (ie, nasal vs temporal) of the RD is higher vs lower.
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3) An inferior RD that is ‘typical’ in appearance
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#1: In a superior RD that does not cross the 12 o’clock meridian, the break is within 1.5 clock-hours of the uppermost border of whichever side (ie, nasal vs temporal) of the RD is higher.
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2) **A superior RD that does cross the 12 o’clock meridian**
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If the RD is superior and crosses 12 o’clock, where is the break?
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If the RD is superior and crosses 12 o’clock, where is the break?
It is within 1.5 clock-hours of straight-up 12 o’clock.

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2) A superior RD that does cross the 12 o’clock meridian
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#2: In a superior RD that *does* cross the 12 o’clock meridian, the break is within 1.5 clock-hours of straight-up 12 o’clock
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Per Lincoff:

If the RD is inferior and ‘typical’ in appearance, where is the break? It is on whichever side (ie, nasal vs temporal) of the RD is higher vs lower.

1) A superior RD that does cross the 12 o’clock meridian
2) A superior RD that does not cross the 12 o’clock meridian
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What three things must be accomplished to successfully repair a rhegmatogenous RD?

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#3: In an inferior RD that is ‘typical’ in appearance, the break is on whichever side (ie, nasal vs temporal) of the RD is higher.
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If the RD is inferior and ‘bullous,’ where is the break?

- **Nasal meridian**
- **Superior meridian**
- **Inferior RD that is typical in appearance**
- **An inferior RD that appears ‘bullous’**
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If the RD is inferior and ‘bullous,’ where is the break? Counterintuitively, it is superior, with the liquid vitreous tracking inferiorly via an occult peripheral retinal sinus.

3) An inferior RD that is typical in appearance

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#4: In a bullous inferior RD, the break is **superior**, with the liquid vitreous tracking inferiorly via a peripheral retinal sinus.
The Lincoff Rules
What three things must be accomplished to successfully repair a rhegmatogenous RD?

1) Find all retinal breaks

2) Induce an inflammatory response in the chorioretinal tissue immediately surrounding the break

3) Bring the inflamed choroid and retinal tissue into apposition long enough to allow formation of a chorioretinal scar, which will act as a barrier between the break and the subretinal space. Note that accomplishing this requires eliminating any vitreoretinal traction that may be present.

What are the two main surgical approaches for inducing the inflammatory response?
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**What are the two main surgical approaches for inducing the inflammatory response?**

-- Laser

-- Transscleral cryotherapy
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What are the surgical approaches to accomplishing this step?
--Scleral buckle (SB)
--Pars plana vitrectomy (PPV)
--Pneumatic retinopexy (PR)
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How does a SB bring the retina and underlying tissue into apposition?
By indenting the sclera underlying the retinal break. Indention pushes the subretinal tissue in the direction of the detached retina. It may also dissipate vitreoretinal traction.

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Are all SBs circumferential, ie, do they encircle the entire globe?

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What effect does SB have on the refractive state of the eye?
A myopic shift often results.

Why does a myopic shift occur?
If the globe is squeezed circumferentially, the resulting increase in A-P length produces axial myopia.

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3) Bring the inflamed choroid and retinal tissue into apposition long enough to allow formation of a chorioretinal scar, which will act as a barrier between the break and the subretinal space. Note that accomplishing this requires eliminating any vitreoretinal traction that may be present.

What are the surgical approaches to accomplishing this step?
--Scleral buckle (SB)
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How does a SB bring the retina and underlying tissue into apposition?
By indenting the sclera underlying the retinal break. Indention pushes the subretinal tissue in the direction of the detached retina. It may also dissipate vitreoretinal traction.

What effect does SB have on the refractive state of the eye?
A myopic shift often results.

Why does a myopic shift occur?
If the globe is squeezed circumferentially, the resulting increase in A-P length produces axial myopia.
What three things must be accomplished to successfully repair a rhegmatogenous RD?

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Briefly, how is a PPV performed?

Three spaced-apart stab incisions are made through the sclera and pars plana portion of the ciliary body. Via these incisions, a light source, irrigation cannula and vitreous cutter are introduced into the vitreous cavity. The cutter is used to remove the vitreous gel.
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How does a PPV bring the retina and underlying tissue into apposition?

The vitreous overlying a retinal break is the source of traction that pulls the retina away from the underlying tissue. In a PPV, the vitreous—and hence the source of this traction—is removed. That's all there is to it—remove the vitreous, and the retina simply falls back in place? Well, no. A substance (usually a gas or an oil) must be introduced into the vitreous cavity to promote and maintain apposition.

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What are the surgical approaches to accomplishing this step?
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What is the basic procedure in PR?

It is as simple as it is elegant. A gas (air; SF6; C3F8) is injected into the vitreous cavity. The floating gas bubble pushes against the RD, and in doing so forces the subretinal fluid back out through the break, as well as pushes the retinal-break region into apposition against the underlying tissue. All via a simple office procedure!

Sounds great! Why not do this for all rhegmatogenous RDs?

Unfortunately, not all RRDs are good candidates for PR. To qualify for PR, the RD should have the following characteristics:

- **Number of breaks**: Ideally there is only one, but if more than one are present, they must be few in number and all located within 1-2 clock-hours of each other.
- **Location of breaks**: The break(s) must be located between 4 and 8 o'clock.
- **Vitreoretinal traction status**: There must be none, or very little.
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SF₆: Sulfur hexafluoride
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--**Pneumatic retinopexy (PR)**
Pneumatic retinopexy: Head positioning
What are the surgical approaches to accomplishing this step?
--Scleral buckle (SB)
--Pars plana vitrectomy (PPV)
--Pneumatic retinopexy (PR)

What is the basic procedure in PR?
It is as simple as it is elegant. A gas (air, SF₆, C₃F₈) is injected into the vitreous cavity. The floating gas bubble pushes against the RD, and in doing so forces the subretinal fluid back out through the break, as well as pushes the retinal-break region into apposition against the underlying tissue. All via a simple office procedure!

Sounds great! Are all RDs candidates for PR?
Far from it, unfortunately. To qualify for PR, the RD should have the following characteristics:
– Ideally there is only one retinal break. But if more than one are present, they must be few in number, and all must lie within 1-2 clock-hours of each other
– The break(s) must be located superotemporally (upper 1/3 of retina)
– Vitreoretinal traction must be minimal
– The patient must be willing and able to adopt and maintain the (possibly awkward) head position needed to keep the gas bubble pressing against the retinal break

Which method of ‘inflammation induction’ (ie, laser or cryo) is usually used in conjunction with PR?
Laser

Rhegmatogenous RD Repair
What are the surgical approaches to accomplishing this step?

- Scleral buckle (SB)
- Pars plana vitrectomy (PPV)
- Pneumatic retinopexy (PR)

Rhegmatogenous RD Repair

What must be accomplished to successfully repair a rhegmatogenous RD?

1) Find all retinal breaks
2) Induce an inflammatory response in the chorioretinal tissue immediately surrounding the break
3) Bring the inflamed choroid and retinal tissue into apposition long enough to allow formation of a chorioretinal scar, which will act as a barrier between the break and the subretinal space. Note that accomplishing this requires eliminating any vitreoretinal traction that may be present.

What are the surgical approaches to accomplishing this step?

- Scleral buckle (SB)
- Pars plana vitrectomy (PPV)
- Pneumatic retinopexy (PR)

What is the basic procedure in PR?

It is as simple as it is elegant. A gas (air, SF₆, C₃F₈) is injected into the vitreous cavity. The floating gas bubble pushes against the RD, and in doing so forces the subretinal fluid back out through the break, as well as pushes the retinal-break region into apposition against the underlying tissue. All via a simple office procedure!

Sounds great! Are all RDs candidates for PR?

Far from it, unfortunately. To qualify for PR, the RD should have the following characteristics:

- Ideally there is only one retinal break. But if more than one are present, they must be few in number, and all must lie within 1-2 clock-hours of each other
- The break(s) must be located superiorly (upper 1/3 of retina)
- There must be minimal (if any) vitreoretinal traction
- The patient must be willing and able to adopt and maintain the (possibly awkward) head position needed to keep the gas bubble pressing against the retinal break.

Which method of ‘inflammation induction’ (ie, laser or cryo) is usually used in conjunction with PR?

Both are commonly used.
What three things must be accomplished to successfully repair a rhegmatogenous RD?

1) Find all retinal breaks
2) Induce an inflammatory response in the chorioretinal tissue immediately surrounding the break
3) Bring the inflamed choroid and retinal tissue into apposition by creating a chorioretinal scar, which will act as a barrier between the break and the subretinal space. Note that accomplishing this requires eliminating any vitreoretinal traction that may be present.

What's the most common cause of failure in the late post-op period?

Failing to accomplish one (or more) of these is the most common cause of RD surgery failure in the late post-op period!
What three things *must* be accomplished to successfully repair a rhegmatogenous RD?

1) Find all retinal breaks

2) Induce an inflammatory response in the chorioretinal tissue immediately surrounding the break

3) Bring the inflamed choroid and retinal tissue into apposition long enough to allow formation of a chorioretinal scar, which will act as a barrier between the break and the subretinal space. Note that accomplishing this requires eliminating any vitreoretinal traction that may be present.

What's the most common cause of failure in the *late* post-op period?

Development of PVR

Failing to accomplish one (or more) of these is the most common cause of RD surgery failure in the *late* post-op period!
What three things **must** be accomplished to successfully repair a rhegmatogenous RD?

1) Find all **retinal breaks**

2) Induce an **inflammatory response** in the **chorioretinal tissue** immediately surrounding the break

3) Bring the inflamed choroid and retinal tissue into apposition, allowing the formation of a chorioretinal scar, which will act as a barrier between the break and the subretinal space. Note that accomplishing this requires eliminating any vitreoretinal traction that may be present.

**Failing to accomplish one (or more) of these is the most common cause of RD surgery failure in the late post-op period!**

What's the most common cause of failure in the **late** post-op period?

- Development of **PVR**
What three things **must** be accomplished to successfully repair a rhegmatogenous RD?

1) Find all retinal breaks
2) Induce an inflammatory response in the chorioretinal tissue immediately surrounding the break
3) Bring the inflamed choroid and retinal tissue into apposition long enough to allow formation of a chorioretinal scar, which will act as a barrier between the break and the subretinal space. Note that accomplishing this requires eliminating any vitreoretinal traction that may be present.

Failing to accomplish one (or more) of these is the **most common cause of RD surgery failure in the late post-op period!**

What does PVR stand for in this context?

What's the most common cause of late RD repair failure?

Proliferative vitreoretinopathy

By what mechanism does PVR cause late RD repair failure?

It leads to vitreo-retinal traction — and we're right back where we started…
What three things *must* be accomplished to successfully repair a rhegmatogenous RD?

1) Find all retinal breaks

2) Induce an inflammatory response in the chorioretinal tissue immediately surrounding the break

3) Bring the inflamed choroid and retinal tissue into apposition long enough to allow formation of a chorioretinal scar, which will act as a barrier between the break and the subretinal space. Note that accomplishing this requires eliminating any vitreoretinal traction that may be present.

Failing to accomplish one (or more) of these is the most common cause of RD surgery failure in the late post-op period!

*A Rhegmatogenous RD Repair*

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What's the most common cause of RD surgery failure in the late post-op period? Proximal vitreous traction

What does PVR stand for in this context? Proliferative vitreoretinopathy
What three things must be accomplished to successfully repair a rhegmatogenous RD?

1) Find all retinal breaks

2) Induce an inflammatory response in the chorioretinal tissue immediately surrounding the break

3) Bring the inflamed choroid and retinal tissue into apposition long enough to allow formation of a chorioretinal scar, which will act as a barrier between the break and the subretinal space. Note that accomplishing this requires eliminating any vitreoretinal traction that may be present.

Failing to accomplish one (or more) of these is the most common cause of RD surgery failure in the late post-op period!

What's the most common cause of RD surgery failure in the late post-op period?

Development of PVR

What does PVR stand for in this context?
Proliferative vitreoretinopathy

By what mechanism does PVR cause late RD repair failure?
It leads to vitreo-retinal traction—three words
What three things must be accomplished to successfully repair a rhegmatogenous RD?

1) Find all retinal breaks
2) Induce an inflammatory response in the chorioretinal tissue immediately surrounding the break
3) Bring the inflamed choroid and retinal tissue into apposition long enough to allow formation of a chorioretinal scar, which will act as a barrier between the break and the subretinal space. Note that accomplishing this requires eliminating any vitreoretinal traction that may be present.

Failing to accomplish one (or more) of these is the most common cause of RD surgery failure in the late post-op period!

What does PVR stand for in this context? Proliferative vitreoretinopathy

By what mechanism does PVR cause late RD repair failure? It leads to vitreo-retinal traction
What three things must be accomplished to successfully repair a rhegmatogenous RD?

1) Find all retinal breaks
2) Induce an inflammatory response in the chorioretinal tissue immediately surrounding the break
3) Bring the inflamed choroid and retinal tissue into apposition long enough to allow formation of a chorioretinal scar, which will act as a barrier between the break and the subretinal space. Note that accomplishing this requires eliminating any vitreoretinal traction that may be present.

What’s the most common cause of RD surgery failure in the early post-op period!

What does PVR stand for in this context? Proliferative vitreoretinopathy

By what mechanism does PVR cause late RD repair failure? It leads to vitreo-retinal traction—and we’re right back where we started.

Failing to accomplish one (or more) of these is the most common cause of RD surgery failure in the late post-op period!