

Primary Vitrectomy Versus Chandelier Buckling in Primary RD



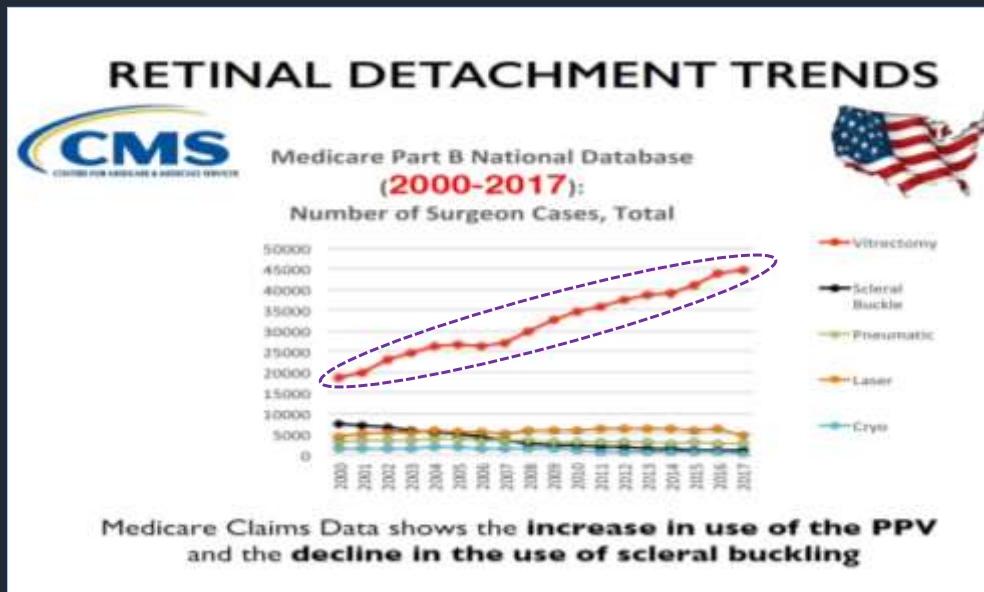
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Financial Disclosure

I have the following financial interests or relationships to disclose

- Thea Pharma Laboratories : Consultant/Advisor, Lecture Fees
- Allergan : Consultant/Advisor, Lecture Fees
- Bayer Healthcare Pharmaceuticals : Consultant/Advisor, Lecture Fees
- Novartis Pharmaceuticals Corporation : Consultant/Advisor, Lecture Fees
- DORC International, bv : Consultant/Advisor, Lecture Fees

Primary Vitrectomy versus Chandelier Buckling in Primary RD



Primary Vitrectomy versus Chandelier Buckling in Primary RD

Single surgy success rates (SSSR) to achieve the restoration of pre-detachment vision

SSSR to achieve the restoration of pre-detachment vision

The goal of the surgery

- The retina specialist is responsible of performing the surgical technique with the highest chance of restoring pre-detachment vision
- Visual acuity is not vision
 - Visual acuity \Rightarrow How do we read an E chart
 - Vision \Rightarrow How do we perceive our environment

SSSR to achieve the restoration of pre-detachment vision

Scleral buckle surgery negatively effects the chance of restoring Pre-detachment vision

One day after surgery

- Induced astigmatism
- Induced myopia
- Muscle imbalance
- Tearing, photophobia
- Discomfort
- Reduced visual acuity (*Macular edema, increased choroidal thickness*)



SSSR to achieve the restoration of pre-detachment vision

SPR study; Ophthalmology-2007 (The largest randomized clinical trial)

- **Phakic** ⇨ Better functional results with buckle
- **Pseudophakic** ⇨ Better anatomical outcomes with vitrectomy

The results expressed in this study does not reflect the well deserved success of PPV

NO STANDARDISATION

- Vitrectomy technique
- Surgeon experience level

SSSR to achieve the restoration of pre-detachment vision

The single surgery succes rate (SSSR)

Recently, the SSSR of PPV has been reported to be 95% or more

Pak et al; J Ophthalmol. -2017
Park et al; BMC Ophthalmol.-2015
Schneider et al; Retina. -2012
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Primary Vitrectomy versus Chandelier Buckling in Primary RD

Postoperative recovery period and complications

Postoperative recovery period and complications



One day after surgery



Postoperative recovery period and complications



One day after surgery

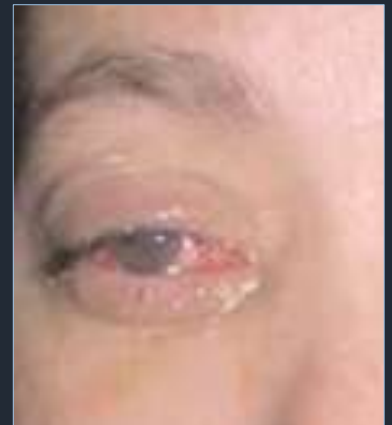
Much less surgical trauma on the sclera and conjunctival tissue compared with SB



Postoperative recovery period and complications

Visual rehabilitation

Although it is widely believed that SB surgery provides early visual recovery, this is not true when we consider binocular vision restoration



Postoperative recovery period and complications

SB complications (Intraop)

- Fish mouthing
- Muscle damage
- Scleral perforation
- SRF drainage complications
 - Subretinal bleeding
 - Suprachoroidal Hemorrhage
 - Scleral perforation and incarceration

POOR VISUALIZATION



Postoperative recovery period and complications

SB complications (Postop)

- Induced myopia and astigmatism
- Decrease retinal and choroidal blood flow
- Mobility disorder and diplopia
- Extrusion and infection of buckling material
- Anterior segment ischemia
- Persistent subretinal fluid
- Retinal fold
- Inflammatory reaction, pain and photophobia
- Choroidal detachment
- PVR development in failed case



Postoperative recovery period and complications

Vitreotomy complications

- Cataract formation
- Iatrogenic breaks

An experienced surgeon can avoid and minimize these complications except cataract development

- Intraocular inflammation

Primary Vitrectomy versus Chandelier Buckling in Primary RD

Customized surgery based on each individual patient status

Customized surgery based on each individual patient status

Reasons for decrease in choice for surgery with SB in the recent years

- Introduction of small-gauge conjunctiva sparing PPV [25G, 23G, 27G]
- PFCL allows easier and safer retinal reattachment during PPV
- PPV is less time-consuming than SB
- SB related complications
- Poor visualization of SB surgery

Reasons for decrease in choice for surgery with SB in the recent years

Improved visualization

Indirect
ophthalmoscopy



Chandelier
illumination



Microscope / 3D Heads-up
Wide angle viewing system
Endoillumination



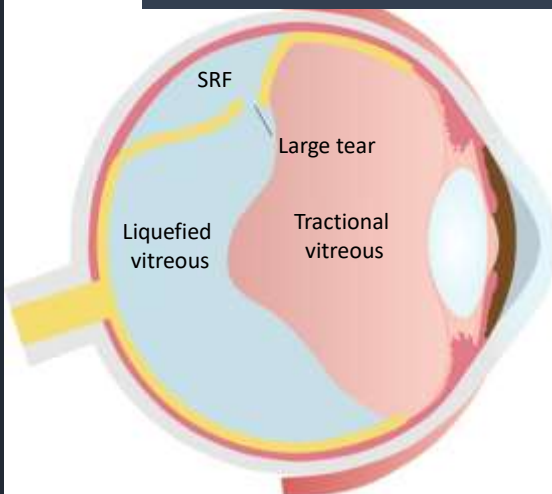
Customized surgery based on each individual patient status

Do the right operation

Do the operation right

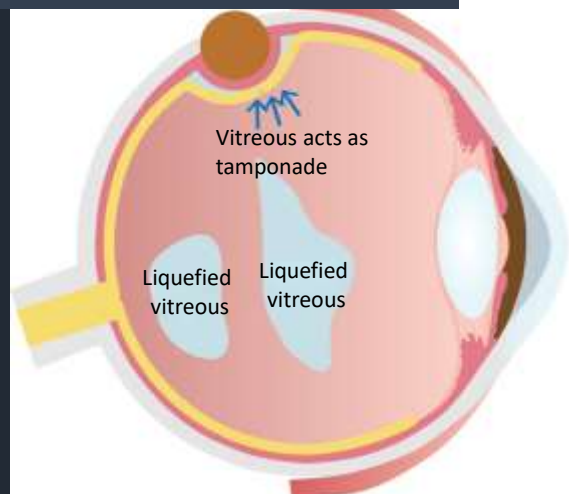
Customized surgery based on each individual patient status

Two patterns of RRD based on the presence of PVD.



Vitrectomy

Park et al; Clinical ophthalmol.-2018



Scleral Buckle

Customized surgery based on each individual patient status

Uncomplicated RD

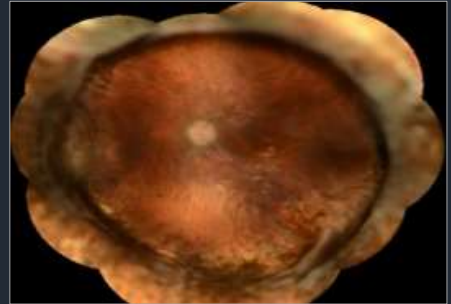


Young phakic patients without PVD

- Single break
- Lattice with a hole
- Localized shallow RD



Scleral Buckle



Customized surgery based on each individual patient status

Uncomplicated RD



Young phakic patients without PVD

- Single break
- Lattice with a hole
- Localized shallow RD



Scleral Buckle

Complicated RD

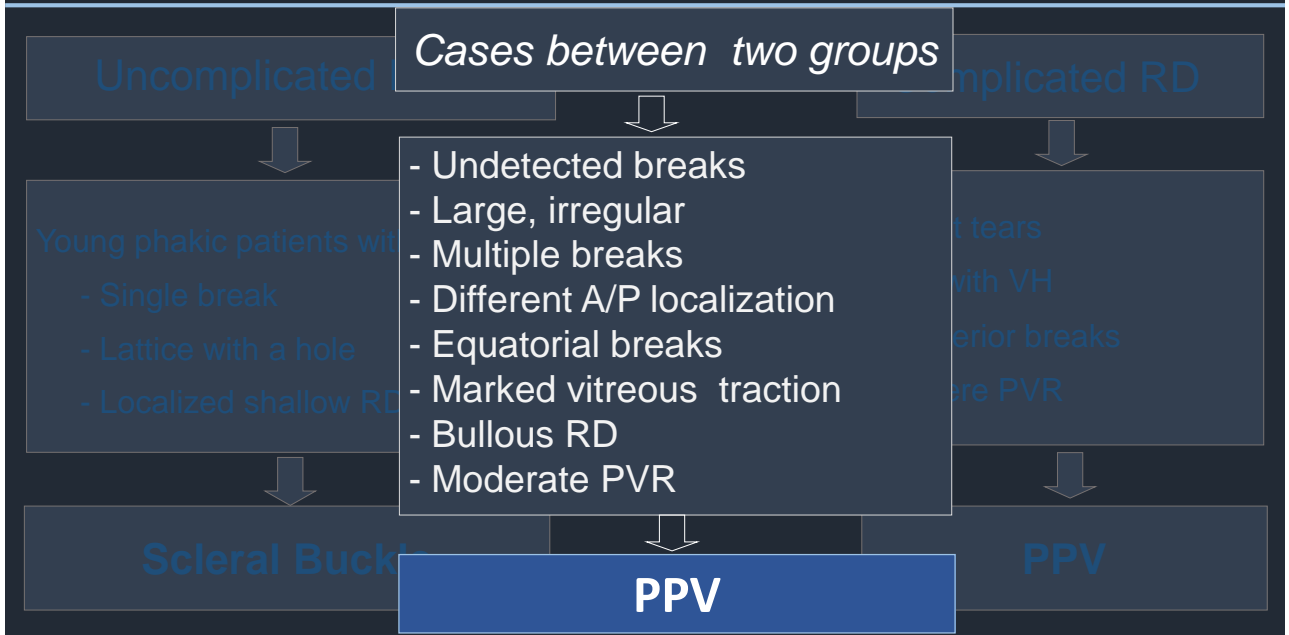


- Giant tears
- RD with VH
- Posterior breaks
- Severe PVR



PPV

Customized surgery based on each individual patient status



Customized surgery based on each individual patient status

Do the operation right

Customized surgery based on each individual patient status

Do the operation right

- Match the grade of detachment to the experience surgeon
- Timing of surgery
 - Better to wait for the experienced vitreoretinal surgeon
 - Prefer regular operating day instead of emergency conditions
- Optimize the surgery

Customized surgery based on each individual patient status

Optimize the surgery (Do the operation right)

- Complete vitreous base shaving with scleral depression
 - Sandwich technique to avoid iatrogenic breaks
- Optimal visualization to detect all breaks
- Laser all breaks/lattice/suspicious areas
 - Not 360 laser or scatter laser
- Minimize the surgery as much as possible to reduce inflammation
- Surgeons should improve vitreoretinal skills to be able to use gas tamponade instead of silicone oil

Primary Vitrectomy versus Chandelier Buckling in Primary RD

Total cost of surgery comparison

Total cost of surgery comparison

Chandelier assisted SB is has become an expensive method compared with conventional SB

- Microscope
- Modern visualization system
- Light source
- Chandelier light pipe

This technique can not be performed without having expensive vitreoretinal equipment

Total cost of surgery comparison

Summary

Scleral buckle should remain as a standard procedure only in young phakic patients without PVD

Imposing scleral buckle surgery to the fellows excluding these limited indications should not be appropriate

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The single surgery succes rate (SSSR)

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PPV is widely accepted as the primary treatment option for pseudophakic RRD because of it is superior outcomes against SB

Sharma et al; Acta Ophthalmol Scand. -2005
Brazitikos et al; Retina. -2005
SPR Study; Ophthalmol.-2007

RD - Primary Pars Plana Vitrectomy

Advantages of PPV comparing to scleral buckle

- Better visualization and detection of all retinal tears
- Lack of complications caused by scleral buckle

Retinal incarceration,	Refraction errors,
Sub-foveal hemorrhage,	Ocular motility problems
Supra-choroidal hemorrhage	Ptosis,
Scleral/retinal perforation due to suturing	
- Less extraocular inflammation
- Clear conjunctiva for the subsequent surgical interventions
- Re-attachment of macula more quickly
- **Higher rates of early functional recovery**

RD - Primary Pars Plana Vitrectomy

Disadvantages of PPV

- Iatrogenic breaks
- Progression of cataract
- Necessity of special equipment (*Expensive Surgery*)
- Long learning curve
- **More intraocular inflammation**

Primary Vitrectomy versus Chandelier Buckling in Primary RD

Should we keep training our fellows to perform SB in RD surgery

Fellowship: 1986
Our routine in RRD:

10%: PPV

20%: SB + PPV

70%: SB

Fellowship: 2018

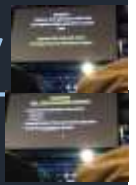
Our routine in RRD:

60%: PPV

30%: SB + PPV

10%: SB

Primary Vitrectomy versus Chandelier Buckling in Primary



Summary

- Customize the operation for each patient
 - Experience and literature
- Customize the operation for the surgeon
- Choose the operation which you feel most confident with
- Perform the operation which has the highest single operation success
- Properly perform the least invasive operation

Primary Vitrectomy versus Chandelier Buckling in Primary RD

Disadvantages

- Need a carefully examination, finding out all the breaks
- Encircling Buckling induces Myopia
- Don't reduces floaters
- External Eye Muscles potential damaging
- Long learning curve
- More surgical trauma at the eye wall and conjunctival tissue.
- Subretinal macular fluid can remain time.

Advantages

- Treatment is only troughout eye wall normally very low intraocular inflammation
- No secondary cataract
- Non glaucoma.No endophthalmitis
- No head position required except if gas supplement is used

Primary Vitrectomy

Buckling

Failure of treatment

- Surgeon related factors
 - Do the right operation
 - Do the operation right
- System related factors
 - Identify factors associated with high rates of failure
 - Identify surgeon management strategies to reduce risk profile

Choosing the right operation

Widening vs Scleral Buckle

Widening	Scleral Buckle
<ul style="list-style-type: none"> Greater success rates Higher success rates Less morbidity Less cost 	<ul style="list-style-type: none"> Reliability of final outcome Less morbidity Less cost

MILAN

Better price

Retinal Detachment

Choose the operation which you feel most confident in

MILAN 08:00 PVR & Retinal 10:00

Do the operation right

- How to increase the chances of success
 - Match the grade of detachment to the experience of surgeon.
- Timing of surgery
 - Better to wait for the right surgeons?

Primary Vitrectomy versus Chandelier Buckling in Primary

Conclusion

- Scleral buckle alone
 - Young and phakic with
- Primary RD: No significant difference versus PPV alone (?)
- Complex RD with PVR that adding SB provides no benefit
- My current approach:
 - Primary RD: PR or SB
 - RD with PVR: PPV/R

Conclusion

- Select properly the cases for each technique and remember that untreated peripheral tears is the most common cause of failure of retinal detachment surgery
- Efficacy of different studies always is related to the surgeon practice.
- Scleral buckle probably remains the gold standard for trained surgeons. Has low morbidity and is cost-effective. Combined buckle&PPV is highly indicated in many situations making the surgery easy and more effective

Primary Vitrectomy versus Chandelier Buckling in Primary RD

Summary

- The concept of buckling an eye to provide support to retinal tears is still a valid one
- SB remains as one of the primary methods of RRD repair in selected cases
- When planning PPV for RD repair, consider adding SB if you are not 100% confident.
- SB: “Make it simple”
- Microscope, Wide-Angle viewing systems and Endoillumination to improve visualization.

Primary Vitrectomy versus Chandelier Buckling in Primary RD

The image displays a collage of slides comparing post-operative buckling complications. The slides are organized into several sections:

- Top Left Slide:**
 - post-operative buckling complications
 - Inflation or extrusion, irritation (44% 57.1% in 70 years)
 - Image of an eye with a white scleral buckle.
- Top Middle Slide:**
 - post-operative buckling complications
 - on 6.58%
 - irritative reaction, pain, phosia
 - Image of a patient's face.
- Top Right Slide:**
 - Image of a scleral buckle.
 - Image of a patient's face.
 - Image of a scleral buckle.
 - Image of a scleral buckle.
- Middle Left Slide:**
 - post-operative buckling complications
 - Image of a scleral buckle.
 - Image of a scleral buckle.
- Middle Middle Slide:**
 - post-operative buckling complications
 - on 3.8%
 - Image of a patient's face.
 - Image of a scleral buckle.
 - Image of a scleral buckle.
- Middle Right Slide:**
 - post-operative buckling complications
 - active change (100%)
 - Image of a scleral buckle.
 - Image of a scleral buckle.
- Bottom Left Slide:**
 - post-operative buckling complications
 - Image of a scleral buckle.
 - Image of a scleral buckle.
 - Image of a scleral buckle.
 - Image of a scleral buckle.
- Bottom Middle Slide:**
 - post-operative buckling complications
 - Chorioid detachment - Low ESP (25-44%)
 - Vitreous opacities (very frequent)
 - Macular pucker
 - Image of a scleral buckle.
 - Image of a scleral buckle.
 - Image of a scleral buckle.
 - Image of a scleral buckle.
- Bottom Right Slide:**
 - post-operative buckling complications
 - Recurrent retinal detachment - PPV
 - Image of a scleral buckle.
 - Image of a scleral buckle.
- Far Right Slide:**
 - Image of a scleral buckle.
 - Image of a patient's eye.

Customize the operation for each individual patient

Uncomplicated RD

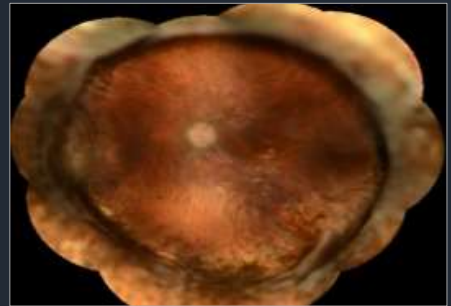
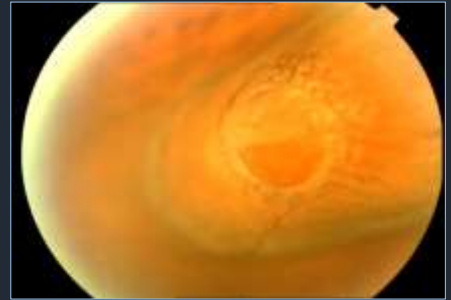


-Young phakic patients without PVD

- Small break, localized shallow RD
- Lattice degeneration with a hole
- Slow progression



Scleral Buckle



Primary Vitrectomy versus Chandelier Buckling in Primary RD

Primary succes rate is 64-90%

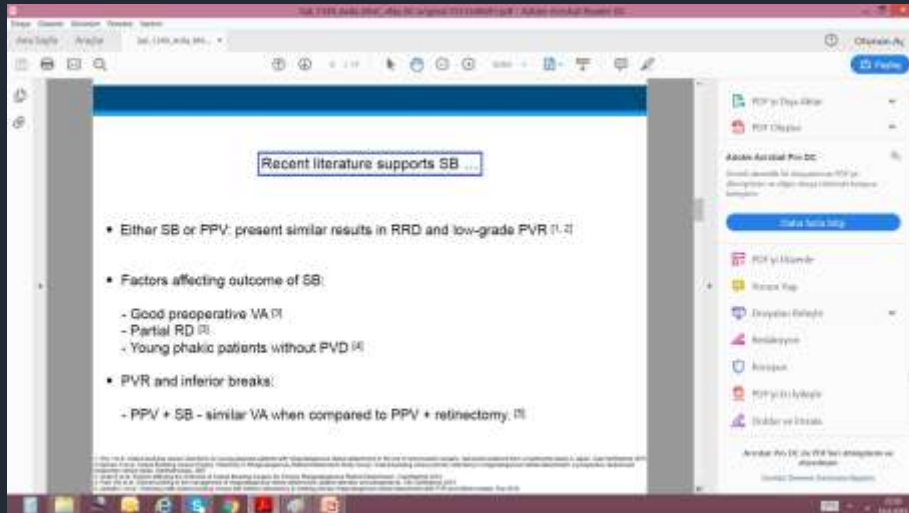
Why does the succes rates vary so much ?

Inconsistency in reporting

How can we recognise those at greatest risk of failure

How can we maximize the succes rate of the operation

Reasons for decrease in choice for surgery with SB in the recent years



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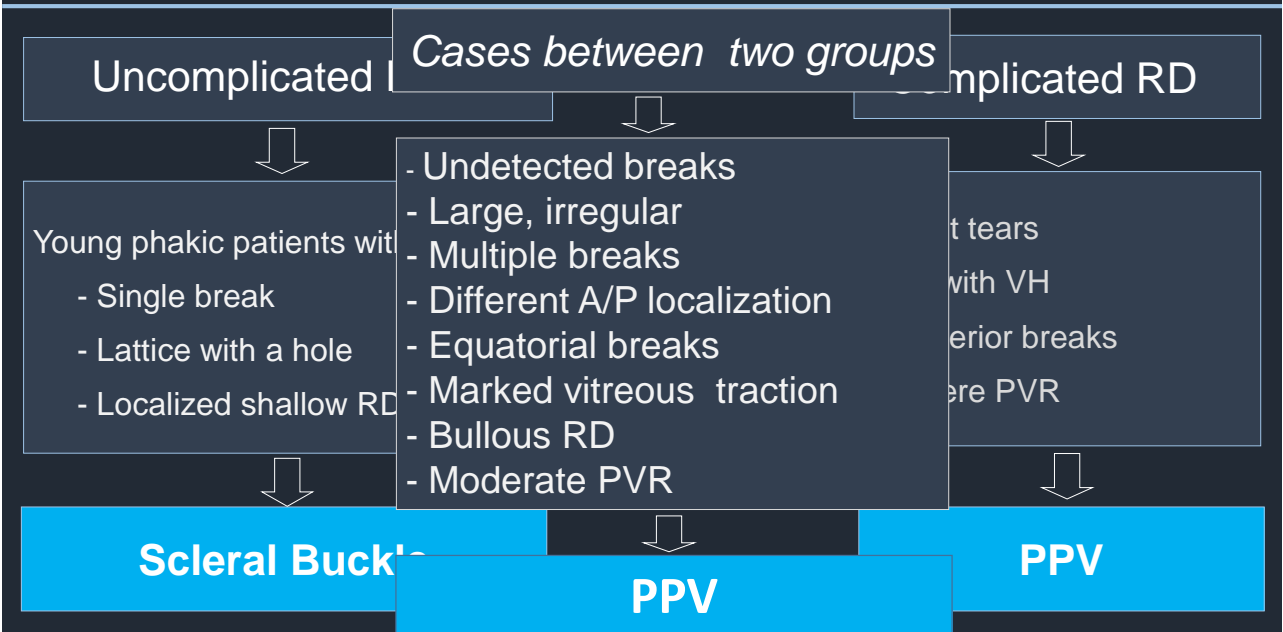
Should we keep training our fellows to perform SB in RD surgery ?

For limited indication \Rightarrow YES

Do the right operation

Do the operation right

Customize the operation for each individual patient



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