

Sub Macular
Perfluorocarbon Liquid
Case Report



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Case report

- A 55-years-old male, cardiac patient
- bilaterally pseudophakic
- presented with a recent visual loss in his left eye
- Visual acuity \longrightarrow CF 50cm..(not corrected)
- He was found to have a subtotal retinal detachment with a superotemporal break.

Case report

- He underwent a 23-G PFCL-assisted pars plana vitrectomy with silicone oil injection.
- Visual acuity improved after operation from counting fingers to 5/60 after 2 weeks.

Case report

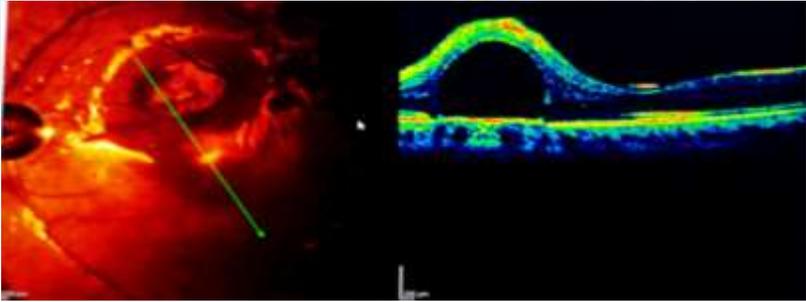
- After 3 weeks, the patient complained gradual decrease in visual acuity of lt eye
- Visual acuity \longrightarrow 1/60 

Case report

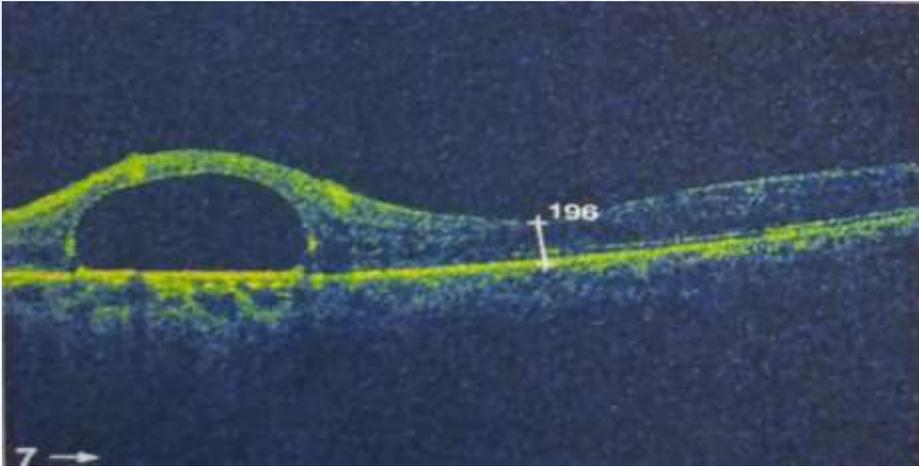
- Although retina was well attached, Indirect ophthalmoscopy revealed single dome-shaped elevation beneath the fovea!!!

Case report

- OCT revealed a well-defined cyst-like hyporeflective lesion in submacular space with a central macular thickness of 241 μ . The retina above the cystic lesion was thinned out.



Case report



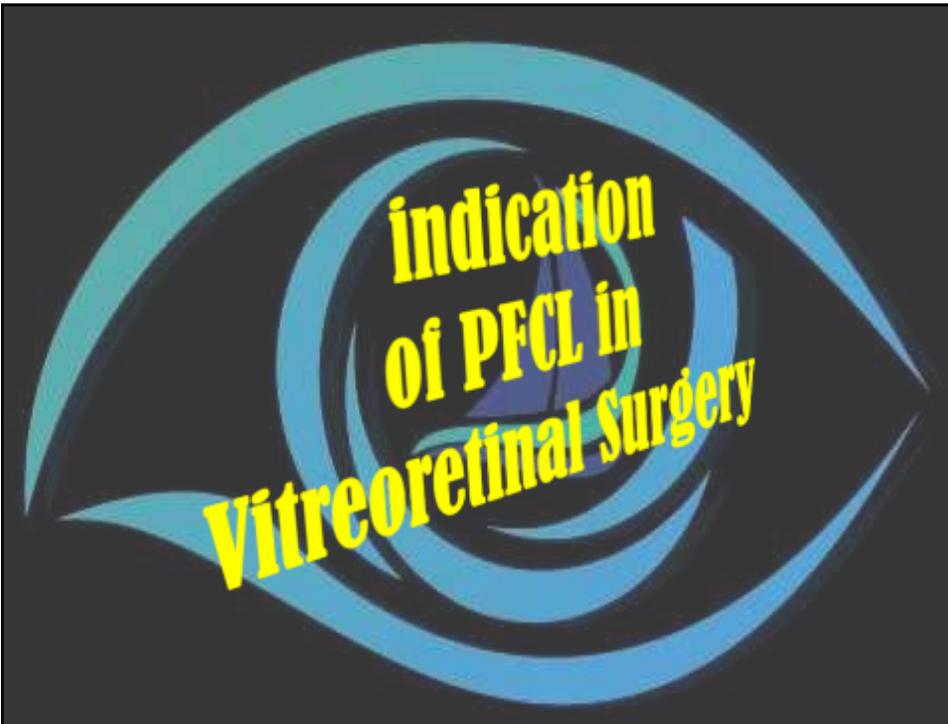
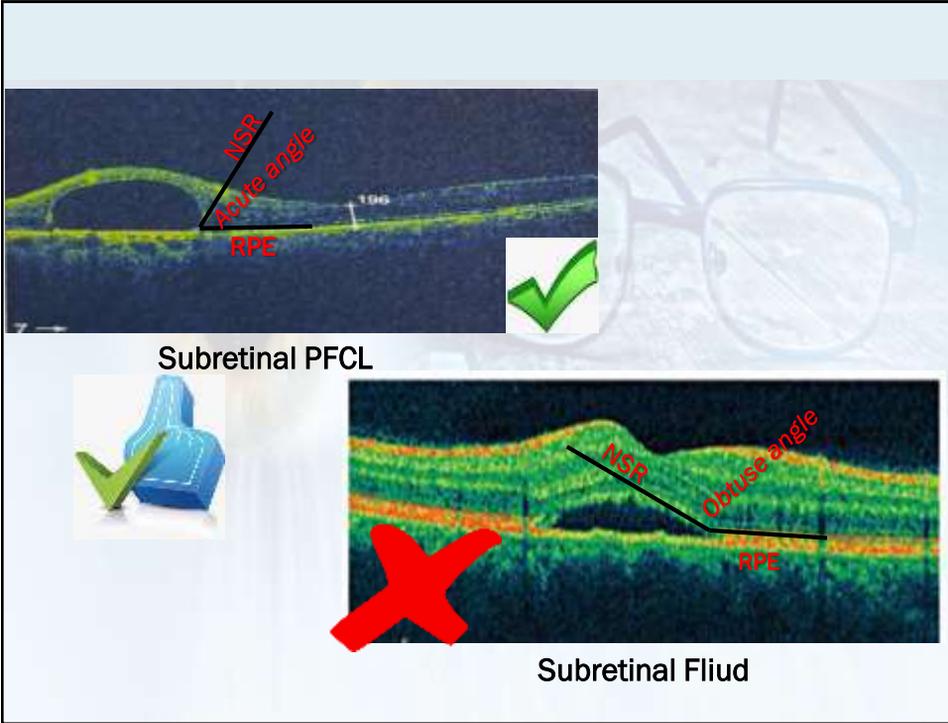


Differential Diagnosis

- Differentiation of subretinal PFCL from subretinal fluid may pose a problem.
- New imaging modalities such as SD-OCT is quite helpful in this regard.

Differential Diagnosis

	SubretinalPFCL	subretinalfluid
retinal contour	Ω	hat
Angle () RPE & NSR at base	Acute	Obtuse
retinal layers above	undefined	Clearly differentiable



■ Giant Tears;-

- stabilizes the detached retina during vitrectomy and displaces the subretinal fluid

■ Diabetic Retinopathy;-

- to flatten shrunken retina, also efficient to flatten retinal detachments that appeared when relieving tight vitreoretinal adhesion
- provides a better condition to perform panretinal photocoagulation if needed with lower energy.

- **Floating the Foreign Bodies in the Vitreous Body;-**

- can lift the foreign body away from the retina, thus simplifying the procedures of removal and improving the safety of the process

- **Posterior Dislocated Crystalline and Intraocular Lenses;-**



- PFCL is injected at the posterior pole to fill the vitreous cavity. The dislocated lens floats on the PFCL, and the injection is ceased once the lens is raised to the iris plane and then removed from A.C

■ Retinal Detachment with Severe PVR;-

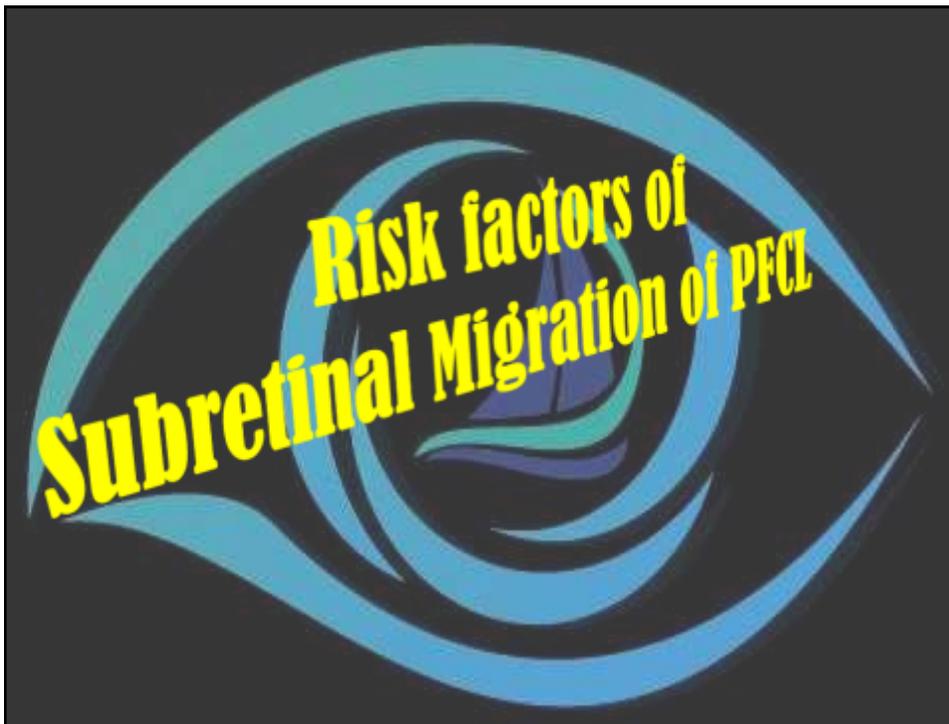
- injection of PFCLs after initial dissection of posterior PVR aids in opening the funnel to provide better visualization of proliferative membranes and provide better removal.

■ Intraoperative complications;-

- used to evacuate subretinal blood from under the macula or prevent blood from reaching the submacular area

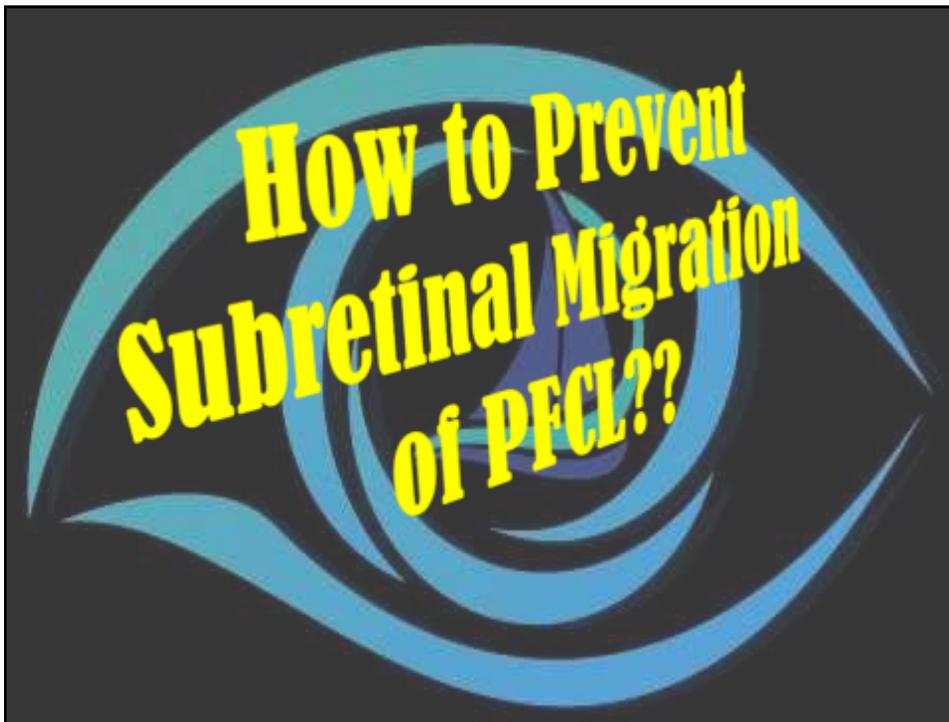
- Hemorrhagic choroidal detachment;-

- It may facilitate the drainage by pushing suprachoroidal blood anteriorly, which can then be removed by performing a sclerotomy



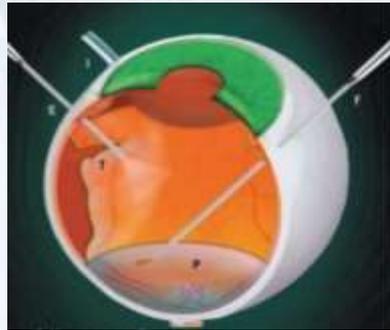
R.F of subretinal migration of PFCL

- Breaking up of PFCL into small bubbles
- **Large retinal break.**
- Large peripheral retinotomy >120 degree.
- **High velocity of infusion.**
- Retinal tractions.



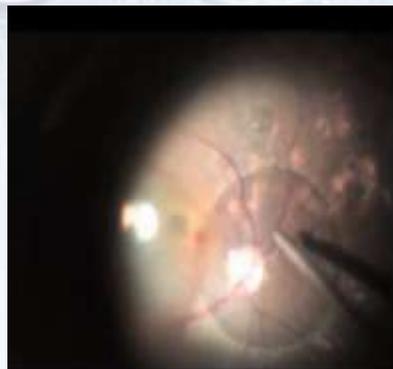
Prevention of Subretinal Migration of PFCL

- The speed of injection of PFCL should be slow and continuous to avoid breaking up of the PFCL into multiple small bubbles..



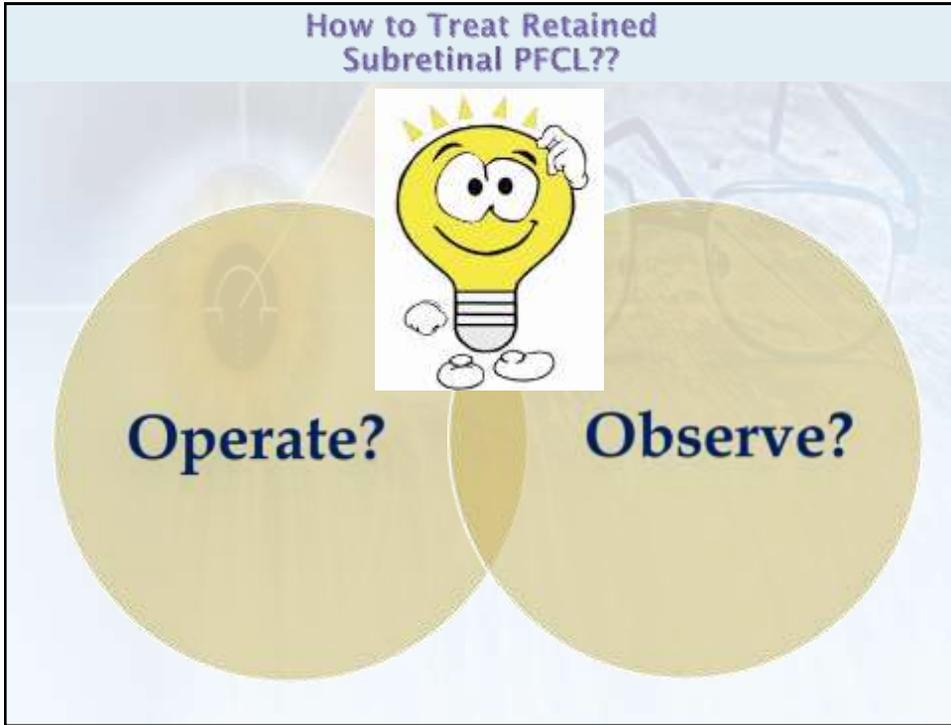
Prevention of Subretinal Migration of PFCL

- Bubble formation also can be avoided by keeping the cannula tip inside the PFCL bubble during the entire process of injection



Prevention of Subretinal Migration of PFCL

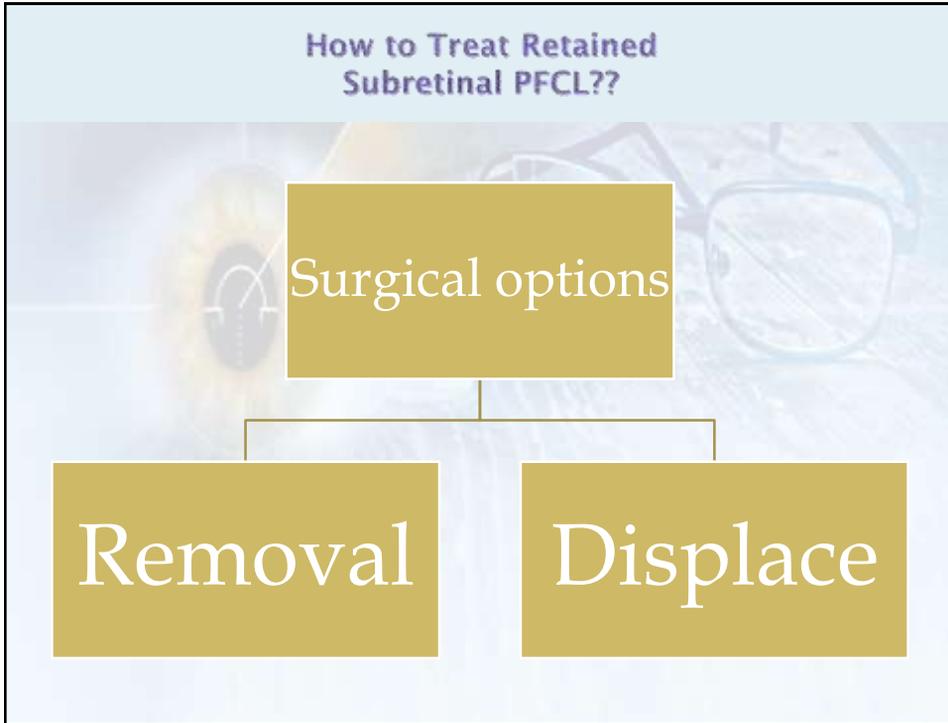




How to Treat Retained Subretinal PFCL??

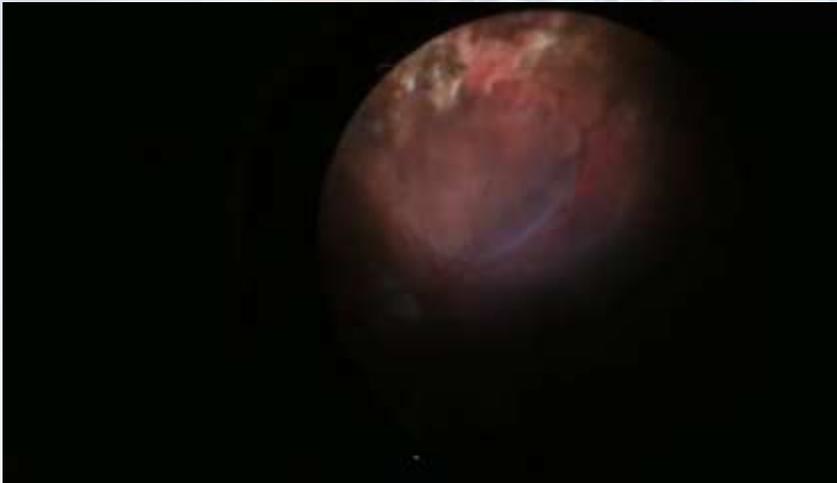
- ▣ Subretinal PFCL beneath the fovea or at risk for migration beneath fovea should be considered for removal as soon as possible.

- As Retained Submacular PFCL can lead to
 - functional visual loss,
 - central scotoma,
 - irreversible retinal structural damage.



- How to Treat Retained Subretinal PFCL??
- Surgical removal by aspiration via 40-G needle through a single therapeutic retinotomy adjacent to subfoveal PFCL bubble in three-port pars plana approach

How To Treat Retained Subretinal PFCL



How to Treat Retained Subretinal PFCL??

- Surgical removal by aspiration leads to retinal morphologic restoration and functional improvement..

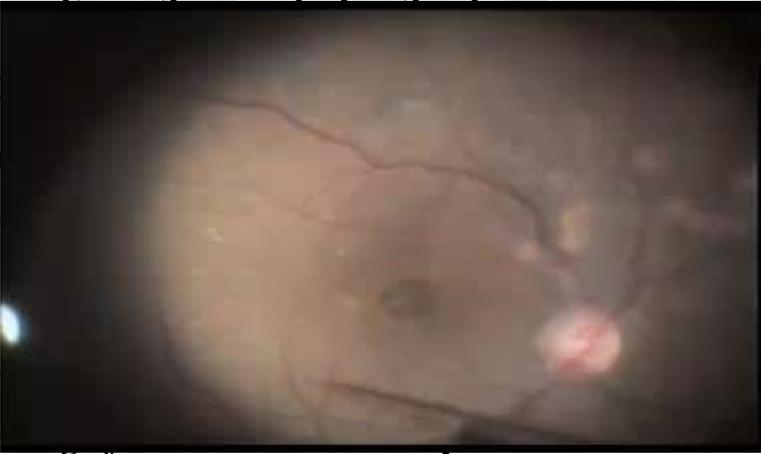
But carries more risks!!

such as damage to RPE,
photoreceptors,
retinal nerve fibers,
subretinal hemorrhage.

How To Treat Retained Subretinal PFCL

Oth

- D...ained
- st... with
- th... bright
- h...
- S...PFCL
- th...

A fundus photograph showing a retained subretinal PFCL bubble. The bubble is a bright, reddish-orange, circular lesion located in the inferior temporal quadrant of the retina. The surrounding retina shows normal vascular branching.

When to observe Retained Subretinal PFCL?

- If a bubble of subretinal PFCL is found outside the fovea postoperatively, careful observation and follow up is needed as spontaneous resolution may occur within weeks postoperatively with subsequent anatomic and visual improvement.



Discussion

- Characteristically PFCLs have
 - high specific gravity,
 - low surface tension, and viscosity.
 - These physical properties make PFCL an ideal tool in vitreoretinal surgery.

Discussion

- A recognised risk of using PFCL during vitrectomy surgery is that some bubbles may be trapped under the retina and become positioned under or near the macula.

Discussion

- Although the subfoveal retention of PFCL is a rare complication of vitreoretinal surgery, it causes irreversible visual loss as it causes outer retinal atrophy ,and photoreceptor loss, via mechanical compression ,the direct toxic affect or an inflammatory response including the macrophages phagocyted PFCL

Discussion

- This complication is reported following surgeries for giant retinal tears, in cases where there is incomplete removal of tractional membranes.

Discussion

- PFCL enters the subretinal space through retinal breaks/posterior retinotomy during surgery.
- Retained PFCL causes retinal toxicity through presumed mechanical compression and chemical toxicity.

Discussion

- The presence of subretinal PFCL does not seem to affect visual and anatomic success when located outside the macula, but deterioration of the central vision will occur when it involves the macular area, **especially the fovea.**

