



**Clinical outcomes of a new simple technique  
to manage posterior capsule rupture during  
phacoemulsification using an air bubble**

**Jinhyun Kim, M.D., Seungwoo Lee, M.D.**

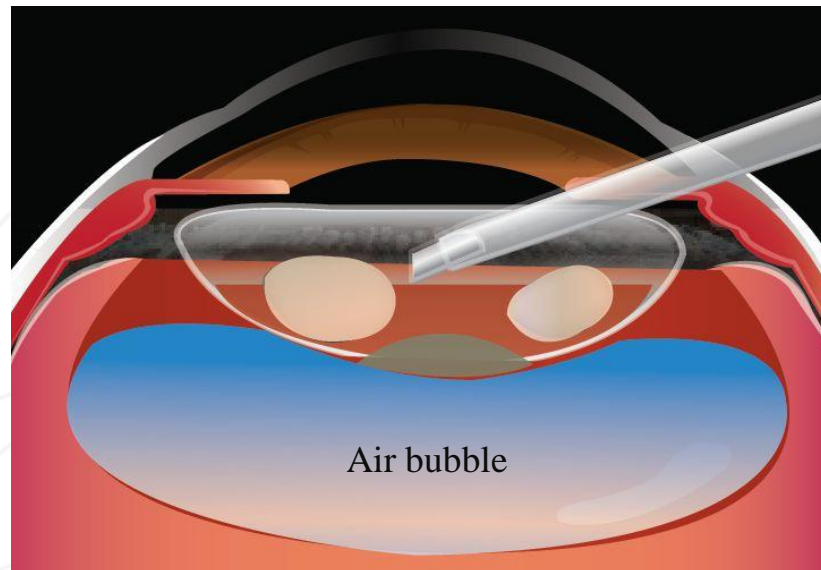
**Department of ophthalmology, University of Dongguk.**

**School of medicine, Republic of Korea**



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- The management of posterior capsule rupture(PCR) is still challenge the skills for the surgeons. Especially, if PCR is accompanied with vitreous loss.
- We would like to introduce a safe, simple new technique to manage the PCR using an air bubble (Air bubble technique)



**Air bubble technique**

- Retrospective consecutive case note review
  
- The air bubble technique was used in a series 12 patients ( March 01, 2012 - December 31, 2014)
  
- Surgical technique
  - A dispersive ophthalmic viscoelastic device (OVD) is injected beneath tear site
  - the small volumes of air (0.2cc to 0.3cc) are injected posterior to the tear site into Berger's space
  
- The intraoperative findings, results and complications were evaluated.

## ▪ Step 1

: The dispersive OVD is injected beneath tear site prior to removing phaco tip for stabilizing the anterior chamber

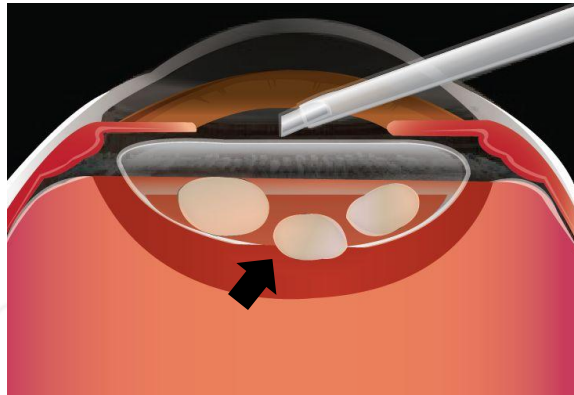


Figure 1 PCR (black arrow)

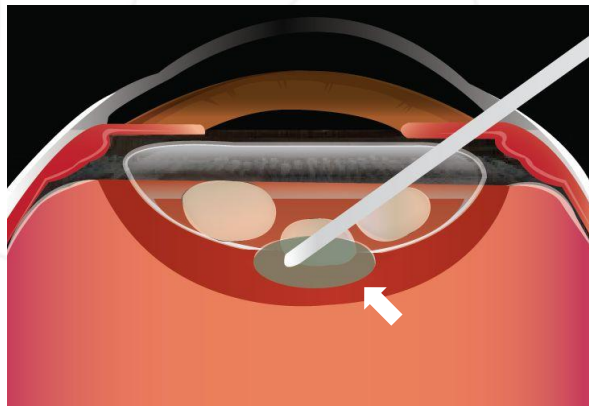
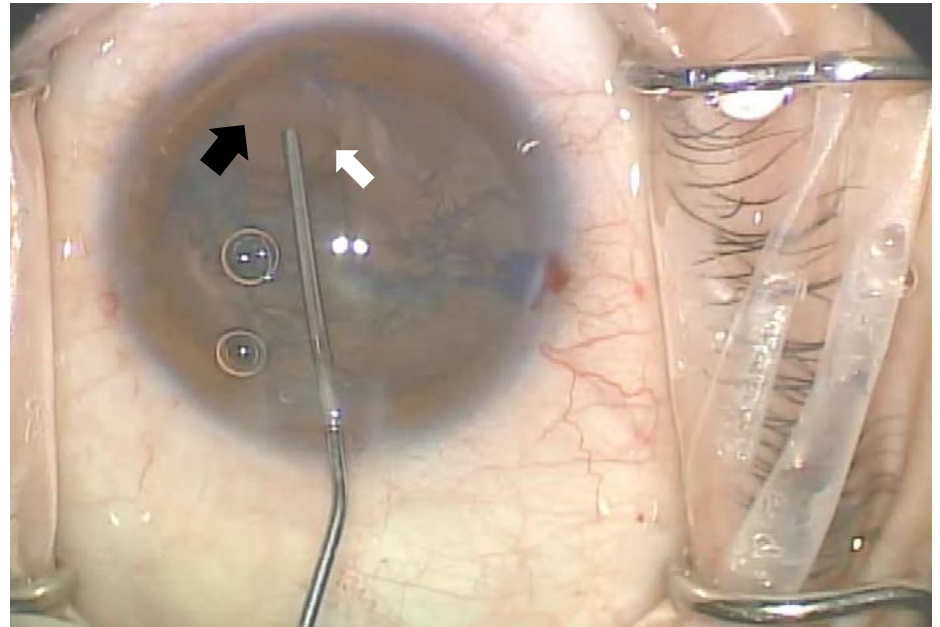


Figure 2 OVD(white arrow)



Surgical photograph 1

## ▪ Step 2

: After a OVD are injected below the remaining lens material, small volumes of air(0.2cc to 0.3cc) are injected posterior to the tear site into Berger's space.

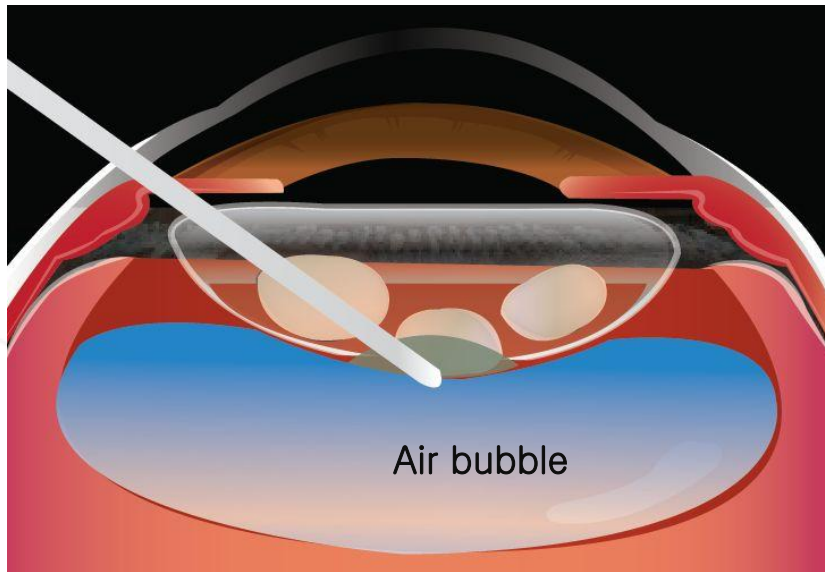
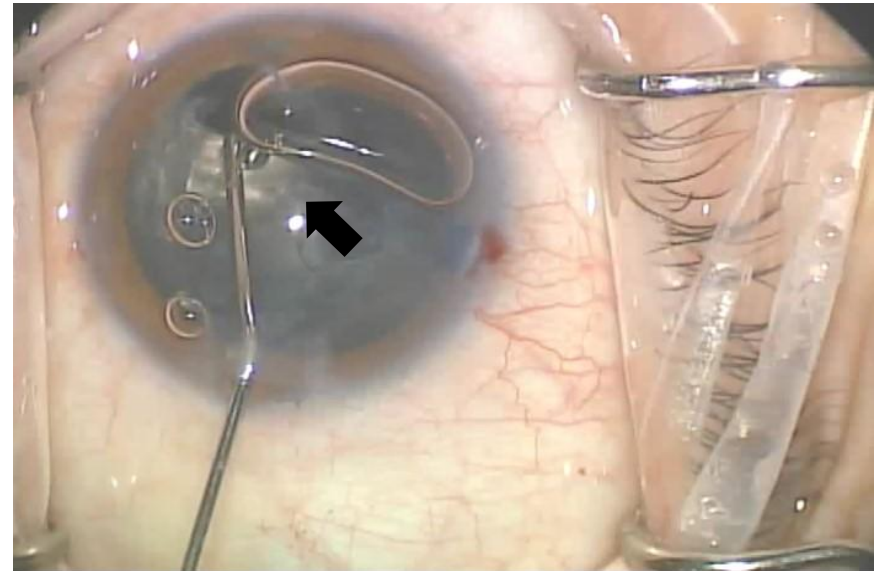


Figure 3



Surgical photograph 2 Air bubble (black arrow)

## ▪ Step 3 -1 (phacoemulsification)

: Air bubble perform a barrier function and support the posterior capsule with no vitreous loss or extension of tear, even though OVD are aspirated by surgical instruments during the surgery.

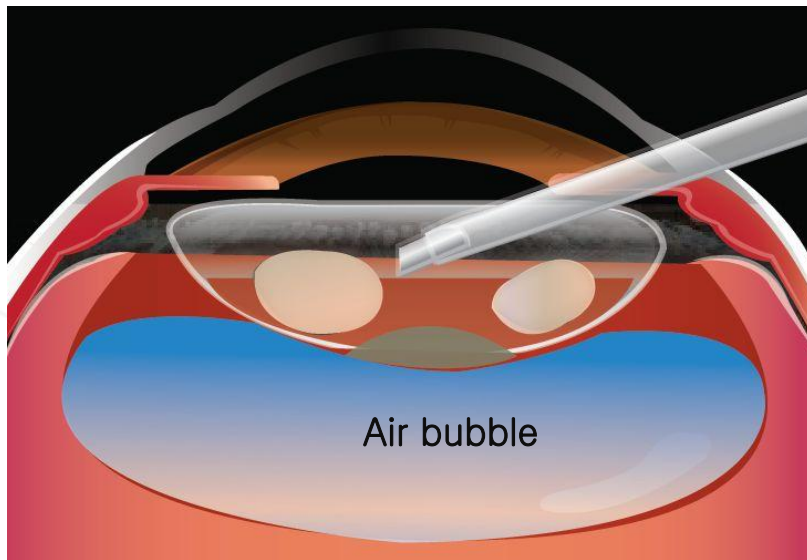
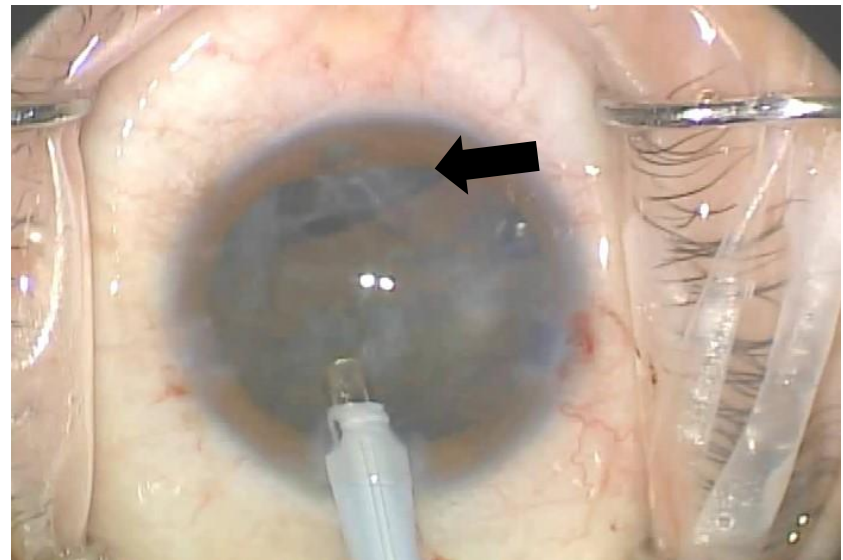


Figure 4



Surgical photograph 3 Air bubble (black arrow)



## ▪ Step 3-2 (Removal of cortex)

: Air bubble perform a barrier function and support the posterior capsule with no vitreous loss or extension of tear, even though OVD are aspirated by surgical instruments during the surgery.

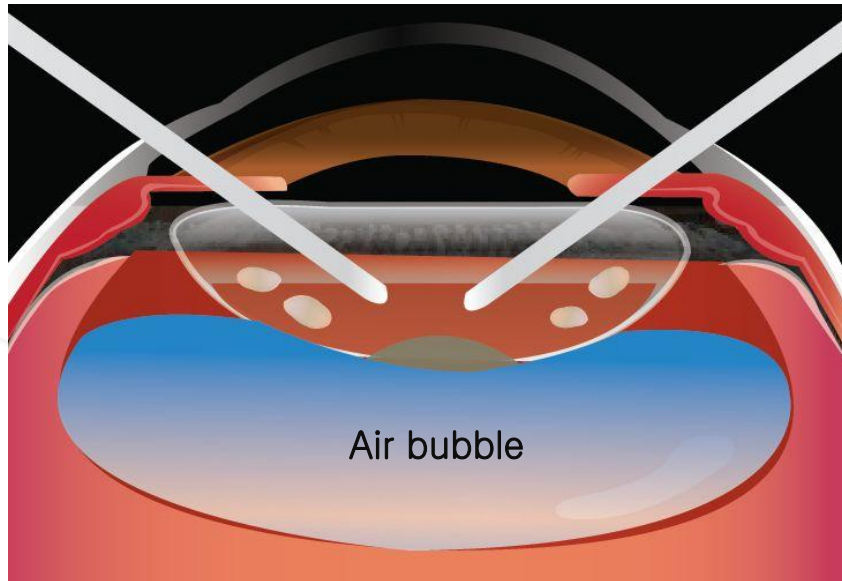
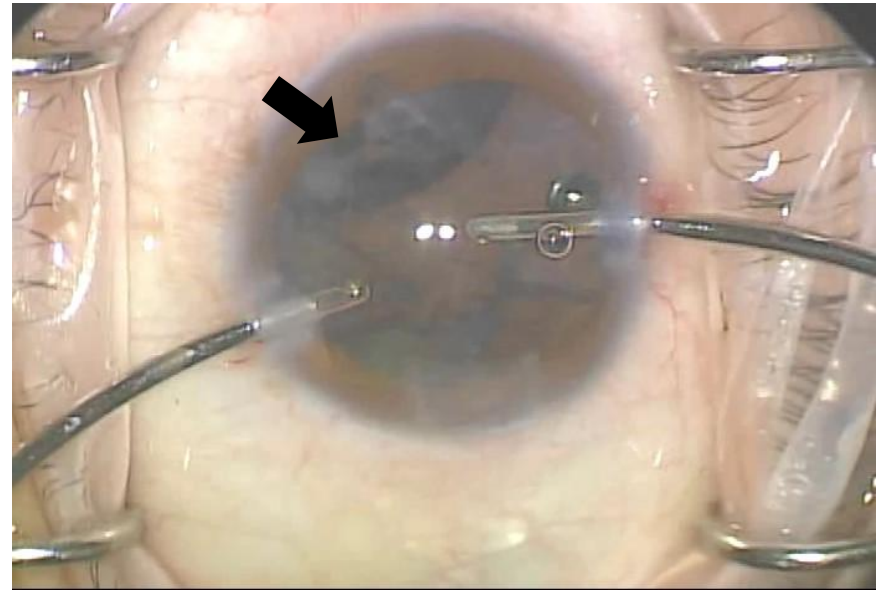


Figure 5



Surgical photograph 4 Air bubble (black arrow)

## ▪ Step 4

: .Air bubble can be simply removed using a needle tip before IOL implantation or after implantation, or it is naturally absorbed in 2 to 3 days.

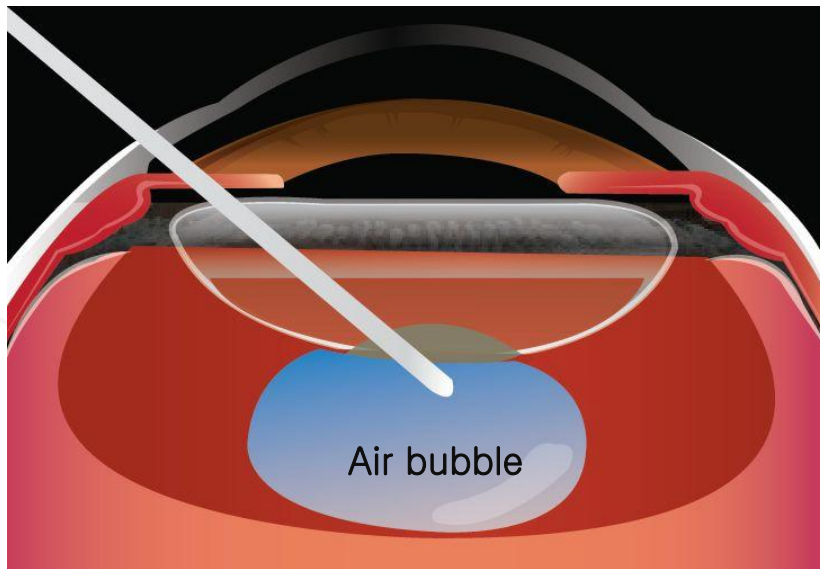
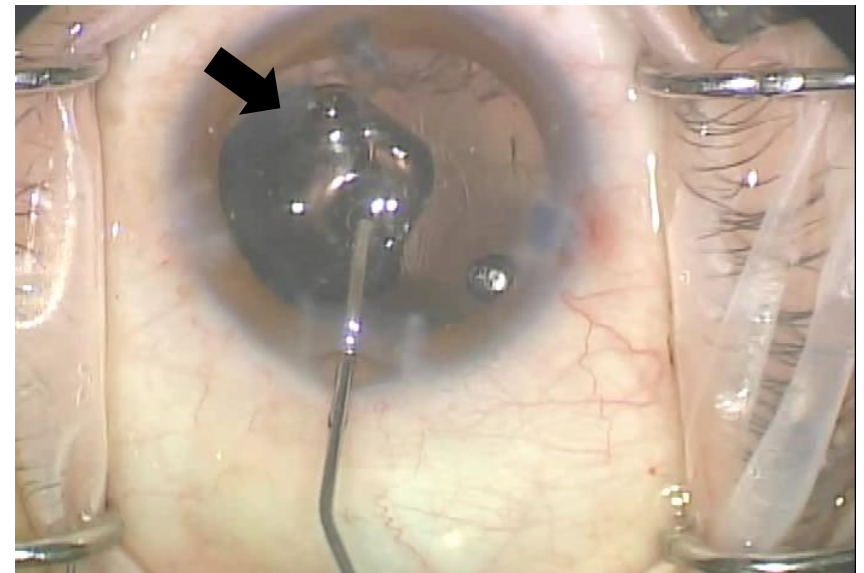


Figure 6



Surgical photograph 5 Air bubble (black arrow)

Removal of cortex with air bubble



- No serious complications
  - Retinal detachment
  - dropped lens fragment
  - Vitreous incarceration
  - Increased IOP
  
- PCR size were expanded in only 2 cases.
  
- Additional OVD injection was needed in 3 cases.
  
- Our impression is that air bubble imparted greater stability to the nuclear pieces and the posterior capsule than OVD only.

Patient No	Age	Sex	Increase of PCR size	IOL	Complications
1	75	M	(+)	sulcus	(-)
2	67	M	(+)	sulcus	(-)
3	65	F	(-)	sulcus	(-)
4	78	F	(-)	sulcus	(-)
5	57	F	(-)	sulcus	CME(+)
6	65	F	(-)	sulcus	(-)
7	66	M	(-)	sulcus	(-)
8	67	M	(-)	sulcus	(-)
9	72	M	(-)	sulcus	(-)
10	81	F	(-)	sulcus	(-)
11	78	M	(-)	sulcus	(-)
12	74	M	(-)	sulcus	(-)

- The air bubble performs a physical barrier function and supports the posterior capsule without additional injection of OVD during cataract surgery. The new simple technique provides a better compartmentalization of lens material and quarantine of the vitreous than using the only OVD.



*Thank you for your attention*

