Let us discuss about a situation all of us are bound to face on and off in our surgical practice. This was a straight forward moderately hard cataract posted for phacoemulsification. As we can see here the capsulorhexis was completed and after hydrodissection, phaco was initiated. We can notice that when half of the nucleus has been emulsified, the pupil size has come down a bit and there is a central line on the posterior capsule. So now we are faced with a large posterior capsule tear with half of the nucleus positioned right over the tear.

We need to think of the following aspects which could have caused this PC tear:

1. While trenching the nucleus, the phaco tip could have gone deeper to touch the PC.
2. During chopping the chopper tip could have touched the PC.
3. While trying to get a full cleavage so that the chopped pieces of nucleus are fully separated, the lateral separation could have been too forceful to induce a tear in the PC.
4. There could have been a discontinuity/weak spot at the CCC margin which could have got extended to the periphery of the capsule and gone further on to extent on to the PC. Also the Chopper tip and the phaco tip can injure the CCC margin thus resulting in the same situation.
5. Although it would be less possible in this case, a forceful hydrodissection, especially in the presence of a small CCC, without decompressing the capsular bag can result in a posterior capsule blow out.

At this point there is no vitreous prolapse. Now we need to consider the options:

1. To stop phaco and convert to Manual SICS. For this, before withdrawing the phaco needle from the anterior chamber, the chamber should be filled with OVD (preferably dispersive viscoelastics). This can seal the PC tear and prevent chamber shallowing. Shallowing of the chamber can lead to vitreous prolapse and further extension of the PC tear. Then the situation can be reassessed by dilating the pupil with iris retractor hooks. If the CCC is intact, then one needs to enlarge it and then prolapse the remaining nucleus into the anterior chamber. Stabilise this nucleus by injecting more OVD behind the nucleus. Now a fresh sclerocorneatunnel can be constructed superiorly (the temporal clear corneal section can be abandoned). After adequately opening the sclerocorneal tunnel the nucleus can be extracted out using a vectis below and sinskey above it (sandwich method). According to the available capsule support, a single piece IOL can be implanted into the capsular bag or a multipiece IOL into the scleral sulcus.

2. To continue phacoemulsification: As there is no vitreous prolapse till now, careful slow motion phaco can be continued after injecting dispersive OVD into the anterior chamber and into the PC tear area to plug the PC tear. The bottle height can be lowered, vacuum and flow rates reduced and phaco can be continued as we see here. The remaining nucleus can be mechanically brought out of the capsular bag and can be emulsified in the iris plane. Before emulsification a sheet’s glide and be cut to fit the incision size and can be placed under the nucleus to prevent drop of some nucleus pieces into the vitreous cavity. Here we can see that phaco is continued in a very slow and controlled manner to make sure the nucleus pieces stay very close to the phaco needle tip and get emulsified. After the nucleus is emulsified, iris hooks are used here to dilate the pupil to assess the extent of capsular support present to implant an IOL.

At any stage of the procedure, if there is a requirement to take out the irrigating handpiece, the chamber has to be filled with dispersive OVD before withdrawing irrigation.

Please Click on the link: http://youtu.be/fR7jF1FCCE

The surgical video shows a very common, but at the same time critical and important complication during cataract surgery. It’s occurrence, progress and management strategies are shown in detail in the video. This text can be read along with the video or after viewing the video.
The presence of vitreous in the anterior chamber is an indication to stop the procedure and initiate automated anterior vitrectomy. We should suspect the presence of vitreous in the AC when

1. There is sudden deepening of the chamber
2. The aspirating post feels clogged and aspiration of either nucleus or cortex doesn’t happen
3. There is peaking of the pupil altering its round contour
4. Sometimes gelly like thick vitreous can be seen prolapsing out through the main incision or the paracentesis

To reconfirm the presence of vitreous in the anterior chamber, a very helpful tool is preservative-free triamcinoloneacetonide. These preparations are available in the Indian market. A 4 mg/ml solution can be directly injected into the anterior chamber and it stains the vitreous white, making the presence of vitreous in AC very clear.

It is always preferable to perform bimanual anterior vitrectomy through two paracentesis wounds which fit the irrigating canula and the vitrectomy probe snugly. Use the highest cut rate available in one’s machine and low vacuum. There is no need to move the vitrectomy probe too much inside the chamber. At the completion of removal of all the vitreous present in the anterior chamber, we can notice the lax (not rolled up and stretched) margins of the PC tear. Again before withdrawing the irrigating canula, use dispersive OVD to plug the PC tear and fill up the rest of the capsular bag and the anterior chamber with cohesive OVD( which can maintain the space in the anterior chamber well during IOL insertion and also can be removed much more easily, quickly and completely after IOL implantation.

**Selection of IOL for implantation is also very critical.**

1. Multipiece IOL(foldable or rigid) or single piece rigid PMMA IOL in the ciliary sulcus with capture of the optic within the CCC( If the CCC is intact and is smaller than the optic)
2. Single piece foldable IOLs are not meant to be placed in the sulcus and should be placed inside the capsular bag when there is an intact CCC and enough inferior PC support
3. In the absence of an intact CCC, multipiece IOLs or single piece PMMA IOLs can be place in the ciliary sulcus only if there is enough PC support inferiorly
4. Other options are ACIOLs, Scleral fixated IOLs( sutured or glued), and Iris fixated(sutured or clipped) IOLs

Here we can see that the CCC tear has extended to the periphery and further on to the posterior capsule. Because there was enough capsular support, a single piece foldable IOL has been placed into the capsular bag saving the day for the surgeon.

**References**


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