Chapter - 7

PHACOEMULSIFICATION

Phacoemulsification, introduced by Kelman in 1967, is undoubtedly one of the most important innovations in ophthalmology. This has now been accepted as gold standard surgical procedure for management of cataract. This allows the removal of cataract through a 3.0 mm incision, thus eliminating many of the complications of wound healing related to large incision surgery and greatly shortens the recovery period.

Preoperative preparation

All the basics of ECCE like full mydriasis, good anaesthesia, antimicrobial preparation of operative part, use of disposable plastic drape are to be given due importance.

PATIENT SELECTION

The current technique and equipment have developed to such an extent that this technique may be used in majority of cases of cataract. However pre operative evaluation of patients under fully mydriasis with slit-lamp examination is very important. This will give valuable information about pupillary dilation, grade of nuclear sclerosis and zonular support. Sometimes evaluation of fundus is possible, and will assure you a good post operative vision in case of uneventful surgery.

Relative contraindications are miotic pupil which refuses to dilate, very hard nucleus and lack of zonular support. For a beginner, ideal case is patient of around 60 years with moderate hardness and good fundal reflex. Following are difficult situation for phacoemulsification.
- Deep set eyes
- Shallow AC
- Hazy cornea
- Non dilating pupil
- Brunescent cataract Grade IV/V or very soft cataract
- Subluxated/ dislocated lens
- Cataract in vitrectomised patient

**Hardness of Nucleus**

Utmost importance should be given to assessment of the hardness of the nucleus. This can be assessed with slit-lamp examination under mydriasis. Nucleus of crystalline lens changes from transparent to gray, to gray-yellow amber, brown and finally to almost black. To a certain degree, variation in colour corresponds to an increase in hardness of nucleus. Other important consideration is patient age. Older the patient harder the nucleus is likely to be. Hardness of nucleus can be classified as follows.

1. Soft nucleus (Grade 1) - transparent to pale gray
2. Slightly hard nucleus (Grade 2) gray - grayish yellow
3. Moderately hard nucleus (Grade 3) - yellow with tinge of gray
4. Hard Nucleus (Grade 4) - Yellow amber
5. Very hard Nucleus (Grade 5) - brown-black

**PHACOEMULSIFICATION MACHINE**

**Ultrasonic handpiece:** Ultrasonic power is most often produced by enclosed piezoelectric crystals which convert electricity into mechanical vibration. This energy is transmitted along the handpiece into phaco-needle in such a way that primary oscillation is axial. Irrigating fluid flows through two ports located 180° apart on the silicon sleeve surrounding the phaco tip. Fluid flows between needle and silicon sleeve.
Normal frequency of various phaco machines ranges from 20,000 to 80,000 (20-80 KHz) Hertz. Frequency is fixed for particular machine. Usually it is in the range of 40 KHz.

Stroke length is the forward and backward movement of the needle along the longitudinal axis. These oscillations are between 70-120 microns wide. This can be varied by selecting different power limits.

**Phaco tips** - These are made up to titanium. It can have an opening angulation of 0°, 15°, 30°, and 45°. Greater angulation facilitates sculpting whereas lower angle is good for occlusion. 30° tip is suitable for both functions and is the most preferred one.

External diameter of needle is 1.1 mm and internal diameter is 0.9mm. In case of microtip needle external diameter is 0.9 mm and internal diameter is 0.5-0.7 mm. The tip is covered with silicon sleeve that insulates and protects the tissue at the incision site.

**FLUID DYNAMICS**

Aspiration flow rate: The quantity of liquid (measured in cubic centimeters = CC) which circulates in unit time (one minute) is defined as flow. The liquid flows downwards under gravity from the infusion bottle, passes through infusion line and reaches the eye through handpiece. It exits the eye through the aspiration line and also through main and side port incision (leakage). The flow of fluid is mainly responsible for bringing the nucleus fragments towards the phaco tip.
Vacuum

The vacuum is negative pressure which is generated by pump and can propagate along the aspiration line as far as the handpiece. The vacuum is expressed at handpiece. It is generated by pumps. The vacuum is responsible for the hold that the phaco tip has on the nuclear fragment.

PUMPS

Pumps create the vacuum during the aspiration flow. There are basically three different types of pumps used in phaco machines.

1. Peristaltic pumps

Peristaltic pumps have been used the longest. A peristaltic pump creates aspiration by advancing fluid through a tube that is wound tightly around a 'humped' rotating wheel. It works by squeezing off small segments of the tubing between successive rollers mounted on a wheel. As the wheel turns the segment of fluid trapped between two rollers is moved, creating a vacuum behind that is relieved by more fluid coming up the tubing.

   With a perstaltic pump, flow rate depends on pump speed when the tip is not occluded. Aspiration vacuum builds when the tip is partially or totally occluded, and once again the rate of rise of the vacuum depends on the pump speed.

   The vacuum level limit and the flow rate (vacuum rate of rise) can be adjusted independently with peristaltic pumps. The vacuum level can be adjusted by setting the transducer to allow for venting at a certain limit. The flow rate is determined by setting a limit to the rotation speed of the peristaltic pumps. Also, if the surgeon desires, both the vacuum limit and the flow rate can be varied by linear control, which is the instantaneous change of each parameter by depression of the foot pedal.

2. Vacuum Pumps

The evacuation of air from a closed container by a vacuum pump can be used to form a vacuum reservoir. This vacuum reservoir can create a flow in the aspiration tubing. The two styles of vacuum pumps are ‘diaphragmatic’ or ‘venturi’.
**Venturi pump**

This is driven the compressed gas (nitrogen or air) that is directed through the chamber. By varying the size of the opening, the volume of the gas through the chamber is proportionately controlled. The gas flow over the opening of tube into chamber creates a pressure differential via a venturi effect with air flow. This air flow and pressure differential in the tube creates a vacuum in the chamber that pulls fluid in from the aspiration tubing. Vacuum and flow rate are proportionately linked on a venturi pump and cannot be independently adjusted as they can on a peristaltic pump.

**FOOT SWITCH**

Phaco machines come with a foot switch to control functions of the machine. Newer machines can almost be totally controlled with the foot switch. The basic control positions are the same with all machines. In the ultrasound mode (U/S), on depressing the foot pedal, the position entered first is ‘position 1’. In this position, the irrigation line is opened, with free flow out of the phaco tip sleeve. On further depressing the foot pedal, aspiration is initiated and vacuum is transmitted to the phaco tip. This is ‘position 2’. Further depression of the foot pedal activates the ultrasound oscillation of the phaco tip, generating the force required to emulsify the nucleus. The foot pedal control is linear in the sense that the power generated is proportional to the amount by which the foot pedal is depressed.

**Surge and venting**

Surge is a phenomenon encountered in position 2 or 3 when an occluded fragment at the phaco tip is aspirated and suddenly occlusion is broken. Because of higher pressure in A.C., fluid suddenly rushes to lower pressure in phaco tip, creating a potential for A.C. collapse which could damage the cornea or posterior capsule. Newer machines have effective anti surge designs.
Venting is the main anti collapse system. In this case the negative pressure inside the aspiration line is neutralized with emission of liquid or air.

**INCISION CONSTRUCTION**

Ideal incision for phacoemulsification should be astigmatically neutral and free from sutures.

There are following different parameter in relation to incision

1. **Position**
   - (a) with regard to limbus
   - (b) with regard to o’clock position

2. **Size**

3. **Shape**

Position with regards to the limbus, three sites can be chosen for incision.

1. **Sclero-corneal**
2. **Limbal**
3. **Clear corneal**

**Sclero corneal**

As one moves away from centre of the cornea, surgically induced astigmatism is minimized. A large incision (5.5 mm) is also possible at this site. However, there are a number of disadvantages associated with this type of incision

1. Conjunctiva must be reflected. Diathermy is a must.
2. Greater time is required
3. Difficulty is manipulating of instrument in A/c

Incision is constructed about 2mm away from limbus after reflecting the conjunctiva and applying diathermy. With blade or Bard Parker knife, a vertical partial thickness scleral incision is given. With crescent knife, dissection is made in sclera and cornea and finally according is entered with 3 mm keratome.
Limbal incision

Limbal incision is one where external edge is localized 0.5mm posterior of vascular arcade, that is on fixed conjunctiva. These incision are also called as near clear incision

Advantages of limbal incision are

a) They induce less astigmatism as away from visual axis
b) They heal rapidly as they have a vascular support
c) It has a water tight shape and offers greater resistance to pressure as compared to a clear corneal incision

Disadvantages are

a) Greater possibility of ballooning of conjunctiva which can lead to poor visibility in according
b) Increase risk of subconjuctival hemorrhage

Clear corneal incision

The incision is considered to be clear corneal when its external wound is positioned anterior to limbal vascular arcade (0.5mm anterior to limbus). Advantages of clear corneal incision are :

a) It eliminates need to manipulate the conjunction
b) Aesthetically satisfactory result as eye does not appear to be operated
c) Intra-operatively tunnel is visible and manipulation of instruments in anterior chamber is easier
d) Requires less time and fewer instruments

Disadvantage

1. Poor stability : Any incision more than 4 mm without suture may be unstable
2. Post operative endophthalmitis. There may be increased chance of endophthalmitis.
Clear corneal incision are invaluable in presence of filtering bleb, patients with coagulation disorders, patients with history of alcohol abuse and finally, while operating under topical anesthesia.

**Position**
With respect to corneal curvature, the incision can be positioned in
a) Temporal quadrant  
b) Superior quadrant  
c) Obliquely (Superotemporal quadrant)  
d) In axis of greatest curvature

The choice of position depends on two factors, induced astigmatism and the ergonomics of the operation.

Until a few years ago, an incision in the superior quadrant was the most popular. It causes slightly more astigmatism (ATR) than its temporal counterpart. Nowadays, this site is generally used for making sclero-corneal incision.

Clear corneal temporal incision is the most favored incision with the majority of surgeons. It produces least or no astigmatism, easier access to surgical zone, good red reflex and it facilitates the drainage of irrigating solution.

**Dimensions**
The size of incision depends upon the size of lens to be implanted. It varies from 2.8 to 4 mm for foldable lenses and 5.5 to 6.5 for rigid lens. In foldable category, it also depends upon the size of phaco probe which may vary from 2.8 to 3.2 mm. Size of entry wound should match with size of phaco probe. Any incision in clear cornea more than 4 mm should be sutured.

**Paracentesis (Side port)**
Procedure starts with making a side port entry and injecting viscoelastic in the anterior chamber. Side port incision is made about 2 o’clock left of entry wound. It is

Clear corneal wound  
1mm from limbus,  
1.75mm in width
made in clear cornea with 15° angled knife or 20 G MVR blade. The side port should measure about 1 mm and run parallel to iris plane. After supporting the globe by placing a toothed forceps outside limbus opposite to the site of making side port, enter the AC with 15° angled knife or MVR blade.

Construction of entry wound

Now make a vertical partial thickness incision at or inside the limbus. It should involve half to 2/3 of corneal / limbal thickness. Now a 3 mm keratome is pushed into the depth of the wound and angled forward into the layers of the cornea for about 1.5mm. Direction of keratome should be forward and upward following the curve of cornea. Now the direction of keratome is changed downward to cut the Descemet's membrane and penetrate into the A.C. Once it has entered the AC, it returns to direction parallel to cornea to extend the entry to the required dimensions.

Capsulorrhexis

Continuous curved capsulorrhexis (CCC) was developed independently in the mid 80s by Gimbel and Neuhann. This single innovation has made phacoemulsification a very safe procedure.

Techniques: Capsulorrhexis can be performed with bent 26 or 27 G needle or capsulorrhexis forces (Utrata's forceps). It is remarkably easy with forceps.

Fill the AC with viscoelastic. Start filling from 6 o’clock and withdraw syringe while injecting. A single perforation is created in anterior capsule at 12 o’clock position and extended radially for 2-3 mm to raise a triangular flap. After a triangular flap has been raised and folded over itself (pushed over the anterior capsule), it is rotated clockwise. The needle is repositioned frequently, at least five to six times, always on upper surface of the flap and close to end of the previous sector. Certain precautions are necessary at this point.

1. AC should always be full with viscoelastic.
2. Do not go deep otherwise cortical matter will get disturbed, muffling the details inside the AC and making identification of the capsular flap difficult.

3. Once flap has been raised, the direction of force should be towards the center.

Capsulorrhexis procedure
Start with the capsulotome (N) in the centre, raise a flap (C), fold it on itself, rotate 360° to complete

Capsulorrhexis with Utrata forceps can be performed after raising a flap with needle as described above or an opening can be made in anterior capsule with forceps itself to raise a flap. Once the flap has been reversed, it is grasped with forceps and rotated clockwise or counter clockwise. It should be regrasped again and again in more proximal position to maintain complete control. Make a 360° rotation and while finishing, bring it from outside to inside rather than inside to outside. It is desirable that AC must be reinflated again with viscoelastic if chamber collapses as it is likely to happen more with forceps.

Basic rules of capsulorrhexis
1. Always keep AC filled with viscoelastic
2. Use high magnification
3. Look for best red reflex
4. Be patient. Operate slowly and carefully
5. Repeat capsular grasping several times

Ideal capsulorrhexis is about 5-5.5 mm in size, well centered and circular. This will make future maneuvering safe and easy. If capsulorrhexis has extended into the periphery, it is better to convert to ECCE, especially for a beginner

Hydro procedures are discussed in the previous chapter. There is no need to prolapse the nucleus into the AC. Ensuring free rotation is however essential.
NUCLEUS MANAGEMENT

DIVIDE AND CONQUER

Divide and conquer nucleotomy incorporates 4 basic steps.

1. Sculpting until a very thin posterior plate of nucleus, if any remains.
2. Fracturing the nuclear rim and posterior plate of the nucleus and nuclear rim.
3. Fracturing again and breaking away a wedge shaped section of nuclear material for emulsification and
4. Rotating the nucleus for further fracturing and emulsification.

Crater Divide and Conquer

Initially, deep central sculpting is done, resulting in a large crater, and leaving and leaving a dense peripheral rim to fracture into multiple sections.

Once this is complete, the nuclear rim is fractured, using the bimanual method in which the spatula/chopper and the phacoemulsification tip create a counter pressure. The lens is rotated and a second crack is made, isolating a pie-shaped section. The nuclear rim is then rotated clockwise, for systematic piece-by-piece nucleofractis. The harder the nuclear rim, the smaller the wedge-shaped sections must be, to allow manageability and to reduce the possibility of tearing the posterior capsule.

Usually when performing CDC, especially in dense and brunescent cataracts, rather than immediately emulsifying each wedge-shaped section, the nuclear sections are left in place for capsular bag distension. Once the fracturing is complete each pie shaped wedge of the nucear rim is brought to the center of the capsule where phacoemulsification is safely accomplished. The ultrasonic turbulence is contained within the lens bag and absorbed by the lens, for all but the last one or two nuclear fragments.

Trench Divide and Conquer (TDC)

In soft lenses, after making a central trench a central fracture is created, and then the left as well as right sides of the lens are divided by fracturing.
Many variations of this TDC technique exist and are used depending on density of the lens and the surgeon's choice. In softer cataracts, the firm nucleus is small and the epinucleus quite soft. The trench should be small, central and vertical in these nuclei to leave enough firm nucleus so that the force of two instruments can be applied in nucleofractis. When reaching the 6.0 o'clock epinucleus, the phacoemulsification tip, by going deep to the anterior capsule rim, aspirates the epinucleus and peripheral cortex because of the adherent tendency of this material.

In soft nuclei, the lens is split by exerting lateral pressure with the phacoemulsification tip and spatula at the very center of the lens where the nuclear density is sufficient to resist cutting through the tissue with the instruments particularly with the spatula. With the lateral pressure at this point in the lens, the splitting usually starts in the posterior pole of the lens and extends towards the 6.0 o'clock positions for a complete splitting of the nucleus. The phacoemulsification tip is then used to impale the left-and-right-hand sections, and quadrants are fractured. With increasing density of the lens it becomes more difficult to fracture the lens in this way unless the trench is made to its full length. This is accomplished by rotating the lens 180 degrees after sculpting is completed at the 6.0 o'clock position, so that the 12.0 o'clock area is now positioned at the 6.0 o'clock. For expediency, it is easier and more efficient to fracture the inferior rim with the phacoemulsification tip and spatula positioned just inferior to the centre of the lens. After this initial fracture, which usually extends to one half or three quarters of the diameter of the lens, the fracture can be made complete by withdrawing the two instruments back to a position just superior to the center of the lens where lateral pressure will often then extend the fracture through the nucleus at the 12.00 O’clock position.
After the initial split inferiorly that extends to the center of the lens or three quarters of the diameter, subsequent fracturing can be accomplished without the first fracture complete to the 12.0 o'clock position. The direction of the phacoemulsification tip is angled to the left and with a little more sculpting centrally the tip burrows deeply into the nucleus of the left hemisection. While the hemisection is stabilized with a spatula and aspiration, but no ultrasonic power the phacoemulsification tip is pushed and rotated clockwise to break off a pie-shaped inferior section of the lens. In softer nuclei this usually will break as a quarter section. In more firm nuclei one can try to break away a smaller section, usually about one third of the hemisection. After this section is pulled to the center by aspiration, it is emulsified.

Then, either another section can be similarly broken on the left hand side or the spatula can rotate the remaining three quarters of the nucleus counterclockwise, so that the phacoemulsification tip can then burrow into the right hemisection and break away one third or one half of this section while the remainder is stabilized with the spatula.

After fracturing is complete, the phacoemulsification setting is switched to the pulse mode to enhance holdability of the nuclear fragments to the phacoemulsification tip. The second instrument is then used to elevate the central apex of each quadrant and the phaco tip is used to deeply engage the nuclear fragment. Once occlusion has occurred the segment is brought into the middle of the epinuclear shell to be emulsified. The remaining quadrants are rotated and sequentially emulsified in a similar manner, leaving an intact epinuclear shell.

**Four Quadrant divide and conquer**

Beginner should start with sculpting. This is preferably done with 30° or 45° needle. Setting of machine should be as follows.

- Vacuum : 20-40 mm Hg
- Flow : 18-20CC/ minute
- U/S power : 70%

After stabilizing the nucleus with spatula/ chopper introduced through side port, start making a groove on the nucleus from 12 to 6 o'clock. Press the foot pedal
to position 3 and move the handpiece toward 6 o’clock edge of the capsulorrhexis. Never try to reach to the edge of the nucleus. Once at 6 o’clock, comeback to position 2 on foot pedal. The groove should be one phaco-tip wide and depth should be about 80%. Depth can be judged by depth of two sides of the groove and presence of red reflex obtained through the remaining nucleus. In soft nucleus, trench should be narrow deep and localized to central 2/3 whereas in hard cataract trench should be wide and reach further toward the edge of nucleus. Now, engaging the spatula at the end of tunnel rotate the nucleus by 90°. Same procedure is repeated for each half. In between i.e. when rotating the nucleus, the foot pedal should be at position 1 (irrigation only). After required depth has been achieved, stage is set for cracking the nucleus. With foot pedal at position 1, place the phaco-tip on right side and spatula or chopper on other side and separate the piece with lateral gentle force. It is very important that both instruments should be placed deep in the groove. A beginner can use two spatula/ choppers to divide the nucleus after filling the eye with viscoelastic. The direction of force should be horizontal with no vertical component. The procedure is then repeated to completely separate the four quadrants. At this stage, ensure the crack is complete posteriorly and all four quadrants are separated from each other.

Now change the machine parameters as follows

- Vacuum : 150-200 cc
- Flow : 20-24 cc/ minute
- U/s power : 20%

Engage one piece at its depth, bring it forward and emulsify in iris plane. Repeat same procedure for other 3 quadrants.

**Phaco Chop**

K. Nagahara introduced the phaco chop in 1993. The technique is based on a principle that adopts the physics of splitting wood. A chopping instrument (the
hatchet) is used to split the nucleus (the log) resting against the phacoemulsification tip (the chopping block). This permits the nucleus to be fractured along its longitudinal fibres using appositional forces rather than the parallel forces used by Gimbel. Every motion pulls the nucleus in towards the middle of the capsular bag, moving it out of the capsular fornix.

After completing capsulorrhexis and the hydrotomization, the phacoemulsification tip is placed in the eye burying it in the nucleus as far superiorly as possible. The nucleus is held firmly preventing it from moving superiorly as the chop is performed.

Next, an instrument i.e. a chopper is placed in the eye through the sideport incision and pushed down into the nucleus as far as the capsulotomy would allow. It is then pulled up towards the phacoemulsification tip, ripping a narrow groove in the nucleus as it cuts its way towards the chopping block. As the second instrument (chopper) approaches the phacoemulsification tip the two instruments move gently apart, the chopper to the left and the phaco tip to the right effectively chopping the nucleus in two pieces.

The operation continues, with the nucleus being rotated 90 degrees orienting the original chops horizontally and then the steps were repeated on the inferior half of the nucleus. The phacoemulsification tip is buried in the nucleus half just inside the original chop, the chopper is placed inferiorly and pulled up towards the phaco tip, chopping the inferior nucleus half into quarters. After another rotation, the second nucleus half is also chopped into two. The four quarters were now emulsified.

**Stop and Chop**

Koch and Katzen, modified the phaco-chop technique to provide space for tissue separation, nucleus manipulation, and aid ease of removal. Without tissue removal the nuclear segments could fall back together after each chop, reassembling like an intraocular jigsaw puzzle. Hence a crater or a trench is made first and then one stops and then chopping is performed.
ASPIRATION AND IRRIGATION

The instruments used for irrigation aspiration can be automated or manual. Automated systems of I/A have the following advantages.

1. Vitreous is pushed back thus ensuring safety of posterior capsule.
2. Less chance of endothelial damage due to well maintained AC.
3. Easier I/A because of open and accessible capsular fornices.

Manual I/A however, has greater flexibility, greater surgeon control and is easily learnt.

Aspiration following phacoemulsification is different from ECCE. The amount of cortex after the former is much less, it is well hydrated and thus easily aspirated. Further, there are no loose capsular tags and capsular fornices are well opened due to well maintained AC. However, it is difficult to remove the cortical matter from 12 o’clock region because approachability is limited due to CCC and small incision, especially when it is clear corneal.

The stages of adequate cortical clean up include.

1. Seeking occlusion
2. Grasping which implies a greater occlusion by activating suction and
3. Traction to strip the cortical tissue.

There are several difficulties in aspirating subincisional cortex.
Reasons for difficulty during aspiration of subincisional cortex with the tunnel incision

- Long pathway of the tip inside the tunnel
- Difficult verticalization of the tip as well as access to the capsular equator
- Increase in fluid leakage and decrease of chamber depth due to divarication of incision lips
- Small rhexis
- Distally decentralized rhexis
- Possible miosis
- Corneal folds

The methods described to aspirate the subincisional cortex are following:

1. Post IOL implantation, dialing the IOL loosens cortex making aspiration easier.
2. Using a 26 G ‘J’ shaped cannula
3. Using a 30 G cannula through side port, i.e. suck and spit method. The entire lens matter is engaged using the cannula and pulled towards 6 o’clock and released into the anterior chamber. This is then aspirated using Simcoe I/A cannula or a syringe filled with 0.25 cc BSS.
4. 6 o’clock approach - A stab incision is given at 6 o’clock and 30g cannula is used through the side port. Vacuuming and polishing can also be done with I/A tip with suction kept at the minimum (25-30mmHg).

INTRAOCULAR LENS IMPLANTATION

The IOLs which can be used after phacoemulsification are single piece PMMA IOLs or foldable IOLs. The rigid IOLs used in phaco surgery have an optic diameter of 5.5mm or less so that only one suture is required to close the wound.

Foldable IOLs can be made of soft acrylic and hydrogels or silicone material. The design can be either three piece lenses or single piece or plate haptic design. Presently, three piece lenses are used and plate haptic design is used for toric IOLs to correct astigmatism of < 3D.
The insertion devices can be either a specially designed **forceps or injector**
systems. The folding techniques are based on **horizontal principle** which allows a one
step implantation or an **vertical principle** which requires a 2 step implantation.
Silicone lenses cause less endothelial and uveal damage and are autoclavable. However, they may be associated with greater
decentration and posterior capsule opacification (PCO) or after cataract as compared to acrylic lenses. Further, these cannot be implanted is eyes with silicone oil or where future vitreoretinal procedures are anticipated. As of now, the acrylic lenses provide the best visual performance and least amount of PCO.

**PHACOEMULSIFICATION FOR A BEGINNER**

Phacoemulsification has a long learning curve. Failures at every stage are bound to come. But at sometimes this must be learned and mastered. As this is a technique for present and future and without phacoemulsification professional survival of cataract surgeon may be in danger if not now, may be few years afterwards. Here I outline few steps which if followed may make your journey less bumpy and troublesome.

1. Be well conversant with use of microscope including use of foot control.
2. Know your machine well
3. Select a case with patient age about 50-60 years, well dilated pupil, Grade-II / III nucleus hardness, and preferably right eye for right handed surgeon.
4. Make a limbal beveled incision at 12 o’clock or superotemporal site. So if need arises it may be extended.
5. Ensure nucleus rotation by good hydro dissection.
6. Perform a capsulorrhexis
   Any failure at stage 4 (premature entry with frequent iris in section) and 5 and 6 consider converting to ECCE.
7. Start with sculpting and four quadrant divide and conquer.
8. Ensure first vertical crack is complete vertically and more important posteriorly

Phacoemulsification is an ordinary human effort. If others can do it so can you. By determination and perseverance you will definitely be able to master it.