MSICS
The Practical Approach

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Why Small Incision Surgery?

- Safe, predictable in volume surgeries
- Economically viable
- Better than ECCE with sutures
- Less post operative visits
- No suture related complications
- Easy to learn
- Easier in hard cataracts
- Safer in decompensated corneas
Starting Out- Surgically

- Pick your patients carefully
- Avoid traumatic and subluxated cataracts
- Deep set eyes
- Prominent brows
- PXE
- Vision blue is great
- Sharp blades are much easier
- Great block peribulbar preferred
- Always remain in your comfort zone
- Do not hesitate to call for help
Instruments Required

- Always carry your preferred instruments
- Most of the instruments required are used in phaco
- The ones which differ are:
  - # 15 blades of 300 microns, guarded blades
  - The crescent knife
  - MVR knife
  - AC maintainer
  - The aspirator
AC Maintainer & Aspirator
Steps In MSICS

- Dissecting the conjunctiva & cautery
- Scleral incision
- Tunnel construction - scleral and inner-lip
- Side port
- Maintaining the anterior chamber with BSS or viscoelastic
- Capsulorhexis
- Hydrodissection with nucleus prolapse
- Nucleus expression
- Cortical cleanup
- IOL implantation
- Wound closure
Dissecting the Conjunctiva

- Dissect from limbus to limbus
- Leave a rim of 1mm of conjunctiva: this would serve to manipulate the eyeball & also the limbal stem cells are preserved so less post-op dryness
- Try to clear the bed of tenon’s
- Cauterize the vessels to prevent post-op hyphaema
Scleral Incision

- Initial scleral groove taken 2 mm behind the limbus
- Done with a # 15 blade on BP handle
- Diamond knives, 300 microns can also be used
- Shape can be
  1. straight
  2. frown
  3. smile
  4. chevron
- Length 5-8 mm depending upon the size and density of the nucleus
take care as to maintain a uniform and straight line while extending the entry.

- Smile
- Frown
- Straight
- Chevron
**Depth of the Scleral Groove**

- This is a very important step
- Depth should be around 0.3mm
- 1/2-1/3 rd thickness of sclera at the limbus
- Imp-tip stabilize the sclera with a toothed instrument like lims’ forceps
- Do not hold the tunnel flap to prevent damage or tunnel leakage
Tunneling - Key to Success

- Done with angled crescent knife
- Scleral flap should be neither too thin or too thick
- Depth can be assessed depending if you can clearly see the crescent blade
- If seen clearly, flap is too thin, might cause a buttonhole
- If not seen at all, the flap is too thick, might cause a direct entry and damage the angle structures
- The blade should be just visible under the scleral flap; indicates the appropriate thickness of the flap
Toothed Forceps

Tunneling
How to Make a Self Sealing Tunnel

Even large tunnels can be self sealing. The length of the tunnel should be equal to or greater than width.

\[ C + L + S = 3.5 - 4.0 \text{mm} \]
Direction of Crescent Blade

• The crescent blade is propagated anteriorly and forward until it engages the limbal tissue
• It should move in the upward and forward direction
• Remaining parallel to sclero corneal plane
• The lateral end of the tunnels are continued as scleral pockets, making a funnel shaped tunnel
• The tunnel is also continued 1mm into the clear cornea
Making Scleral Pockets
Tip Has Entered the Descemet Layer
Incision anatomy

This ensures that it is a self sealing tunnel

Incision Anatomy: The upper part of the figure illustrates the frown incision whereas the lower illustrate the straight or scratch incision with backward extensions which are almost perpendicular to limbus.
Creating Side Ports

- Use a 20 gauge MVR blade (preferred) as it holds the AC maintainer in place
- 15 degree paracentesis stab knife can also be used
In a Right Eye & a Right Handed Person the Two Paracentesis

10 o’clock

7 o’clock
Capsulorhexis/Capsulotomy

- Can be achieved by using a cystitome or capsulorhexis forceps
- If cystitome is used side port is preferred & from the main wound, if forceps used
- Can be done in fluid ie BSS or RL or under viscoelastic
- Unlike phaco the rhexis has to be 6-6.5 mm, this is the secret to success
Anterior Chamber Entry

- Done with 3.2 or 2.8 keratome
- Introduce it in the tunnel in a oscillating movement to avoid premature entry
- Keep going until you see the tip of the keratome at the tunnel end in the clear cornea and see the dimpling
- Tilt downwards to enter the anterior chamber
- Once inside, change movement to lateral and forwards
- This extends the internal incision to extend in a curve parallel to the limbus
Enter the AC with angled keratome
Bi-valved Entry Into AC
Hydro-dissection

- I normally like to use the 27 gauge cannula
- Can do it at 3 and 9 o'clock positions
- Hydro should be such that with the pressure of the fluid one edge of the nucleus should prolapse out of the capsular bag
- Hence the size of rhexis is important
Hydrodissection

Continue with hydrodissection until one pole of the nucleus tilts from the bag
Nucleus Delivery Into The AC

- Hydro prolapses the nucleus out of the bag
- If not, tilt the nucleus by giving pressure on one pole
- Take the dialer & dial the nucleus out of the bag
- Hence size of rhexis plays a crucial role
Conquering the Nucleus

- Once in the AC the nucleus can be delivered by irrigating vectis, visco expression with pressure, counter pressure
- Once the nucleus gets engaged in the wound the fluidics in the AC from the maintainer expresses the nucleus out of the wound
Conquering the Nucleus

NUCLEUS GETTING ENGAGED
Conquering the Nucleus

IRRIGATING VECTIS OR VISCOELASTIC

NUCLEUS CONQUERED
Conquering the Nucleus

• Can be achieved by using a 20/21 gauge aspirator preferably from the side port and this is my method of choice as the AC is well formed

• Simcoe can also be used but then the maintainer has no role
Rhexitis margin
Intra-ocular Lens Implantation

- Can be inserted in fluid or viscoelastic
- Can use McPherson, IOL holding forceps
- Even foldable lenses can be inserted
- Do dial the IOL to see that the IOL is in the bag
Final Step: Hydrate the Paracentesis & Reflect the Conjunctiva

- After clearing the AC of any visco all the wounds need to be sealed side port
- Can be achieved using 27/30 gauge cannula
- The conjunctiva over the wound also gives pressure on the wound thus seals it further
- Can do this by cauterizing the ends of the conjunctiva or giving sub-conj. injection of steroid-antibiotic
Reflect the Conjunctiva & Seal the Wound

- With the conjunctiva over the wound this also gives pressure on the wound thus seals it further

- Can do this by cauterizing the ends of the conjunctiva or giving sub-conj. injection of steroid-antibiotic
Take Home Points

- Scleral groove should be 2mm behind the limbus
- Length is 5-8mm
- Depth 300 microns
- Fixation is with a toothed forceps holding the conjunctiva
- Tunneling is the key to success
- Creating a funnel shaped tunnel
- Larger rhexis around 6mm
- Good hydrodissection
Your Thoughts Play a Vital Role in Shaping Your Life