Fluid tricks make tough cases easy

1. Use intracameral Xylocaine (in IC phenylephrine)
2. Understand Rheology
3. Use SST, USST, SSB & variations
4. CC Hydrosedicate more than you think you should.

"Phaco is Rheology"

Two physical components of Phaco:

Rheology — Control of flow in & maintenance of...the AC...

OVDs are pseudoplastic fluids used to create an AC surgical environment optimized for surgery.

Creative use of OVDs reduces complication rates.

Intracameral Phenylephrine

1. Add 5 cc BSS to entire minim (0.3 cc) 10% phenylephrine in a 6 cc syringe (≈ 0.57%, diluted 17.7x).
2. Inject 0.1 cc into AC after xylocaine, via side port & again under OVD.
3. Action: Effect is apparent in ~10 seconds.

Further steps to manage IFIS are rarely needed.

*Epi-Shugarcaine
9 cc BSS + 4 cc Bisulfite-free Epi 1:1,000 + 3 cc 4% Non-pres. Lidocaine

Argentinean Flag Syndrome

- Argentinean Flag Syndrome should never occur.
- By all accounts: "Rheology is a difficult subject."
- Discussion of this subject is usually clear evidence of fundamental misunderstanding of rheology.

PRESSURE EQUALIZED CATARACT SURGERY

Why do we need to pressurize the AC?
(higher viscosity cohesives, viscoadaptives)

- There is always posterior pressure:
  - Extracapsular suctions.
- Anterior capsule is convex anteriorly:
  - It will always want to tear peripherally.
- Only a viscous elastic OVD will neutralize the posterior pressure (HMW NaHa).
- Important for: capsulorhexis IOLimplantation
Imaginative use of OVDs makes tough cases easy.

CLASSIFICATION OF OVDs

- **Viscoadapтивы**
  - Ultra viscous-cohesive (solid)
  - Pseudo-dispersive

- **Higher Viscosity Cohesives**
  - Create space
  - Induce & sustain pressure
  - Prolonged retention
  - Partition spaces.

- **Lower Viscosity Dispersives**
  - Viscous-Dispersive
  - Viscosity of Healon
  - Dispersion of Viscoat

OVD ROLE IN PHACO:

**STEPS REQUIRING SPACE MAINTENANCE & STABILITY**

- Capsulorrhexis
- IOL Implantation

Best achieved with viscous cohesive OVDs

**STEPS REQUIRING ENDOTHELIAL PROTECTION**

- Phacoemulsification
- Irrigation/Aspiration

Best achieved with lower viscosity dispersive OVDs

“New” SOFT SHELL TECHNIQUE (SST):

- Enhanced by adding BSS below the cohesive OVD

**SST: An approach, not a formula**

Capsulorrhexis is easier when BSS is injected onto the capsule surface, after OVD injection, when using Soft Shell Technique, or any viscous cohesive OVD alone.

“New” SOFT SHELL TECHNIQUE (SST):

- Enhanced by adding BSS below the cohesive OVD

**SST: An approach, not a formula**
THE ULTIMATE SOFT SHELL TECHNIQUE (USST)

- Combines viscoadaptive with:
  - BSS or trypan blue (Vision Blue) or other capsular dye (ICG).

GOALS:
1. Achieve the pressurization of viscoadaptive.
2. Create the resistance to surgical maneuvers of water.
3. BSS can not mix with the viscoadaptives.


ULTIMATE SOFT SHELL TECHNIQUE (USST)

Pre Capsulorhexis Step
- AC filled 75% with viscoadaptive.
- BSS injected over lens capsule surface.
- AC remains pressurized due to viscoadaptive blocking wound.
- Capsulorhexis is very easy, in a pressurized, but low viscosity environment.

Pre IOL Implantation Step
- AC filled with viscoadaptive injected across capsulorhexis.
- Peripheral part of capsular bag filled with BSS, in a manner similar to hydrodissection, best for IOLs inserted through an injector.

USST for Capsular Dyes

- 1. AC 90% filled with viscoadaptive.
- 2. Vision Blue painted over capsule.
- 3. Excess Vision Blue washed out as BSS "locks USST".

VISCOADAPTIVE Filled Space

BSS or trypan blue filled space


IFIS SS Bridge

1. Considerable variation in sensitivity to Flomax.
   - Preop dilation test.
   - IC phenylephrine
2. IFIS SS Bridge enables safe, easy management of most IFIS cases.
   1. Reestablish the AC SSB structure when necessary (H5).
   4. Boris Malyugin’s ring (MST) (Fyodorov Institute Moscow)


Flomax IFIS

- Iris hooks, Malyugin rings, are important to have available, but are almost never needed to manage tamsulosin induced floppy iris syndrome.
- Intracameral phenylephrine is most helpful & easy to prepare.
- IFIS SS Bridge can easily manage >90% of cases.

-SA Research
Pitfalls in performing IFIS SS Bridge

1. Incisions too short.
2. Failure to refill AC with viscoadaptive when SSB becomes unstable.
   - Usually after hydrodissection
3. Failure to perform adequate hydrodissection for fear of # 2.

“Hand me the vitrector”
“Losing” vitreous is unacceptable

- You don’t have to “lose” vitreous.
- Put in back!
- Simply use a viscoadaptive (H5) and a dispersive (Viscoat) to push vitreous back behind the posterior capsule and finish the surgery.

"You only need 1 OVD" (whichever the hospital contract calls for)

**A BIG MISTAKE!**

- OVDs are all different.
- Generic OVD names should not be used.

Imaginative use of OVDs makes tough cases easy. … Summary

1. Use intracameral Xylocaine (& phenylephrine or Shugarcaine)
2. Understand Rheology
3. Use SST variations
4. CC Hydrodissect more than you think you should.

SOFT SHELL PROTECTION OF A SMALL HOLE IN THE POSTERIOR CAPSULE

- A lower viscosity dispersive OVD is used to isolate and protect the hole.
- PCCC.
- A higher viscosity cohesive OVD is used to move any protruding vitreous back through the hole.

"In Cataract Surgery, the slower you go, the less time it takes!"