Combined phaco-vitrectomy

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West of England Eye Unit
Exeter
SHO MREH 1987

“Beautiful ECCE’s”
Registrar MREH 1990 - 1992

Phaco “being tried” at MREH

“Unlikely to catch on”
Senior Registrar Charing Cross and Moorfields 1993 - 1995

SHO taught me Phaco!

“Phaco is the way to go”
VR Fellow MREH 1995 -1996

Fantastic training in VR

Post vitrectomy cataract sent to anterior segment team
Vitrectomy and cataract

- **Nuclear sclerosis**
  - Formed gel protective
  - Increased in myopia
  - Increased post vity
  - Gradual onset

- **Gas cataract**
  - Large gas fill
  - Posterior sub capsular
  - Immediate effect
Patient perspective

- Has “big” vitreoretinal operation in hospital
- May need to posture post op
  - Uncomfortable
- Develops index myopia
  - Change in glasses
  - Change in glasses
- Referred back to hospital
  - Back in for cataract operation
Surgeons perspective

- Difficult cataract surgery
  - Lens / zonules damage
  - High myopes
  - A/C instability and variable pupil size

- BUT
  - Modern phaco machines have better A/C stability
  - Ways of avoiding iris bounce

- 143 eyes
- Per-op
  - 93% deep or fluctuating A/C depth
  - 9% PC rupture
  - 5% incomplete capsulorhexis
- Post-op
  - 6% retinal detachment

- Case series of 75 eyes
- 53% had evidence of iris diaphragm retropulsion syndrome
Cataract National Dataset electronic multicentre audit of 55,567 operations: risk stratification for posterior capsule rupture and vitreous loss

Eye 2008

- Age
- Male gender
- Glaucoma
- Diabetic retinopathy
- White cataract
- Poor fundal view
- Phacodonesis / PXF
- Small pupil
- Axial length >26mm
- Inability to lie flat
- Trainee surgeon
- Use of alpha blocker
Private practice perspective

- Some people may not be so keen on combined surgery!
Combined surgery – historical perspective

- If no cataract, leave lens and do vitrectomy alone
- If mild cataract but good view of fundus, leave lens and do vitrectomy alone
- If sufficient cataract to impair fundal view, do vitrectomy and lensectomy (posterior approach to lens)
  - Lens in sulcus if sufficient capsule support
  - AC IOL if insufficient capsule support
  - May require large corneal section
Combined surgery – with advent of good phaco technique

- If no cataract, leave lens and do vitrectomy alone
- If mild cataract but good view of fundus, leave lens and do vitrectomy alone
- If sufficient cataract to impair fundal view, do phaco vitrectomy (anterior approach to lens)
  - Lens in capsular bag
  - Small corneal section
Why not routinely remove the lens in a presbyopic patient undergoing vitrectomy?

- Lens already lost ability to accommodate
- Cataract formation almost inevitable after vitrectomy
- Avoid patient having to return for further surgery
- Possibility of emmetropia
Keen newly appointed consultant

Why not do phaco vitrectomy on presbyopic patients?

Would also enable more complete vitrectomy

Would also enable very large gas fills with no worries about gas cataract

Perhaps would not need to posture for patients having surgery for macula hole?
Tornambe PE et al. Retina, 1997;17(3):179-85. Macular hole surgery without face-down positioning


Exeter macular hole study

- Combined phaco-vitrectomy surgery
  - With posture 13 patients
  - Without posture 20 patients

- Results
  - With posture 85% hole closure
  - Without posture 90% hole closure
“The whole is greater than the sum of its parts”

From Zen Buddhism

90 eyes (28 RRD, 44 macular holes, 11 ERM, 7 other)
13% fibrinous uveitis
1% IOL / pupil capture

93 eyes, 88% reattachment rate with one op
16% fibrinous uveitis
8% IOL / pupil capture
How to avoid IOL / pupil capture

- Nothing new – keep capsulorhexis size smaller than the optic
- Avoid strong post-operative mydriatics
- Tropicamide nocte for 1 week

How to avoid fibrinous uveitis

- Anterior chamber stability = minimal inflammation
- Be aware of pressures on either side of posterior capsule at all time
- Be aware of infusion pressures and if infusions are on or off
- Pred forte 2hrly for 2 days then q.i.d.
- Endo laser rather than cryo
- **DO NOT ALLOW ANTERIOR CHAMBER TO COLLAPSE**
**Recent developments**

- Better phaco machines
  - Good AC stability
  - Microincision phaco / Bimanual phaco
- Better vitrectomy machines
  - Good pressure control
  - Designed for combined surgery
- 23g vitrectomy
  - Less inflammation
  - Less entry site breaks
  - Valved trocars to maintain pressure
Manchester Royal Eye Hospital


  - To posture or not to posture after macular hole surgery
  - 28 eyes
  - One first night of face down posture
  - No need to posture if > 70% gas fill on first post op day
Microincision cataract surgery combined with vitrectomy: a consecutive case series

52 eyes with 1.8mm microincision (MICS) cataract surgery and vitrectomy

2 eyes “significant inflammation”

No lens decentration

Conclusion – “safe technique”
Current technique

- Insertion of 23g trocars
- Corneal incision (no sutures)
- Phaco and IA
- Vitrectomy
- IOL insertion
- Gas (if needed)
Current practice

- Macular holes
  - Phaco vity on everyone
  - Only posture large holes

- Retinal detachment
  - Slightly increased risk of PVR
  - May be difficult to get accurate biometry
  - Vity only

- Epiretinal membrane
  - Phaco vity on nearly everyone

- Diabetes
  - Vity only
  - Increased risk of inflammation, rubeosis,