New Trends in Combined Surgery

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What is new in Vitrectomy

- The small gauge trocars
- The higher speed cutters
- The more stable instruments
- The new lighting
- Better optical systems
What is new in cataract

- New phaco machines
- New IOLs
- Higher quality optics
Stiffer instruments for more uses
Combined Surgery

- PhacoVt
- Phaco+ s oil removal
- Other use
PhacoVt

- When cataract obstructs
- When no cataract present but presbyopic patient requires Vt
Cataract formation following vitreoretinal procedures.

- 96% after 20-gauge pars plana vitrectomy (PPV)
- 72% after small gauge (23- and 25-gauge) PPV
- 38% after scleral buckle (SB), 38% after pneumatic retinopexy (PR)
- 91% after PPV plus SB (PPV+SB)
- Posterior subcapsular and nuclear sclerotic cataracts were the most common
- almost all developing within 24 months
- no statistically significant difference (P=1.00) between the rate of cataract extraction after 20-gauge (41%) and small gauge PPV (42%)
- a statistically significant difference between PPV and non-PPV (SB, 6%; PR, 7%; P<0.001) and PPV and PPV+SB groups (69%; P=0.0063).

VT and Cataract formation
Benefits

• The patient does not have to go back to the operating room for a further surgical procedure
• the surgeon does not have to perform a potentially difficult operation, from a technical point of view.
  – loss of vitreous counterpressure
  – abnormal variations in the anterior chamber depth
  – unstable zonules
  – flaccid posterior capsule during cortical aspiration

Benefits

• advantages in extending vitrectomy to remove anterior vitreous.
• small retinal tears appear in the anterior retina are easily identified and treated
• retinal visualization is optimal during vitreous surgery.
• simultaneous cataract extraction would require a larger gas volume to fill the vitreous cavity (better mh closure rate)

Lateral Capillary Forces Theory

- Interface at hole lateral capillary forces
- Bridging of hole
- Lateral capillary forces
- Hole closed
What if Posterior Hyaloid Remains?
Is Prone Positioning Necessary?

Interface at hole lateral capillary forces

gas not on hole

no forces

Tension Force
Is Prone Positioning Necessary

• Depends on Bubble Size
  80%  50%
Retina view in a phakic eye
Final outcome the same


final functional and anatomical outcomes were not significantly different from those of phacovitrectomy. Both approaches were efficacious
Faster visual rehabilitation

  2-lines or greater improvements in visual acuity within 6 weeks of surgery.

• Presbyopic Phacovitrectomy. Ling R, Simcock P BJO 2003 Nov
  There was significant improvement in the median logMAR visual acuity from 1.00 preoperatively to 0.48 postoperatively
Easier for patient

• Heath G, Rahman R. Eye (Lond). 2010 Feb;24(2):214-20

Phacovitrectomy without prone position for macular hole surgery.
Disadvantages

• Corneal edema
• Iris prolapse and miosis
• PC rapture in Rd cases
• Inflammation
• Refractive surprise
Iris prolapse
PC rapture in RD
Refractive errors

• Accuracy of preoperative biometry in vitrectomy combined with cataract surgery for patients with epiretinal membranes and macular holes: results of a prospective controlled clinical trial.


• **myopic shifts** developed in patients with long axial lengths, poor preoperative visual acuity, and the preoperative presence of foveal detachment

• The myopic shift was strongly dependent on the diagnosis and the need for intraocular tamponade, indicating that **a slightly hyperopic IOL should be used** in patients having combined surgery
IOLs

Change in anterior chamber depth following combined pars plana vitrectomy, phacoemulsification, and intraocular lens implantation using different types of intraocular lenses.

*Watanabe A et al Jpn J ophthalmol. 2010 Sep;54(5):383-6*

Different types of three-piece IOLs showed different degrees of shift due to fluid-gas exchange.
Refractive surprise


- A myopic shift after phacovitrectomy seems to be independent of the use of intraocular gas tamponade.

- Using a Z-haptic IOL, aiming for slight residual hyperopia (+0.50 D) is suggested in patients having phacovitrectomy.
Tips for perfect PhacoVt
Combine More!!!
Use of additional light when no red reflex

- In VHg
- When other reason for No red reflex
When no good red reflex
Phaco with Cutter
Silicone oil via capsule
Cost of Surgery/ies

• For consecutive surgeries of macular hole and cataract, the cost was $2264 for the cataract extraction and $1331 for macular hole surgery, totaling $3595.

• For combined surgeries, the cost was $2264.

• This cost analysis does not consider the indirect costs (follow-up, visits, transportation, etc.)!!!!

  – AJO, September 2010 vol 150, Issue 3, Pages 387-391
Suggestion

• Skillful/ more experienced surgeons to perform combine surgery
• non experienced to avoid
Recomendations

• Small capsulorexis
• Larger diameter IOLs
Conclusion

• the functional and anatomic results of combined surgery were equivalent to consecutive procedures.

• Combined surgery results in faster visual recovery, thus minimizing patient morbidity and avoiding a second surgery, and also reduces overall surgical cost.

• Combined surgery can therefore become part of public health-care policy, lowering the total cost of these procedures.
Thank you

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