INTRA OPERATIVE COMPLICATION IN VITRECTOMY

Wimbo Sasono
Milestone In Vitreous Surgery

Helmholtz, developed Ophthalmoscope (1850)

Jules Golin introduced Iginipuncture (1919)

Custodis introduced Buckling (1949)
Tsugio Dodo (1955), published open sky vitrectomy & C. Haruta (1959) published closed vitrectomy

Robert Mechemer, regarded as “Father of Vitreous surgery“ for his introduction of pars plana Vitrectomy (1972)
Basic Principle

- Complex blend of high tech-microsurgery & complex pathobiology system
- Excellent Visualization: microscope & additional viewing system
- Closed system surgery, stable intraocular pressure
- Optimal anterior segment clarity & widely field of view
- Multiple sequence of surgical steps
INDICATION

- REMEDY VITREO-RETINAL TRACTION & TO AVOID COMPLICATION ASSOCIATED WITH SCLERAL BUCKLING. ( = PRIMARY VITRECTOMY/ KLOTTI-1970 ).
- RETINAL DETACHMENT complicated with PROLIFERATIVE VITREO RETINOPATHY ( PVR ) or OBSCURE VITREOUS or GIANT RETINAL BREAK.
- OTHERS : such as Endophthalmitis, IOFB ; ect
THE INSTRUMENT

- METHOD
- MECHANICAL
- DEVELOPMENT
METHOD

- PARS PLANA VITRECTOMY. (PPV)
- 3-4 PORT PPV
- SUTURE or SUTURELESS
- PORT SIZE
- ORDINARY or High SPEED CUTTING
- EXTRA ENDO-ILLUMINATION.
- TYPE of VIEWING SYSTEM.
- ENDOSCOPIC VITRECTOMY
- MANAGING the INTRA OCCULAR PRESSURE
MECHANICAL

- PEELING/ SUCKING :
  - TUCK FORCES ALONG THE AXIS of COLLAGEN BUNDLE

- SHEARING CUTTING :
  - IDEAL TISSUE CUTTING is defined as THAT PRODUCING ZERO DISPLACEMENT

- ...

DEVELOPMENT

- PORT SIZE:
  - 20G; 23G; 25G; 25G+ & 27G

- CUTTING SPEED:
  - 800 – 7000 CPM

- ILLUMINATION
  - HALOGEN to XENON

- VIEWING SYSTEM
  - REGULAR to Wide ANGLE
  - INTEGRATED VIEWING SYSTEM; illumination; OCT


**Surgical Steps**

1. Placement of encircling band
2. Access to the vitreous cavity via three port pars plana
3. Removal of posterior vitreous
4. Injection of 1-2 cc perflurocarbon liquids to stabilize the central retina
5. Internal drainage of subretinal fluids
6. Fluid-Air exchange
Surgical...

- Retinopexy by Endolaser or cryo-coagulation
- Tamponade; exchange of air to SF6; C3F8 or Silicon oil
- Adjustment of the tightness of the encircling buckle
- Adjustment of intra ocular pressure
- Lens extraction / lensectomy
- Posterior vitreous separation/detachment
Intraoperative Complication

Could happen in any surgical steps

The most frequent:

• Iatrogenic retinal break (6%).
• Iatrogenic damage to the Lens (3%).
• False direction / subretinal infusion of fluids.
• Choroidal detachment or hemorrhages.
• Retinal or vitreous incarceration at retinotomy sites.
Iatrogenic Retinal Break

- Keep the port of cutter visible
- Lowest effective suction force is the safest
- Minimize the suction force by moving toward the tissue
- Produced Ideal cutting, zero displacement of the tissue
- Linear control by proportional depression of the surgeon’s foot
Iatrogenic Damage To The Lens

- 6 mm canule can bump the Lens
- Sklerostomies: 4 mm for phakic eyes
- $170^\circ$ apart for the pair instrument
- Exchanging the active instrument to the same portion of target tissue
<table>
<thead>
<tr>
<th>Subretinal Infusion Of Fluids</th>
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<tr>
<td>Wide angle view of the posterior segment</td>
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<tr>
<td>Avoid 2 mm canule</td>
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<tr>
<td>Choose the sklerostomies site properly/ the lowest detached area</td>
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<td>Should always inspection before turn on the infusion</td>
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<td>Should be aware of sudden increase of bullous detachment or decreased of IOP</td>
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Choroidal Detachment or Hemorrhages

Hemorrhages:

- Most feared complication of subretinal fluid drainage

Detachment:

- Also induced by Hypotony during drainage of subretinal fluid, that caused vortex vein compromised

Excessive leakage through the sklerostomies port caused by improper instrument
TERIMA KASIH