Advanced Phaco Techniques:
Phaco Chop
White and Brunescent Cataracts

Jonathan B. Rubenstein, MD
Deutsch Family Professor and Vice-Chairman
of Ophthalmology
Rush University Medical Center
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Phaco Chop

Why?

- **Dense nuclei**
  - Produce 8, 12, 16 or more small fragments
  - Uses lower phaco energy
  - Easier to work in safe zone in center of posterior chamber

- **Small pupils**
  - Brings nuclear fragments to center of eye
  - Allows visualization of phaco tip

- **Loose Zonules**
  - Less traumatic / less stretching of zonules
  - More prevalent in white cataracts
**Phaco Chop Techniques**

- **Horizontal Chop**
  - Impale phaco into proximal lens
  - Chopper extended under peripheral capsule around lens equator
  - Bring chopper in straight line towards phaco tip then separate into two pieces
  - Continue to chop into 4 – 8 segments
  - Less trauma to zonules
  - Good for white cataract
Horizontal Chop

Horizontal
(Phaco Chop)

or

Vertical
(Quick Chop)
**Phaco Chop Techniques**

- **Vertical chop**
  - Impale nucleus to mid depth proximately using high AFR
  - Place axe shaped chopper just distal and just to the side of the phaco tip
  - Bring the two instruments together, lift the phaco tip towards the cornea and chopper towards posterior capsule
  - Separate nucleus in a shearing motion
  - Good for brunescent nuclei
Vertical Chop
Phaco Chop

Techniques

- **Stop and Chop**
  - Good technique for most lenses
  - Combines the groove of divide and conquer with horizontal and vertical chopping
  - Create groove first
  - Separate lens into halves
  - Vertically chop halves into fourths
  - Horizontally chop fourths into eighths
Stop and Chop
The Brunescent Cataract
Phaco – Brunescence Cataract Technique

- Adequate pupil dilation
  - Pharmacologic – intra-op epinephrine
  - Iris hooks – MacKool, MST
  - Malyugin ring

- Corneal protection
  - Dispersive or high molecular weight viscoelastic
    - Re-apply multiple times
  - Phaco in the bag, bring fragments to the center
Phaco – Brunescent Cataract Technique

- Clear superficial cortex/nucleus first while lens is stable
  - Bowl out generously

- Use vertical, then horizontal chopping technique
  - Make multiple chops – 8 or 16 pieces
  - Adequate suction to bring pieces to mid pupil
    - Increase AFR and vacuum settings

- Capsular Tension ring if needed
  - CTR if \( \leq 5 \) clock hours of laxity
  - Cionni ring or Ahmed segments if \( \geq 5 \) hours of laxity
The White Cataract

- **Four types:**
  - Mature white lens with hard nucleus
  - White cortical cataracts with possible cortical capsular adhesions and PSC and/or ASC
  - Intumescent swollen cataract
  - Liquified Morgagnian cataract with floating nucleus
The White Cataract

- **Technique**
  - Decompress capsular bag if under pressure
    - Pressurize with viscoelastic (make pressure on outside of capsule > inside of capsule)
    - Puncture and decompress with I & A or vitrector
  - Stain capsule with Trypan Blue dye
  - Instill more viscoelastic to keep pressure on the ant. capsule
  - Slow capsulorhexis
  - Push on lens gently during hydrodissection
  - Horizontal chop or stop and chop phaco
Video
White/Brown Cataract