Basic Concept & Techniques of Phaco Prechop

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Phaco Prechop

“Mechanical nucleofracture performed prior to the phacoemulsification”

1992  Akahoshi, Japan
1994  ASCRS Film Festival
Divide & Conquer

U/S Energy Loss ++
Phaco Prechop

U/S Energy Loss ±
Femtosecond Laser Prechop

Prechop only in the limited zone
Posterior plate remains
Femtosecond Laser Issues

Limited Application
Small Pupil, Deep Set Eyes, Advanced Glaucoma

Cost vs Efficiency
Preparation for Prechop

✓ Corneal Protection
✓ Complete CCC
✓ Hydrodissection
Corneal Protection
Fill up the anterior chamber with dispersive OVD such as Viscoat
Complete CCC
Make a complete capsulorhexis without tears or notches
**Sufficient Hydrodissection**

Akahoshi Hydrodissection Cannula (AE-7636) attached to a 2.5cc syringe
Sufficient Hydrodissection

Cortical cleaving hydrodissection for all the cases except for the posterior polar cataract
Expose the Nuclear Surface

Fill up the anterior chamber again with Viscoat clearing the anterior cortex on the nuclear surface
Preparation for Prechop
Methods of Prechop

Nuclear Support

- Karate Prechop

Nuclear Support

+ Counter Prechop
Karate Prechop
Phaco Prechop without Nuclear Support

- Soft Nucleus
- Complete CCC
- Intact Zonules
Karate Prechop

Combo Prechopper (AE-4190)
The angular side blade is sharp, the rounded side blunt
Karate Prechop

Place the angular side of the prechopper blade at the center of the nucleus
When the whole blade is inserted into the nucleus, open the blades slowly while continue to push the blades down.

**Karate Prechop**
Karate Prechop

When the complete nuclear division has been attained, the inner surface of the posterior capsule can be observed.
Karate Prechop

Place the closed blades into the distal end of the nucleus
Karate Prechop

Open the blades to separate the distal end of the nucleus
Karate Prechop

Place the blades into the proximal end of the nucleus
**Karate Prechop**

Open the blades to separate the proximal end of the nucleus. Thus attain complete division from proximal to the distal end.
Karate Prechop

Restore each bisected nuclear fragment into its original position and rotate the nucleus 90 degrees to prechop into four pieces.
Karate Prechop

Insert the angular side of the blade into the proximal half of the nucleus. The direction of insertion is just downwards.
Open the blades slowly while pushing the nucleus downwards. Repeat opening until the posterior plate is completely separated.
Karate Prechop

Insert the angular side of the blade into the distal half of the nucleus. The direction of insertion is just downwards.
Karate Prechop

When the whole blade is inserted into the nucleus, open the blades slowly while continue to pushing the nucleus downwards.
Karate Prechop

Using the blunt rounded side of the blade, ascertain that the nucleus is completely divided from surface to the bottom.
Karate Prechop

For Soft Cataract
Counter Prechop
Phaco Prechop with Nuclear Support

- Hard Nucleus
- Incomplete CCC
- Weak Zonules
**Counter Prechop**

*Universal Prechopper (AE-4190) + Nucleus Sustainer (AE-2530)*
Counter Prechop

Make a complete capsulorhexis 1.0mm smaller than the IOL optic size
Counter Prechop

Nucleus sustainer is carefully introduced to the equator of the nucleus
Counter Prechop

Insert the prechopper into the center of the nucleus. The tip of the sustainer, center of the nucleus and tip of the prechopper should be aligned on the same axis.
Counter Prechop

Bring two instruments closer. By supporting the nucleus, open the blades repeatedly
Using the two instruments, separate the posterior plate of the nucleus completely.
Counter Prechop

Place the closed blades to the proximal part of the nucleus
Counter Prechop

Open the blades to bisect the nucleus from the surface to the bottom, from proximal to the distal end
Counter Prechop

Restore each bisected nuclear fragment into its original position and rotate 90 degrees
Counter Prechop

By supporting the nucleus with a nucleus sustainer at deep equatorial portion, insert the prechopper blade into the proximal half of the nucleus.
Counter Prechop
Bisect the proximal half of the nucleus completely
Counter Prechop

Insert the closed blade into the hardest core of the distal nuclear fragment by supporting with the nucleus sustainer.
Counter Prechop
Bisect the distal half of the nucleus completely by repeating the opening action
Counter Prechop

Rotate the nucleus by 45 degrees for further prechop of the quadrants. Smaller fragmentation is more advantageous for the phacoemulsification of the dense cataract.
Phaco of Prechopped Nucleus

Make a complete occlusion of the phaco tip to the nucleus so that all the U/S energy can be used effectively to emulsify the nucleus.
Benefit for the sub-2mm MICS

As the U/S time is very short, the incision can be self-sealed quite easily without hydrating the corneal stroma
Counter Prechop

For Dense Cataract
Phaco of Prechopped Nucleus

Bevel Down Burst Phaco
Summary

Nuclear Support

- Karate Prechop
  - Combo Prechopper

Nuclear Support

+ Counter Prechop
  - Universal Prechopper
  - Nucleus Sustainer
Merely making a crack into the nucleus is not enough. What is important is to attain complete division.
Visco Dissection to inject cohesive OVD between the nuclear fragments will facilitate the phacoemulsification
Manual Phaco Prechop

Prechopper can attain the complete division of the posterior plate of the nucleus
Soft Nucleus
Hard Nucleus
Thank you for your attention!

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