

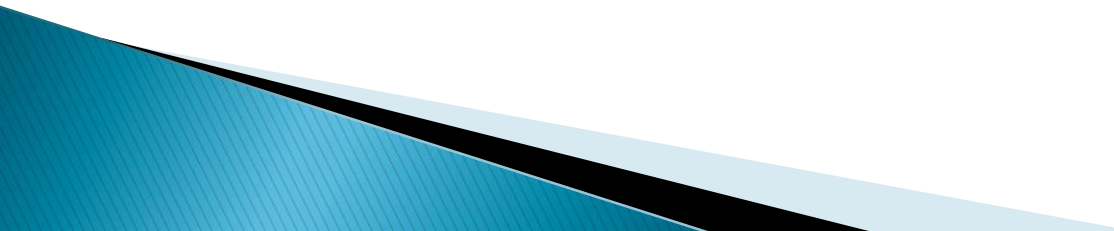
SURGICAL MANAGEMENT OF CATARACT IN ADULTS

GOPIKA T P
ROLL NO:103

TYPES OF SURGICAL TECHNIQUES

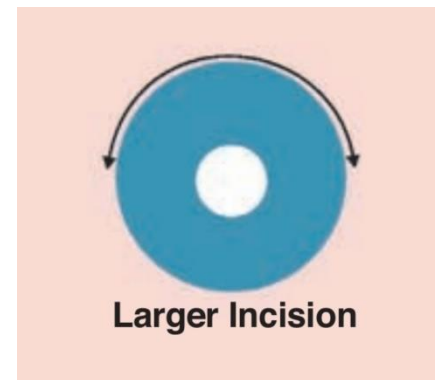
I. INTRACAPSULAR CATARACT EXTRACTION (ICCE)

II. EXTRACAPSULAR CATARACT EXTRACTION

- A. CONVENTIONAL EXTRACAPSULAR CATARACT EXTRACTION**
 - B. MANUAL SMALL INCISION CATARACT SURGERY (SICS)**
 - C. PHACOEMULSIFICATION**
 - D. FEMTOSECOND LASER ASSISTED CATARACT SURGERY (FLACS)**
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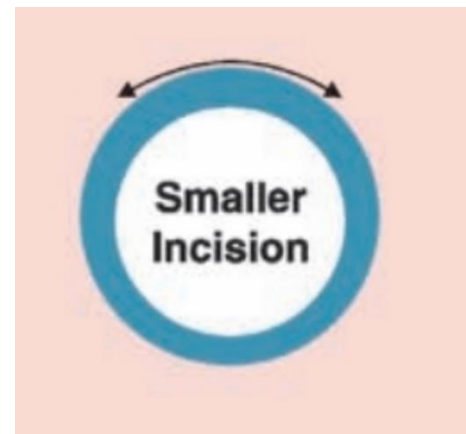
INTRACAPSULAR CATARACT EXTRACTION

- WHOLE LENS IS REMOVED WITH INTACT CAPSULE
- BY RUPTURING THE WEAK AND DEGENERATED ZONULES.
- INCISION: LARGE, 180°, 10–12 mm
- IMPLANTING ANTERIOR CHAMBER INTRAOCULAR LENS
- INDICATION: SUBLUXATED LENS
- NO LONGER USED BECAUSE
 - LARGE INCISION NEEDED
 - COMPLICATIONS LIKE ASTIGMATISM, RETINAL DETACHMENT, VITREOUS LOSS



EXTRACAPSULAR CATARACT EXTRACTION

- ▶ A PORTION OF THE ANTERIOR CAPSULE IS REMOVED
- ▶ EXTRACTION OF THE LENS NUCLEUS AND CORTEX
- ▶ INCISION: MEDIUM, 120°, 7–8 mm
- ▶ THE PUPIL MUST BE DILATED IN ALL TYPES OF ECCE PREOPERATIVELY ,TO VIEW THE PERIPHERY OF THE LENS AND TO REMOVE THOROUGHLY THE CORTEX.



CONVENTIONAL ECCE

- ▶ INCISION: LONG (10–12mm)
- ▶ MULTIPLE SUTURES ARE REQUIRED
- ▶ IMPLANTING POSTERIOR CHAMBER IOL
- ▶ DEMERITS:
 - RISK OF VITREOUS PROLAPSE
 - POSTOPERATIVE ASTIGMATISM
 - POSTOPERATIVE WOUND LEAK, IRIS PROLAPSE
 - NEEDS SUTURE REMOVAL, DURING WHICH INFECTION OCCURS.

MANUAL SMALL INCISION CATARACT SURGERY

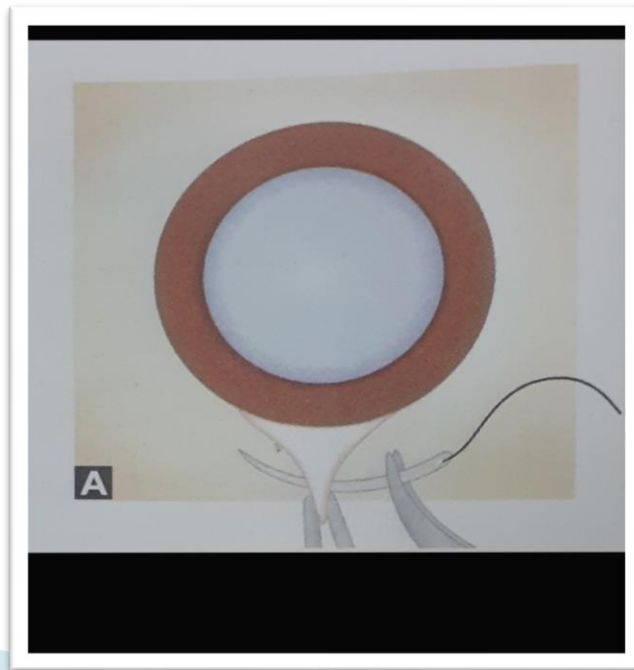
- ▶ ECCE WITH IOL IMPLANTATION IS PERFORMED THROUGH SUTURELESS SELF SEALING VALVULAR SCLEROCORNEAL TUNNEL INCISION.

STEPS:

1.SUPERIOR RECTUS (BRIDLE) SUTURE

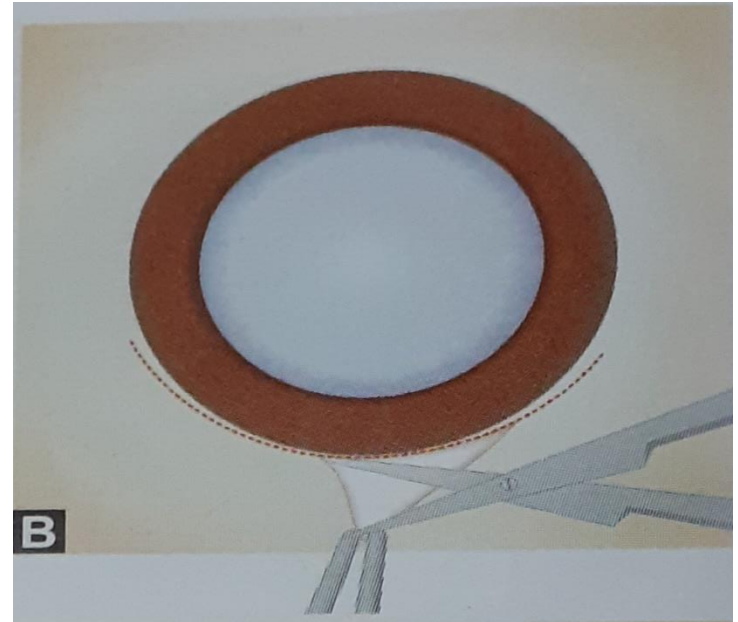
.TO FIX THE EYE IN DOWNWARD GAZE

.PROVIDE A COUNTERTRACTION FORCE DURING DELIVERY OF NUCLEUS AND EPINUCLEUS.



2.CONJUNCTIVAL FLAP AND EXPOSURE OF SCLERA

- ▶ FLAP MADE ALONG THE LIMBUS FROM 10 TO 2 O' CLOCK POSITION
- ▶ CONJUNCTIVA ,TENON'S CAPSULE DISSECTED AND SEPARATED , RETRACTED TO EXPOSE SCLERA (4 mm).



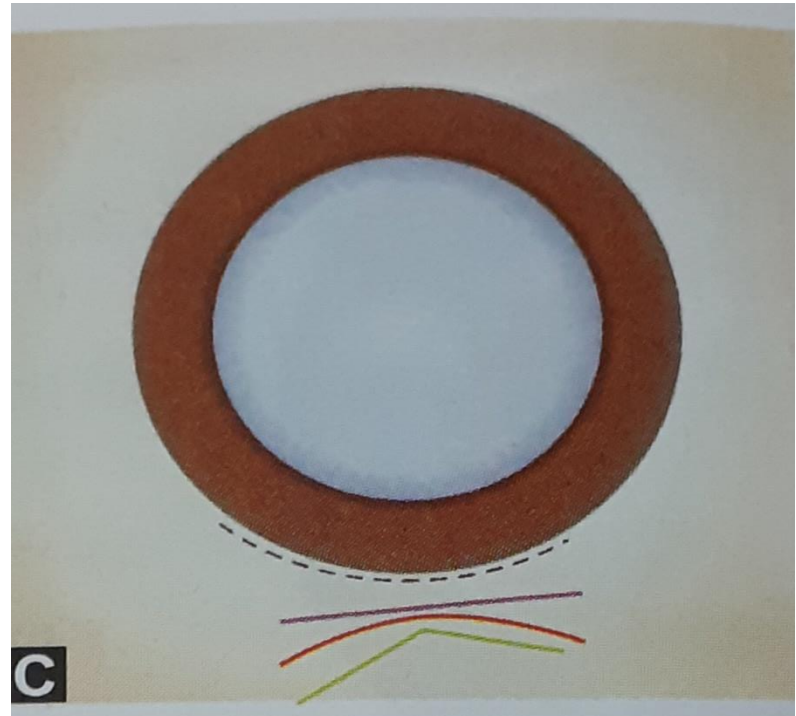
3.HAEMOSTASIS

- ▶ BY WET FIELD CAUTERY

4.SCLEROCORNEAL TUNNEL INCISION

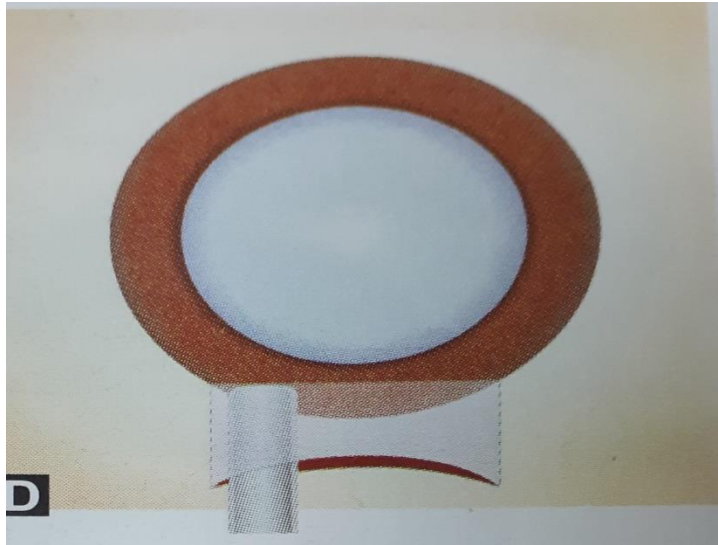
▶ 1.EXTERNAL SCLERAL INCISION:

- . EXTERNAL SCLERAL GROOVE (ABOUT ONE THIRD TO HALF THICKNESS) MADE BEHIND THE LIMBUS
- .LENGTH: 5.5mm to 7.5mm
- .STRAIGHT ,FROWN SHAPED OR CHEVRON IN CONFIGURATION

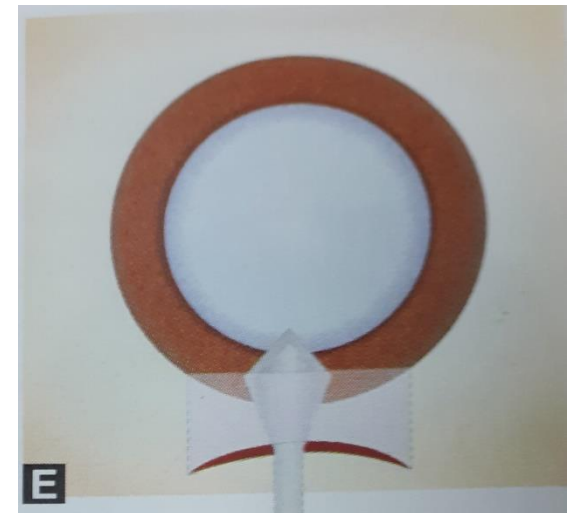


2.SCLEROCORNEAL TUNNEL

- ▶ CRESCENT KNIFE
- ▶ EXTENDS 1–1.5 mm INTO THE CORNEA

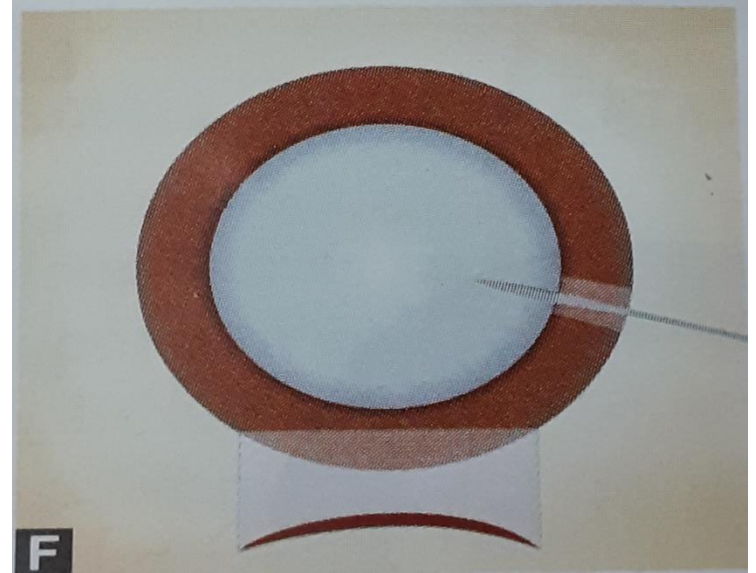


3.INTERNAL CORNEAL INCISION USING 3.2mm ANGLED KERATOME



5.SIDE PORT ENTRY

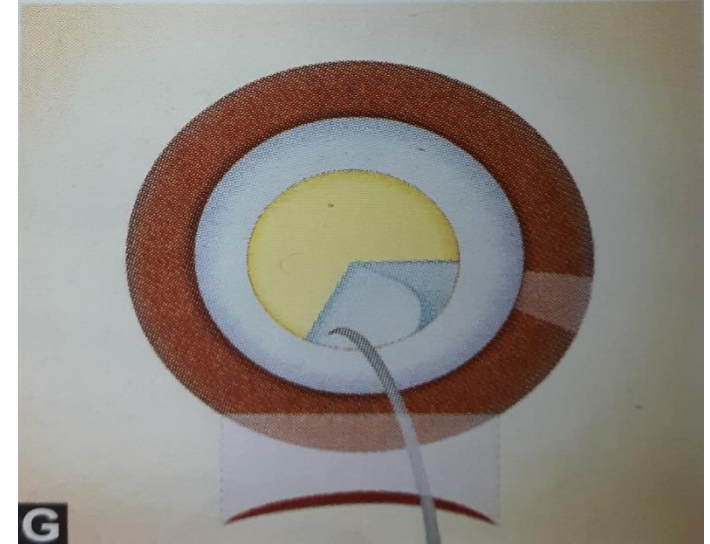
- ▶ 1.5mm CORNEAL INCISION AT 9 O'CLOCK POSITION
- ▶ HELPS IN DEEPENING THE ANTERIOR CHAMBER AT THE END OF SURGERY.



▶ 6.ANTERIOR CAPSULOTOMY

- CAN OPENER'S TECHNIQUE
- LINEAR CAPSULOTOMY
- CONTINUOUS CIRCULAR CAPSULORRHEXIS
(PREFERRED)

- ANTERIOR CAPSULE IS TORN IN A CIRCULAR FASHION
- USING IRRIGATING CYSTOTOME OR CAPSULORRHESIS FORCEPS.



7. HYDRODISSECTION

BALANCED SALT SOLUTION (BSS) IS INJECTED UNDER THE PERIPHERAL PART OF ANTERIOR CAPSULE.

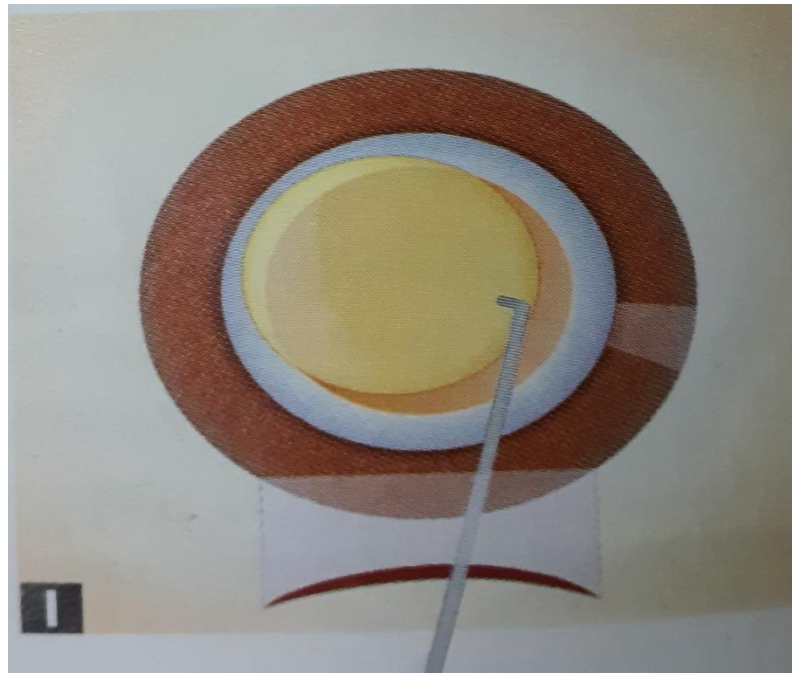
- SEPARATES CORTICONUCLEAR MASS FROM CAPSULE

8. NUCLEAR MANAGEMENT

▶ i) NUCLEAR PROLAPSE

OUT OF THE CAPSULAR BAG INTO THE ANTERIOR CHAMBER

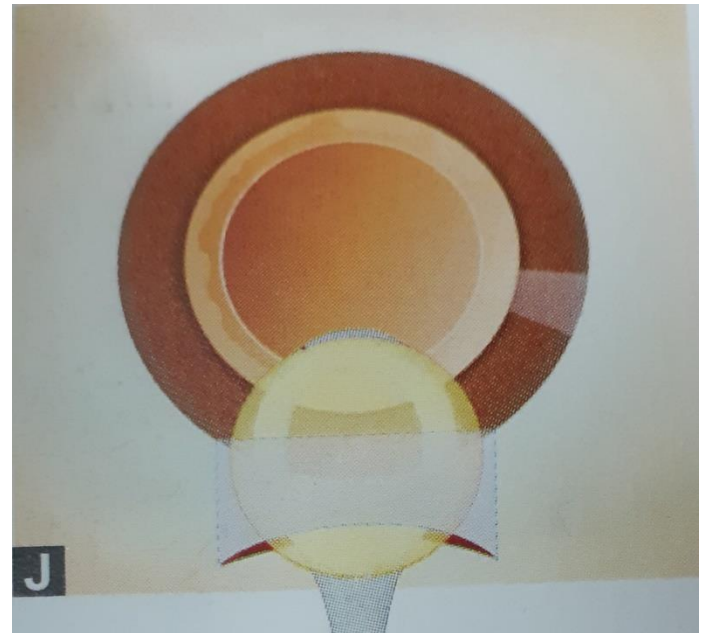
- ▶ INITIATED DURING HYDRODISSECTION
- ▶ COMPLETED BY ROTATING THE NUCLEUS WITH SINSKEY'S HOOK.



ii) DELIVERY OF NUCLEUS

METHODS:

- ▶ IRRIGATING WIRE VECTIS METHOD
- ▶ BLUMENTHAL'S TECHNIQUE
- ▶ PHACOSANDWICH TECHNIQUE
- ▶ PHACOFRACTURE TECHNIQUE
- ▶ FISHHOOK TECHNIQUE



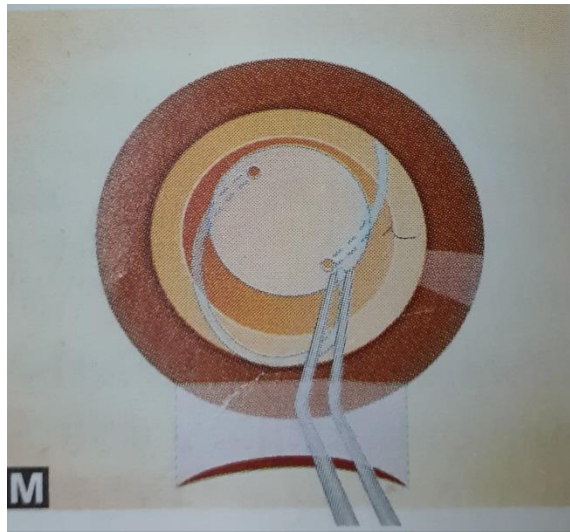
9.ASPIRATION OF CORTEX

- ▶ REMAINING CORTEX ASPIRATED OUT BY TWO WAY IRRIGATION AND ASPIRATION CANNULA



10.IOL IMPLANTATION

- ▶ POSTERIOR CHAMBER IOL
- ▶ AFTER FILLING WITH VISCOELASTIC SUBSTANCE



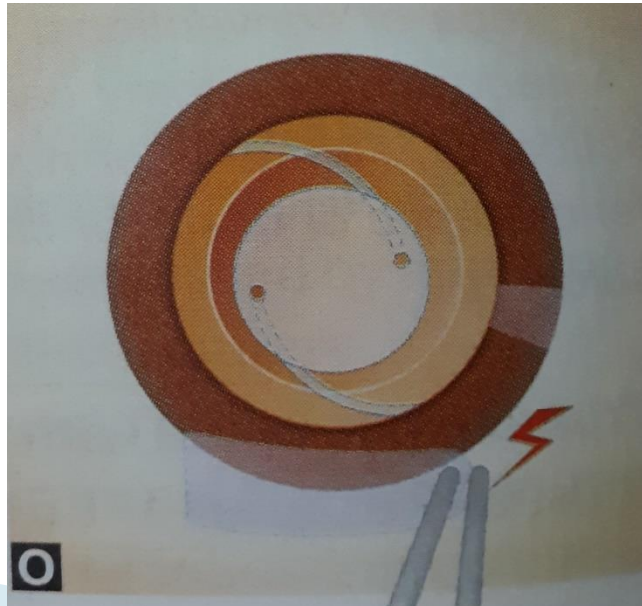
1 1.REMOVAL OF VISCOELASTIC SUBSTANCE

- ▶ FROM ANTERIOR CHAMBER AND CAPSULAR BAG
- ▶ HELP OF TWO WAY IRRIGATION ASPIRATION CANNULA

- IF ANY LEFT OUT ---SECONDARY GLAUCOMA

12.WOUND CLOSURE

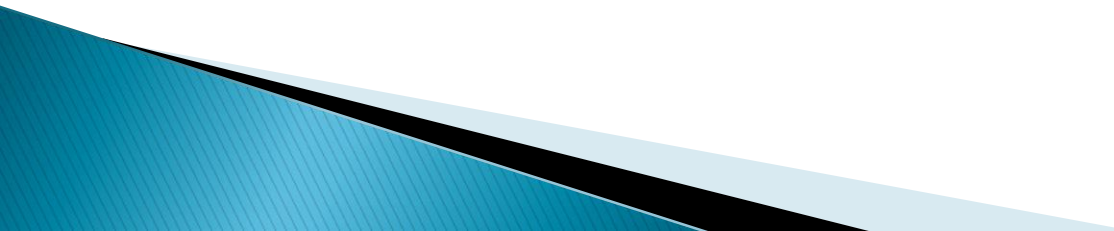
- ▶ ANTERIOR CHAMBER DEEPENED WITH BSS OR RINGER'S LACTATE VIA SIDE PORT ENTRY.
- ▶ LEADS TO SELF SEALING OF SCLEROCORNEAL TUNNEL INCISION DUE TO VALVE EFFECT
- ▶ CONJUNCTIVAL FLAP IS REPOSITED BACK AND ANCHORED WITH WET FIELD CAUTERY.



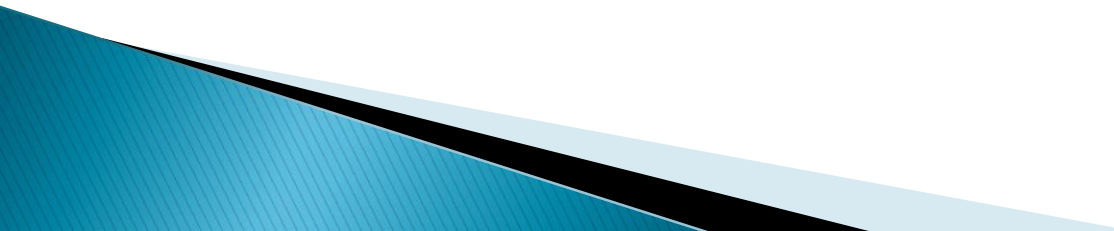
MERITS:

- ▶ UNIVERSAL APPLICABILITY
- ▶ NOT MACHINE DEPENDENT
- ▶ LESS SURGICAL COMPLICATION
- ▶ COST EFFECTIVE

DEMERITS:

- ▶ MILD TENDERNESS
 - ▶ SURGICAL INDUCED ASTIGMATISM
 - ▶ CONJUNCTIVAL CONGESTION
 - ▶ DELAYED VISUAL REHABILITATION
- 

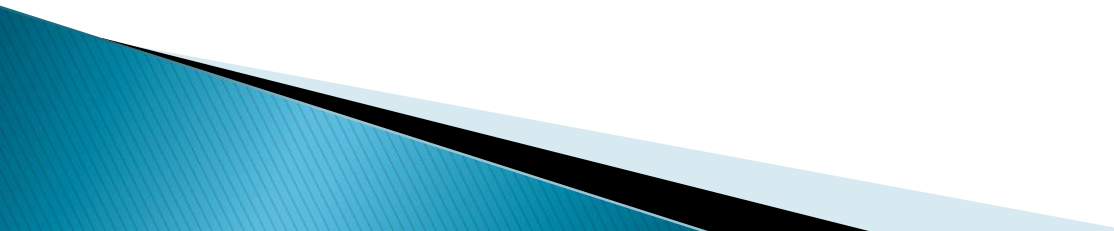
PHACOEMULSIFICATION

- ▶ PROCEDURE OF CHOICE FOR CATARACT SURGERY
 - ▶ INCISION: SMALL, 30°, 1.8–3.2mm
 - ▶ FOLDABLE POSTERIOR CHAMBER IOL
 - ▶ NUCLEUS IS EMULSIFIED
 - ▶ MICS: CAN BE PERFORMED THROUGH A MICRO INCISION (<2mm)
- 

MERITS

- ▶ POSTOPERATIVE CONGESTION IS MINIMAL
- ▶ SMALL INCISION
- ▶ LESS CORNEAL COMPLICATION(WITHOUT NUCLEAR PROLAPSE)
- ▶ VISUAL REHABILITATION IS QUICKER
- ▶ POSTOPERATIVE ASTIGMATISM IS LESS WHEN IMPLANTED THROUGH SMALL INCISION

DEMERITS

- ▶ MACHINE DEPENDENT
 - ▶ HIGH COST
 - ▶ DIFFICULT TO DEAL WITH HARD CATARACT
- 

PHACOEMULSIFICATION

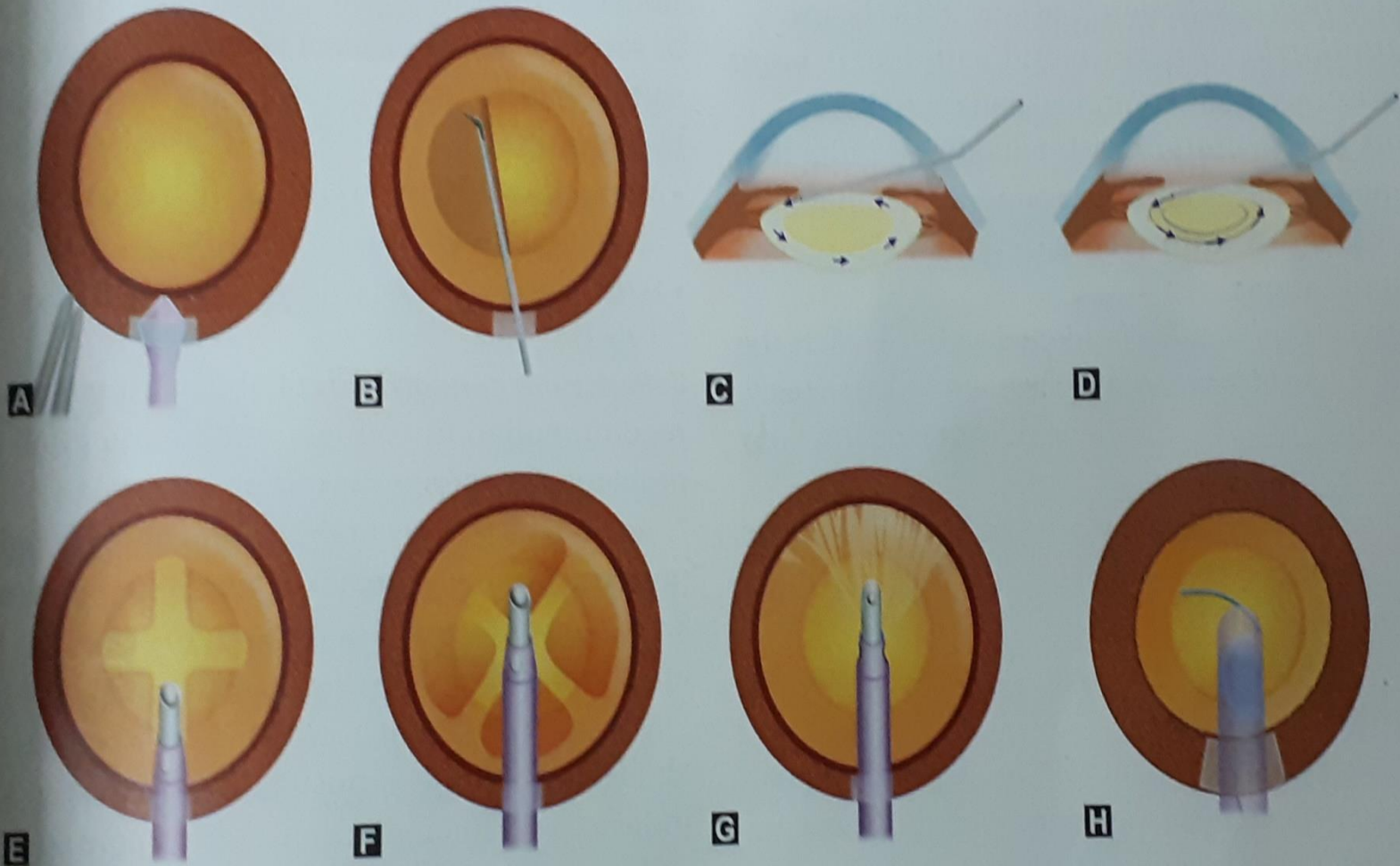
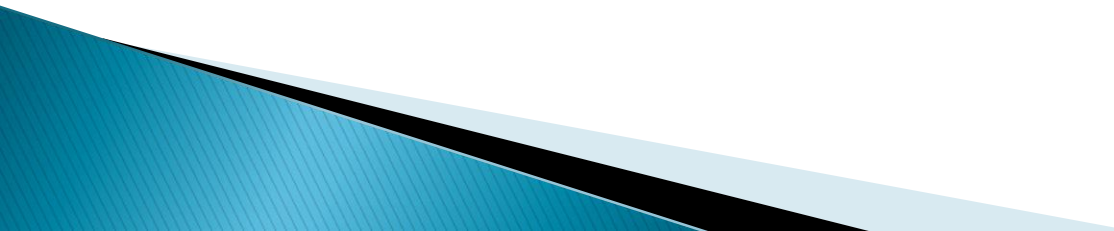
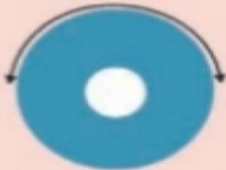
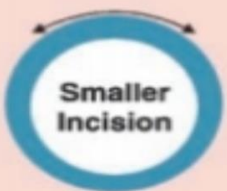
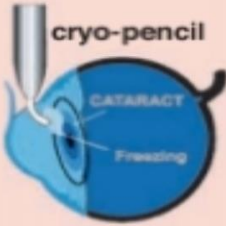
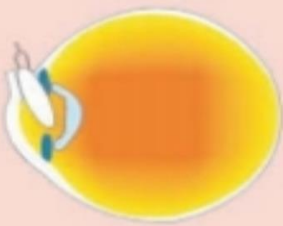


Fig. 9.26 Surgical steps of phacoemulsification: A, Clear corneal incision; B, Continuous curvilinear capsulorhexis; C, Hydrodissection; D, Hydrodelineation; E and F, Nucleus emulsification by divide and conquer technique (four quadrant cracking); G, Aspiration of cortex; H, Implantation of foldable IOL with injector system

FEMTOSECOND LASER ASSISTED CATARACT SURGERY

MICS IN WHICH FEMTOSECOND LASER IS USED IN STEPS:

- ▶ CAPSULLORHEXIS(MORE PRECISE,ACCURATE)
 - ▶ LENS FRAGMENTATION
 - ▶ CLEAR CORNEAL INCISION
 - ▶ ARCUATE CORNEAL INCISION (PREVENT ASTIGMATISM)
- 

	Intracapsular cataract extraction (ICCE)	Extracapsular cataract extraction* (ECCE)	Phacoemulsification
General principles	Whole lens removed with intact capsule	Lens nucleus and cortex capsular bag behind	Same as ECCE removed leaving the
Dilatation of pupil Magnification	Not required Binocular loupe or Microscope	Required Microscope	Required Microscope
Incision	Large, 180°, 10–12 mm	Medium, 120°, 7–8 mm	Small, 30°, 3.2–3.5 mm
	 Larger Incision	 Smaller Incision	 Smallest Incision
Lens removal	Intact lens delivered		
	 cryo-pencil CATARACT Freezing		 PHACO Probe LENS
Capsulotomy Nucleus delivery Cortex removal		'Can-opener' or rhexis manual sliding Irrigation aspiration, Manual or automated Posterior chamber 'in the bag'	Rhexis Phacoemulsification Irrigation aspiration, automated Posterior chamber 'in the bag'
Intraocular lens	Anterior chamber or none		
Sutures	Required, continuous or interrupted (5–7)	Required, continuous or interrupted (3–5)	Not required

*Conventional ECCE. Small-incision 'non-phaco' cataract surgery (SICS) is similar except that a sclerocorneal tunnel incision of 5–6 mm is made and the nucleus fragmented in the eye or delivered with the help of hydrostatic pressure by 'hydroexpression' or 'viscoexpression'.

THANK YOU