UNIWERSYTECKIE CENTRUM KLINICZNE
IM. PROF. K. GIBIŃSKIEGO
Śląskiego Uniwersytetu Medycznego
w Katowicach

EWA MRUKWA-KOMINEK / WOJCIECH LUBOŃ / PIOTR GOŚCINIEWICZ
/ ANNA PIOTROWSKA-GWÓŹDŹ / MAŁGORZATA KOZIKOWSKA / ELZBIETA MAGNUCKA

RAYONE TRIFOCAL LENS USED IN CATARACT SURGERY AND THEIR EFFECT ON IMPROVING THE QUALITY OF LIFE OF PATIENTS

3rd INTERNATIONAL CONFERENCE
INNOVATIONS in OPHTHALMOLOGY
KATOWICE, 16-18.05.2019
PRESBYOPIA SYMPOSIUM
PRESBYMANIA

OPHTHALMOLOGY CLINIC OF THE WLK OPHTHALMOLOGY DEPARTMENT
SILESIAN MEDICAL UNIVERSITY IN KATOWICE
Head of Clinic: Prof. dr hab. n. med Ewa Mrukwa-Kominek

UNIVERSITY CLINICAL CENTRE IM. PROF. K. GIBIŃSKIEGO
SILESIAN MEDICAL UNIVERSITY IN KATOWICE

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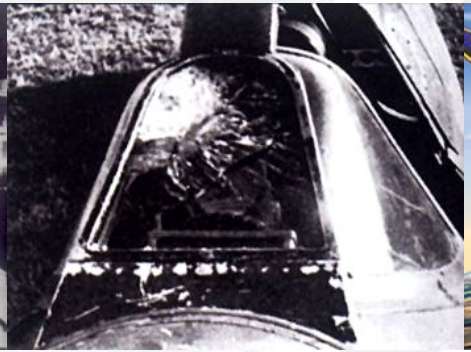
First implantation of an artificial lens Changed cataract surgery.



1949: Sir Harold Ridley,
St. Thomas Hospital (London) – First implantation IOL–
Rayner Spheric IOL

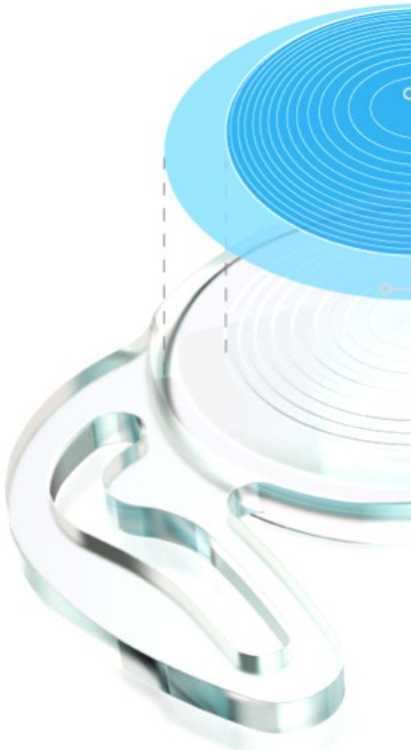
CURRENT SURGICAL TECHNIQUES USED IN THE CORRECTION OF SENIOPIA ARE BASED ON THREE BASIC PRINCIPLES:

- First is to achieve monovision- to create acquired anisometropia, with one eye corrected for distance vision and the other for near.
- Second approach is to increase functional ocular depth of focus by creating simultaneous multifocality, thus achieving satisfactory distance and near vision.
- Third approach is to surgically achieve real changes in accommodation or changes in ocular lens power.

RayOne Trifocal IOL

- the newest member of the RayOne Family preloaded IOLs

- based on the well-known high performance Rayner platform



RayOne Trifocal IOL:

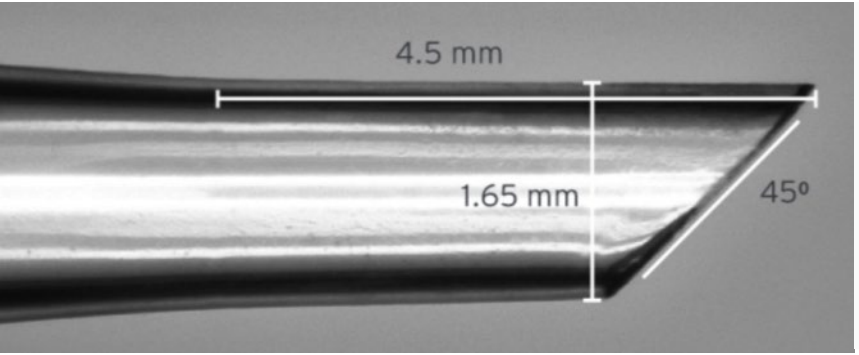
- **Has proven haptic technology for excellent stability**
- **Anti-vaulting haptic technology gives proven rotational and centrational stability, plus excellent fixation in the capsular bag**
- **Superb centration – maximum offset of only 1.0mm 3 months after surgery**
- **Excellent rotational and torsional stability – 3.1° months after surgery**

EXCELLENT INJECTOR

FOR PREDICTABLE AND EFFICIENT DELIVERY, EVERY TIME:

- True 2-steps system; ergonomic design for easy handling; single handed plunger with minimal force required

- Sub 2.2mm incision – 1.65 mm RayOne nozzle for sub 2.2 mm incision



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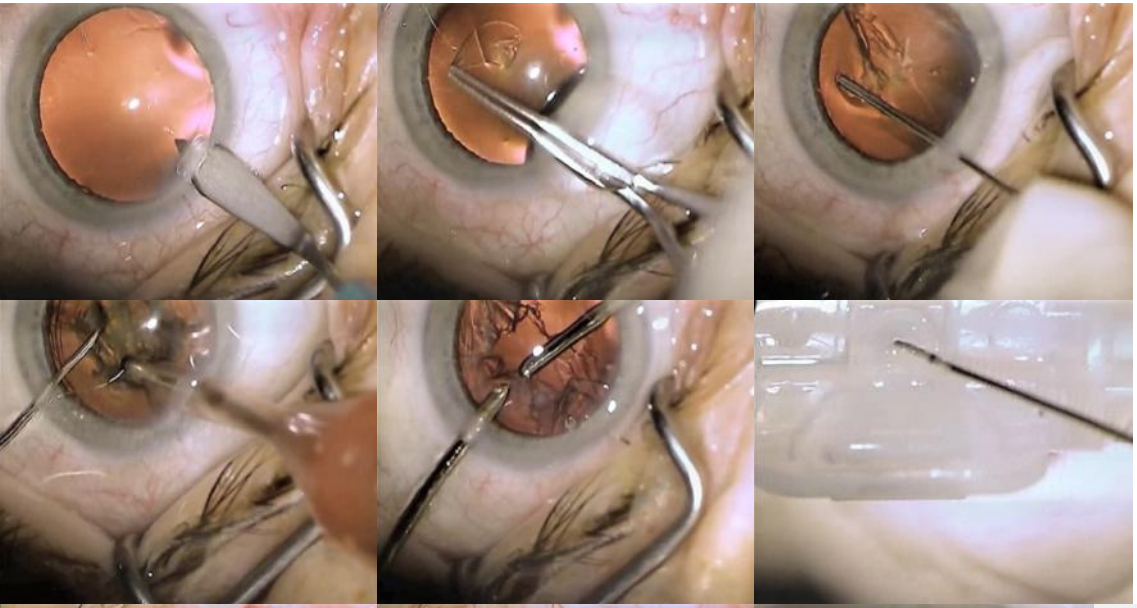
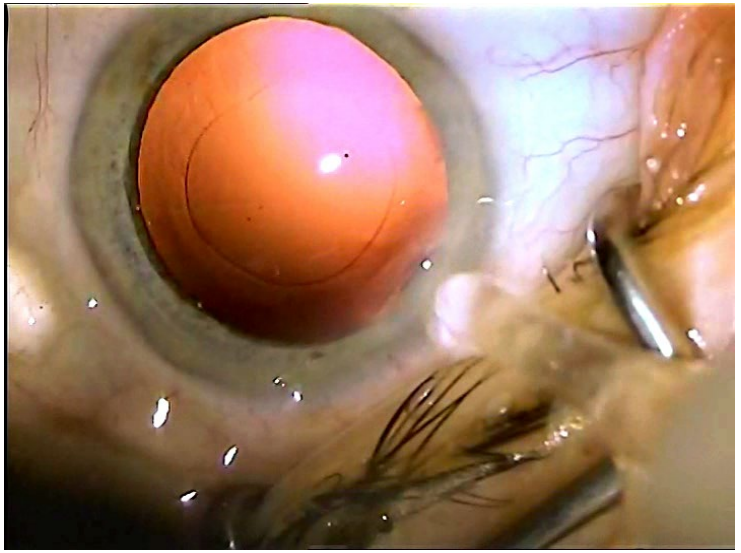
UNIQUE PATENTED LOCK&ROLL TECHNOLOGY FOR CONSISTENT DELIVERY





Consistently locked and rolled to under
half its size in one simple action

RAYONE TRIFOCAL LENS USED IN CATARACT SURGERY AND THEIR IMPACT ON IMPROVING THE QUALITY OF LIFE OF PATIENTS

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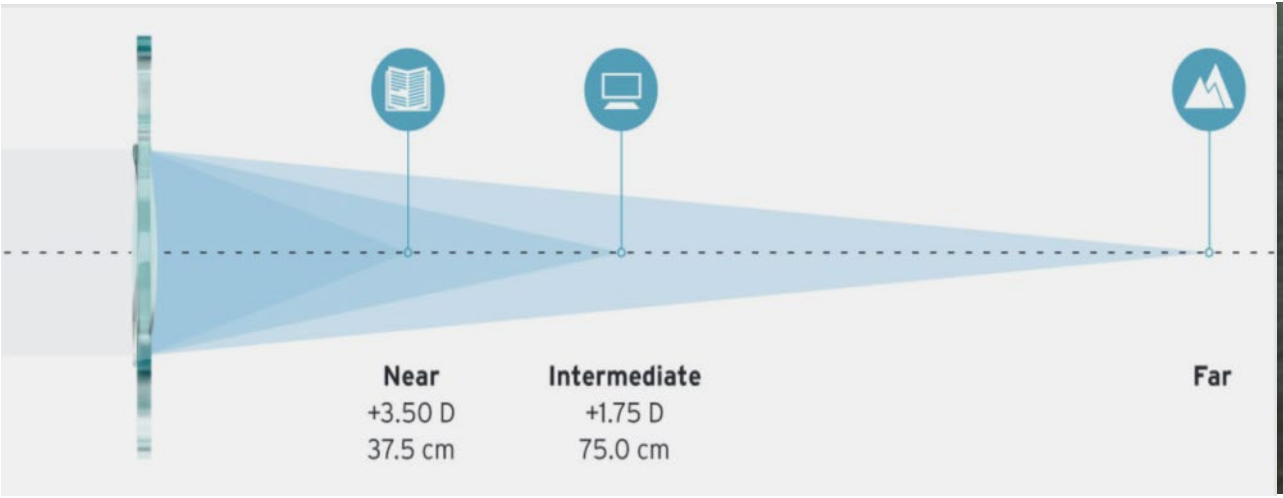
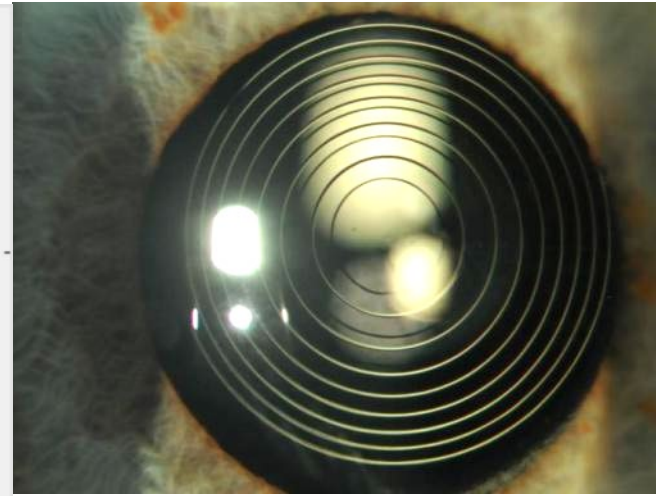
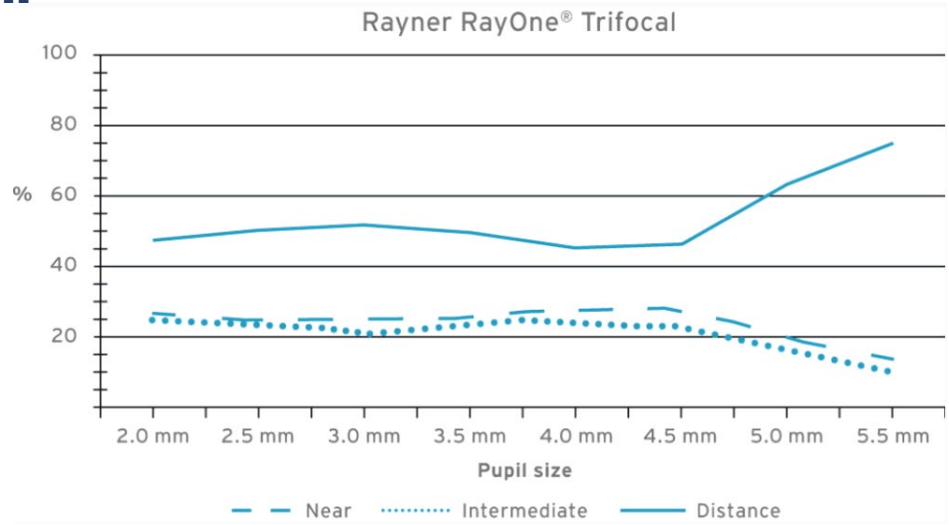
- **Improved visual outcomes designed for less pupil dependency**

- **RayOne Trifocal IOL has fewer rings on the optic surface than many Trifocal IOLs for reduced potential visual disturbances and improved night vision**





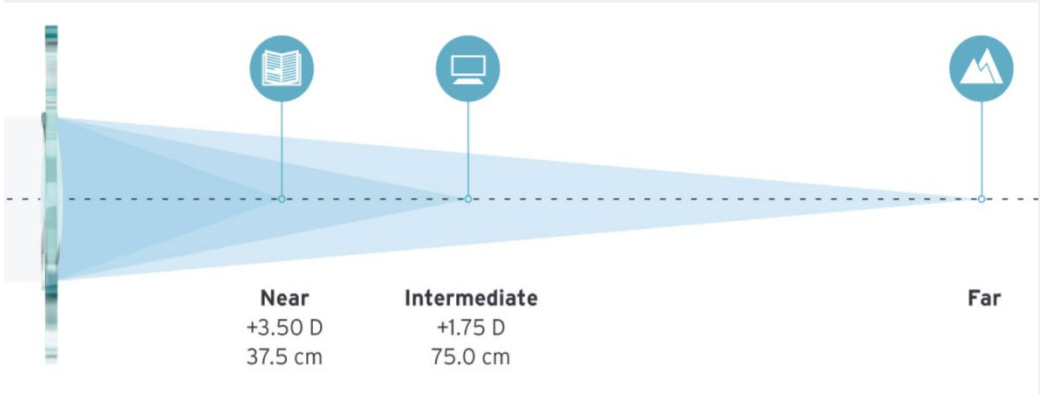
- Exceptional light usage
- Reduces light loss to only 11%
- 98% of light transmitted to the retina with a pupil of 3 mm
- Half the light allocated for distance
- Remaining light divided between near and intermediate vision
- Light Energy Split at 3.0 mm pupil:
  - 52% Distance
  - 22% Intermediate
  - 26% Near



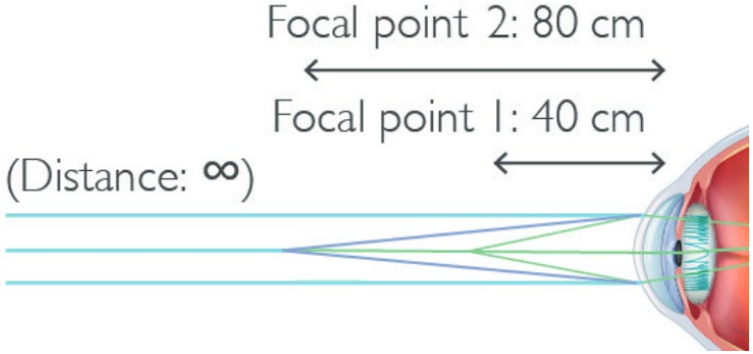
Improved intermediate visual acuity enabling patient to feel more comfortable transition from near to distance activities

RayOne Trifocal:

- +3.5D near add – 37.5 cm reading plane
- +1.75D intermediate add – 75cm reading plane



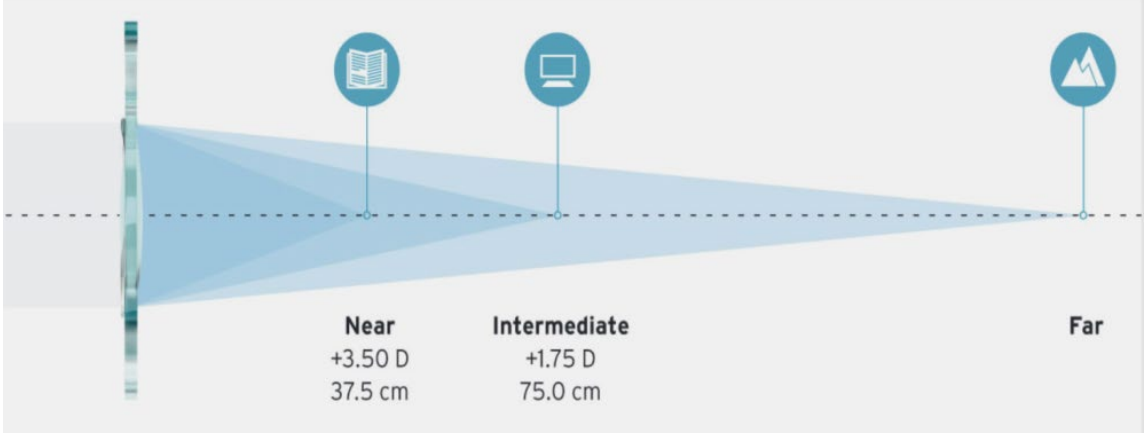
RayOne Trifocal (Rayner)



PanOptix Trifocal (Alcon)

CONTRAST SENSITIVITY

- **RayOne Trifocal IOL offers excellent performance across Near, Intermediate and Distance vision and with retained light energy through the diffractive profile providing excellent contrast sensitivity**
- **In low light conditions when compared to other diffractive trifocal technologies the RayOne Trifocal maintains its performance across the three foci point**



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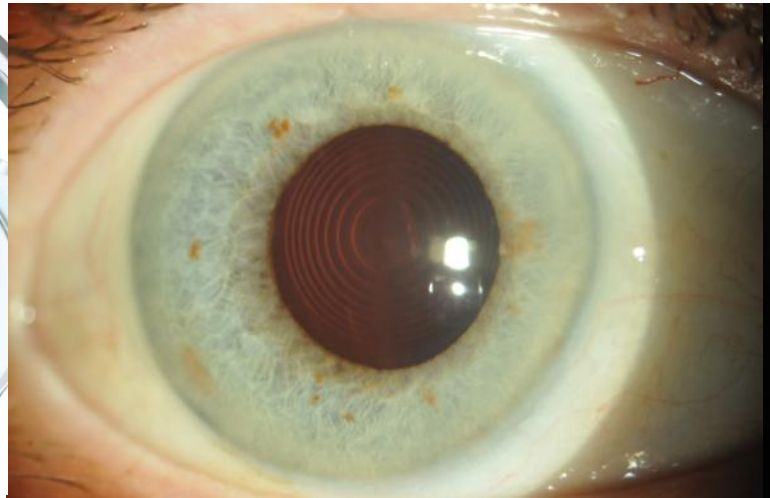
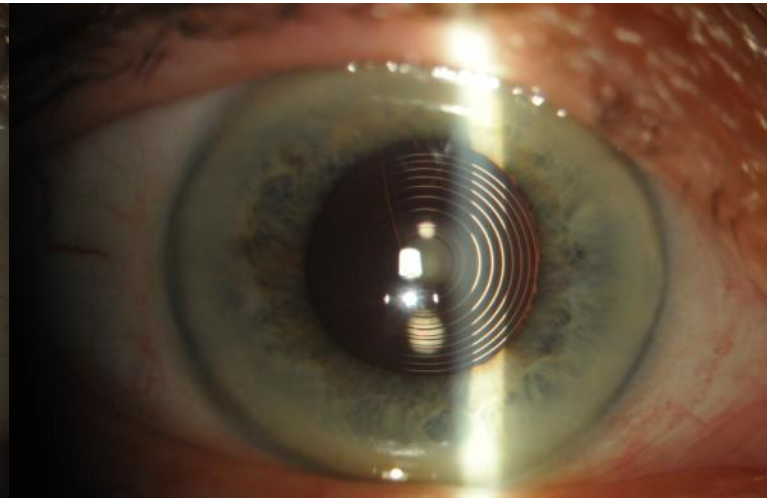
AIM

Assessment of refractive and functional effects after implantation of RayOne trifocal lens (RayOne Trifocal IOL, Rayner, UK) and patient satisfaction assessment





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INCLUSION CRITERIA

- Binocular phacoemulsification in patients with cataract
- Age above 18 years
- Corneal astigmatism < 1.5D Cyl

EXCLUSION CRITERIA

- Corneal diseases
- Retinal or optic nerve pathologies
- Previous eye surgery

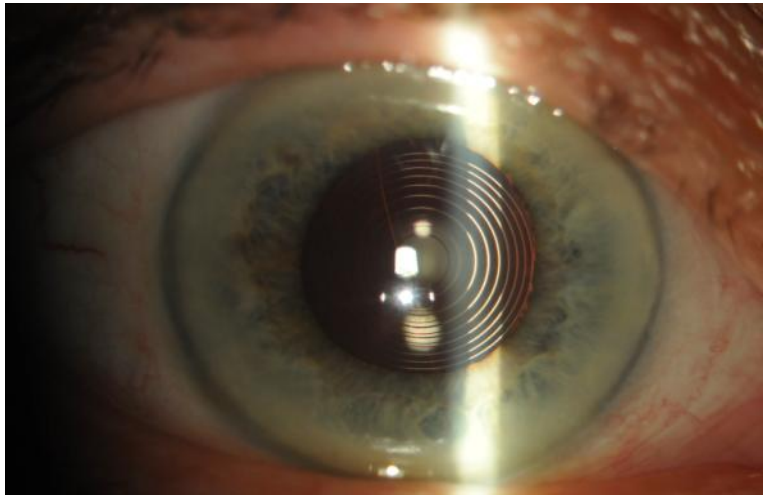
PATIENTS AND METHODS

Patient Control Studies

14 days, 1, 3 and 6 months after surgery

MEASURABLES EVALUATED:

- Binocular BCDVA, UCDVA, BCIVA,UCIVA,BCNVA, UCNVA
- Best reading distance (BRD)
- Post-operative assessment of patient quality of life (VF-14 test)
- Contrast sensitivity in photopic and mesopic conditions (6M)
- Spectacle Independence
- Visual adverse effects (3M, 6M)
- Defocus curve and postoperative complications (6M)



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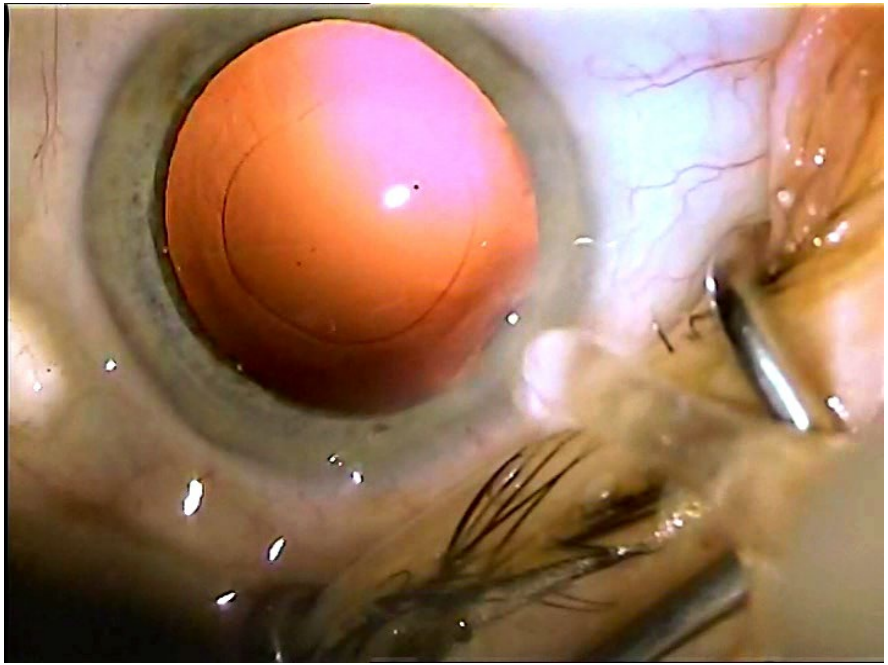
METHODS

- 16 patients (32 eyes) implanted with RayOne Trifocal
- Patients age: 64.53 years (40-76 years)

  Male-9; Female-7
- Power of IOL: 12.5D – 25.0D
- METHOD - standard phacoemulsification with IOL implantation into the capsular bag

	Age
Average	64.53 yrs
STD DEV	11.01 yrs
MIN	40.00 yrs
MAX	76.00 yrs

m=9
k=7
N=32



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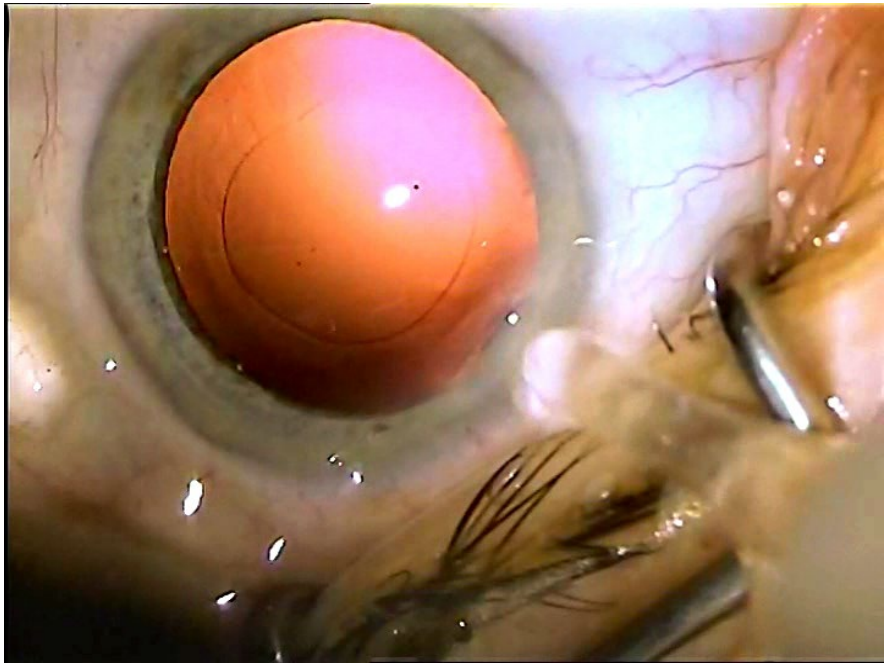
METHODS

- **METHOD - standard phacoemulsification with IOL implantation into the capsular bag**



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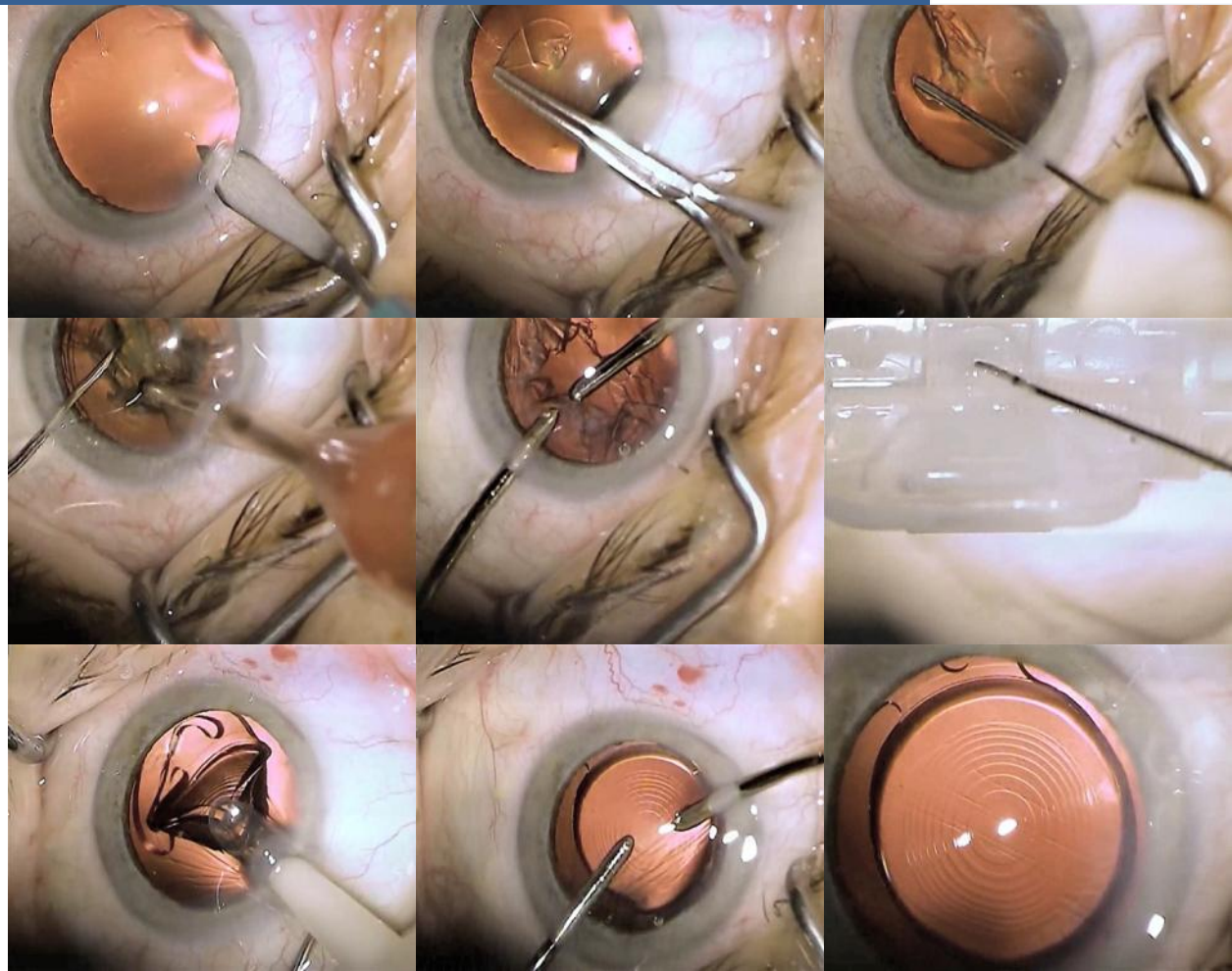
- **RayOne Trifocal IOL Implantation**



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RESULTS

Visual Acuity

	BCDVA (Snellen)		
	Pre-op	Post-Op	Post-Op 6 months
MEAN	0.39	0.75	1.0
SD	0.20	0.23	0.06
MIN	0.02	0.20	0.8
MAX	0.60	1.0	1.0

	UCVDA (Snellen)		
	Pre-op	Post-Op	Post-Op 6 months
MEAN	0.3	0.70	1.0
SD	0.22	0.14	0.08
MIN	0.02	0.2	0.8
MAX	0.5	1.0	1.0

		KONTOLA PO 4 TYG	KONTOLA PO 12 TYG
BCIVA	MEDIAN	2.00	2.00
	MEAN	2.20	2.27
	STD DEV	0.77	0.46
	MIN	2.00	2.00
	MAX	5.00	3.00
UCIVA	MEDIAN	5.00	2.00
	MEAN	3.80	2.67
	STD DEV	1.52	1.05
	MIN	2.00	2.00
	MAX	5.00	5.00

RESULTS

Visual Acuity

	BCNVA (Snellen)		
	Pre-op	Post-Op	Post-Op 6 months
MEAN	1.0	0.75	0.5
SD	0.82	0.21	0.0
MIN	0.50	0.50	0.50
MAX	2.75	1.5	0.50

	UCNVA (Snellen)		
	Pre-op	Post-Op	Post-Op 6 months
MEAN	1.25	1.0	0.5
SD	0.25	0.20	0.15
MIN	0.75	0.50	0.60
MAX	3.0	1.25	1.00

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RESULTS

		Pre-Surgery	Post-Surgery	KONTOLA PO 12 TYG
REFRACTION SPH [D]	MEDIAN	1.13	-1.25	-1.25
	MEAN	0.65	-1.30	-1.34
	STD DEV	2.43	0.34	0.38
	MIN	-4.75	-2.00	-2.00
	MAX	3.50	-0.75	-0.75
REFRACTION CYL [D cyl]	MEDIAN	-0.5	-0.625	-0.75
	MEAN	-0.56	-0.73	-0.73
	STD DEV	0.49	0.35	0.45
	MIN	-1.25	-1.50	-1.50
	MAX	0.50	-0.25	-0.25

	CWG [mmHg]		
	PRE-SURGERY	POST SURGERY	6 MONTHS POST SURGERY
MEAN	16,00	16,08	17,82
SD	1,91	1,98	7,74
MIN	13,00	13,00	14,00
MAX	22,00	20,00	20,00

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RESULTS

No statistically significant difference in corneal endothelial cell density was observed before and after surgery

No significant differences in intraocular pressure were observed before and after surgery

	DENSITY OF THE MIDDLE CELLS	
	PRE SURGERY	POST SURGERY
AVERAGE	2812	2514
SD	301	332
MIN	2106	2013
MAX	3012	2958

PATIENT SATISFACTION TEST VF-14

The Visual function index (VF-14) is a short questionnaire designed to measure functional impairment in patients due to cataract.
It consists of 18 questions about the 14 aspects of the visual function affected by cataracts.
The VF-14 exhibits high internal consistency and is a reliable, important instrument for providing information that is not directly related to visual acuity or general health indicators.

	Vf-14 POINTS		
	PRE-SURGERY	POST SURGERY	6 MONTHS.
AVERAGE	60.3	89	92.0
SD	15,5	6,59	9,5
MIN	40,5	78,00	78,20
MAX	85,0	100,00	100

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RESULTS

CONTRAST SENSITIVITY

	SPATIAL FREQUENCY (cpd)	AVERAGE
DAY	1,5	4,01
	3	4,20
	6	3,48
	12	2,06
	18	1,10
DAY AND LIGHT SOURCE	1,5	4,00
	3	4,17
	6	3,44
	12	3,06
	18	1,53
NIGHT	1,5	4,02
	3	3,87
	6	2,93
	12	1,59
	18	0,91
NIGHT AND LIGHT SOURCE	1,5	3,80
	3	3,54
	6	2,67
	12	1,51
	18	0,78

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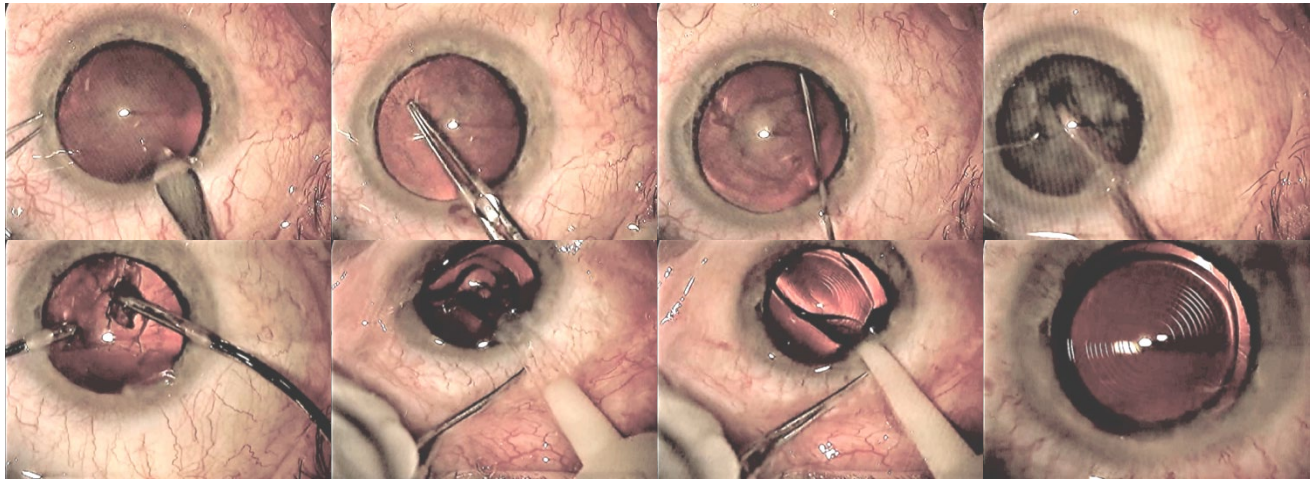

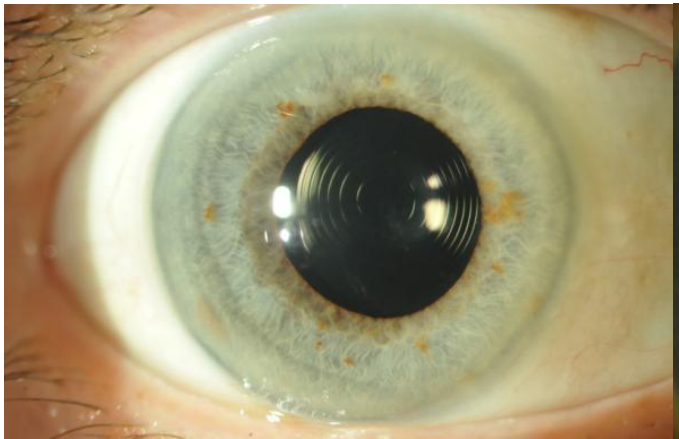

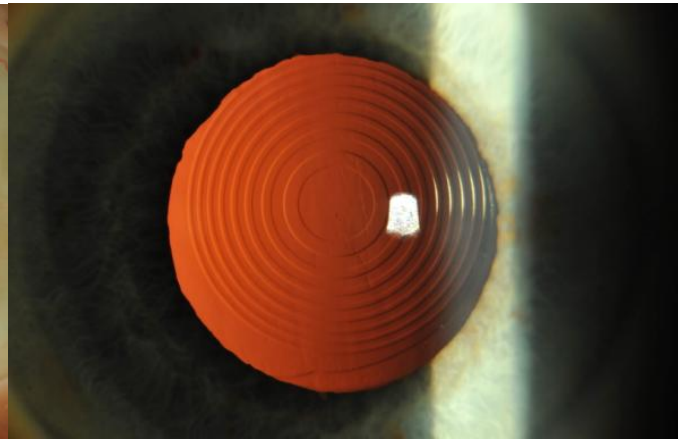

CONCLUSIONS

- The RayOne Trifocal lens allows for the restoration of full visual acuity to the close, far and intermediate distances
- A significant majority of patients achieved maximum near visual acuity.
- A significant improvement in the quality of life of vision-related patients (VF-14 QOL) has been recorded.
- During the 12-month course of treatment, no patient was found to have a decentralized lens.
- RayOne Trifocal lenses tend to be a good option for patients with presbyopia.
- During observation, postoperative refraction was stable and unchanged
- RayOne Trifocal IOLs provide high patient satisfaction

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MARRAKECH

In conjunction with SAMIR (Moroccan Society of Implant & Refractive Surgery)

21 – 23 February 2020

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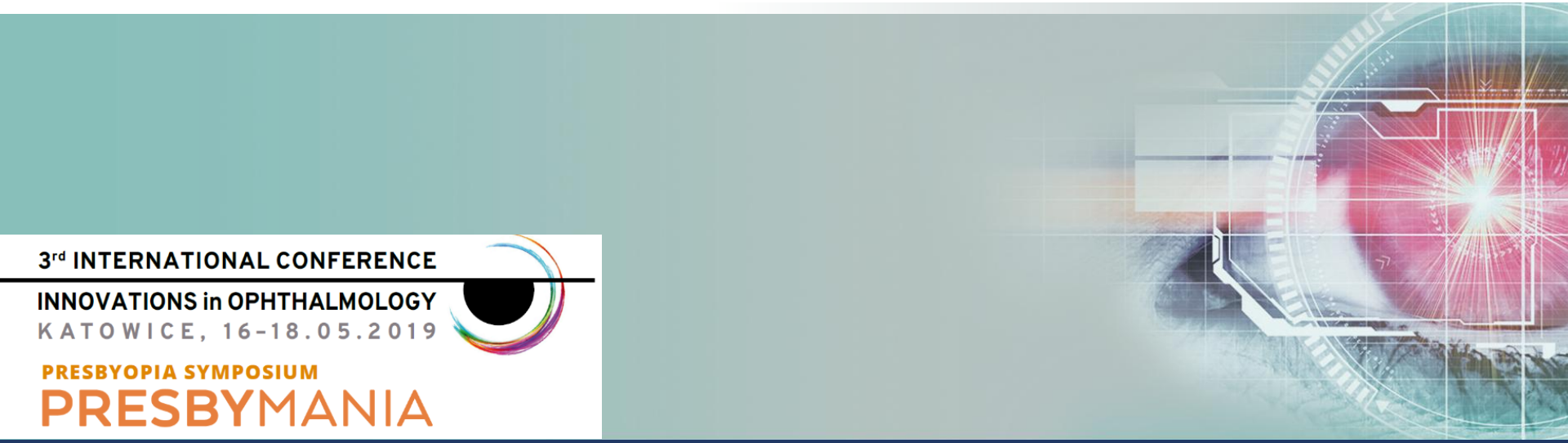

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