

**CLINICA
REMENTERIA**

IMP (INTELLIGENCE MULTIFOCAL PROCEDURE).
TWO YEARS FOLLOW-UP WITH THE FIRST
AUDITABLE PROTOCOL IN CATARACT SURGERY
(SESION 1)
Dr. Fco. Javier Hurtado Ceña
25th of January, 2018

INTELLIGENCE MULTIFOCAL PROCEDURE

| | | |
|---------------------------|--|---|
| Surgical technique | Digital marker | + |
| | Plan of incisions | + |
| | Femtosecond laser | + |
| | Phacoemulsificator used and parameters | + |
| | Intraoperative aberrometer | + |

| | | |
|-------------------------|------------------|---|
| Intraocular lens | Reference | + |
| | Material | + |
| | Design | + |
| | Preloaded or not | + |
| | Blue filter | + |
| | Refractive power | + |

| | | |
|---------------------|-------------------------|---|
| Preoperative | Age | + |
| | Sex | + |
| | Visual acuity | + |
| | Refraction | + |
| | Contrast sensitivity | + |
| | Keratometry | + |
| | Topography | + |
| | Endothelial cell count | + |
| | Corneal pachimetry | + |
| | Grade of cataract | + |
| | Macula evaluation | + |
| | Aberrometry | + |
| | Comorbidity | + |
| | Previous ocular surgery | + |
| | Medication | + |
| Quality of life | + | |

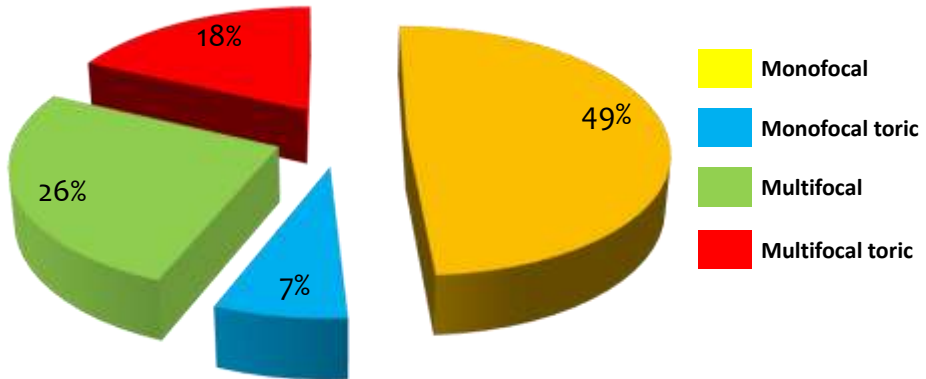
INTELLIGENCE MULTIFOCAL PROCEDURE



| | | |
|---------------|----------------------------|---|
| Others | List of security (OMS) | |
| | Complications | + |
| | Incidence of complications | + |
| | Reinterventions | + |
| | Postop ametropia | + |

| | | |
|----------------------|---------------------------------|---|
| Postoperative | Visual acuity | |
| | Sphere | + |
| | Cylinder | + |
| | Axis | + |
| | Endothelial cell count | + |
| | Pachymetry | + |
| | Evaluation of the macula | + |
| | Surgical induced astigmatism | + |
| | Dependency of glasses | + |
| | Quality of life questionnaire | + |
| | Results reported by the patient | + |

PERCENTAGE OF INTRAOCULAR LENSES



CATARACT REFRACTIVE SUITE (ALCON)



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VERION
LASER T. 2018 101716


Lenx

LUXOR LX3
with WAVE™ Corneal Topographer

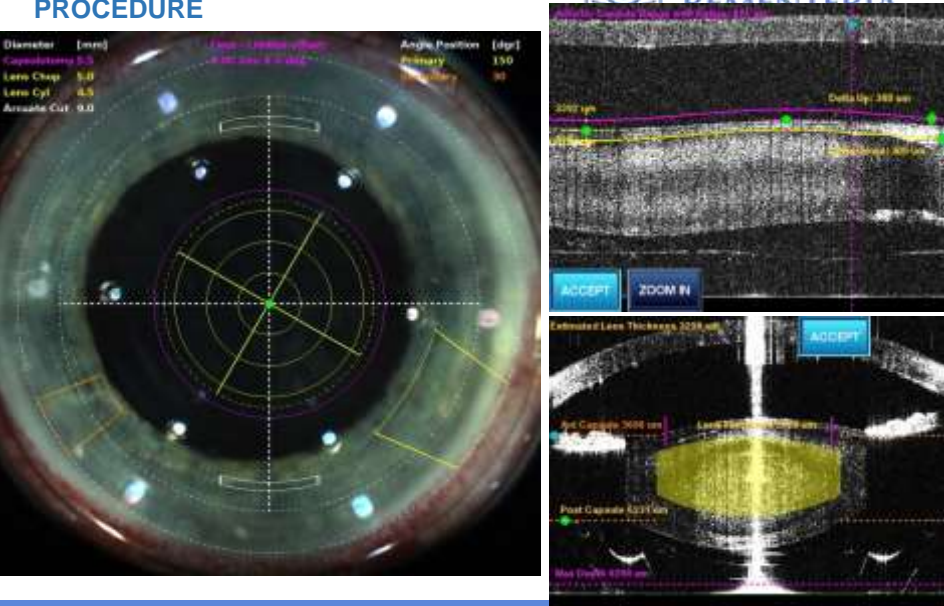
CENTURION
VTRIC SYSTEM

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INTELLIGENCE MULTIFOCAL PROCEDURE



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| Parameter | Value |
|---------------|-------|
| Diameter [mm] | 5.5 |
| Capsoptometry | 5.5 |
| Lens Champ | 5.0 |
| Lens Cyl | 0.5 |
| Aspheric Cut | 0.0 |

Angle Position [deg]
Primary 130
Secondary 90

Estimated Lens Thickness 2038 µm

Pre Capsule 3600 µm
Lens Thickness 2038 µm
Post Capsule 4231 µm
Max Depth 4231 µm

Cornea Topo: 340 µm

ARE THE RESULTS DIFFERENT?



| | Classic surgery (n=38) | FLACS (n=38) | P |
|--|---------------------------|-----------------|-------|
| Corrected visual acuity (LogMAR) | 0,08 (0,138) | 0,10 (0,127) | 0,280 |
| Intraocular pressure (mmHg) | 13,1 (2,92) | 13,0 (3,65) | 0,758 |
| Endothelial cell count/mm ³ | 2634,1 (579,69) | 2576,7 (428,73) | 0,751 |
| Central macular thickness (µm) | 260,0 (25,00) | 267,0 (22,93) | 0,304 |
| Central macular volume (mm ³) | 10,06 (0,526) | 10,09 (0,677) | 0,485 |
| Mean macular thickness (µm) | 280,4 (13,38) | 280,4 (18,69) | 0,621 |
| Anterior chamber depth | 4,08 (0,421) | 4,04 (0,398) | 0,832 |

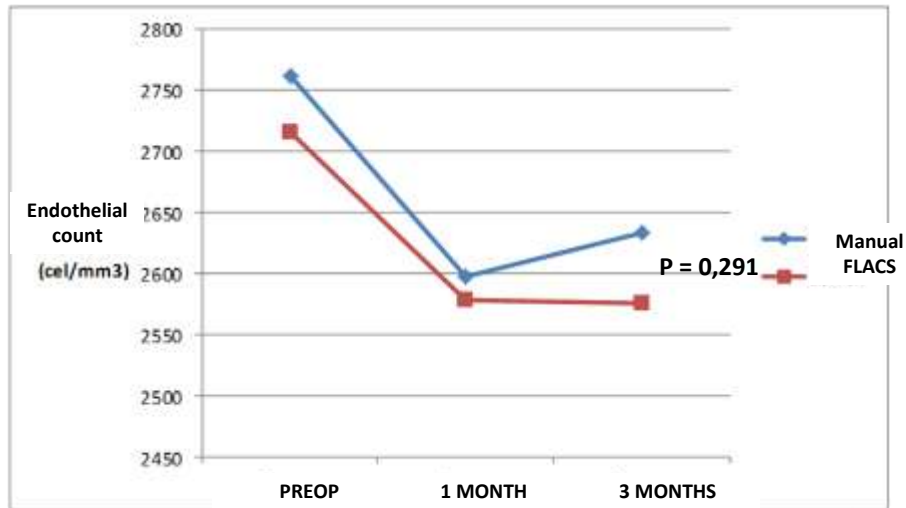
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IS INCISSION MORE STABLE?



| | MANUAL (n=38) | FLACS(n=38) | p |
|--|---------------|--------------|--------|
| Suction time (min) | ---- | 2,96 (2,171) | ---- |
| Real laser time (seg) | ---- | 65,9 (5,88) | ---- |
| Effective time of phacoemulsification (seg) | 8,1 (4,07) | 5,2 (3,96) | 0,001 |
| Fluid used (cm3) | 53,8 (11,37) | 59,3 (34,85) | 0,607 |
| Prefaco incision size (mm) | 2,09 (0,045) | 2,20 (0,040) | <0,001 |
| Postfaco incision size (mm) | 2,20 (0,043) | 2,29 (0,061) | <0,001 |
| Incision size after IOL implantation (mm) | 2,27 (0,062) | 2,38 (0,062) | <0,001 |
| Tipo de LIO implantada: | | | |
| Monofocal | 89,5% | 2,6% | <0,001 |
| Monofocal toric | 2,6% | 5,3% | |
| Multifocal | 5,3% | 63,2% | |
| Multifocal toric | 2,6% | 28,9% | |

IS THERE ANY DIFFERENCE IN ENDOTHELIAL COUNT ?



DOES IT CAUSE ANY REDUCTION IN PERIPAPILAR RNFL?



| RNFL | Manual (n=53) | FLACS (n=55) | p |
|--------|---------------|--------------|-------|
| PREOP | 87,5 (11,4) | 88,25 (8,60) | 0,941 |
| POSTOP | 87,3 (13,9) | 89,23 (9,94) | 0,670 |
| % | + 2,87 | + 1,91 | 0,618 |

Increase in mean thickness of peripapillary nerve fiber layer in both groups:

Group Manual: +2,87% (DS 5,49%)

Group FLACS: +1,91% (DS 5,98%)
(P=0,618)

No correlation with total time of suction or time of femtosecond laser

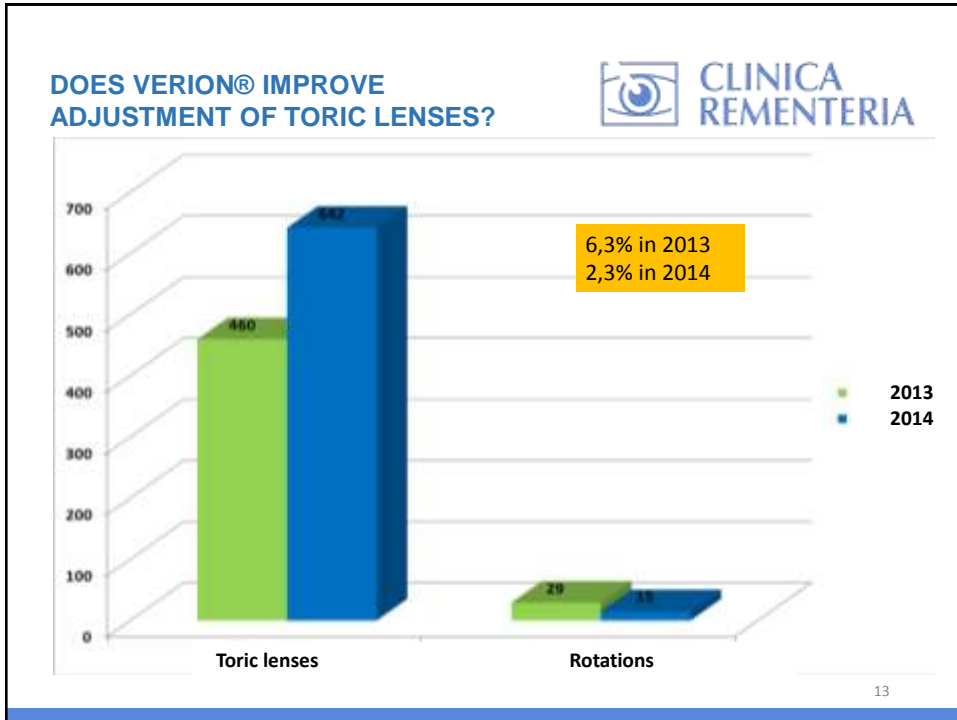
| Complication | N | Anterior capsule | Posterior capsule | Luxation of cataract |
|-----------------|--------|------------------|-------------------|----------------------|
| Gimbel 2001 | 18470 | - | 0.45% | 0% |
| Tan 2002 | 2538 | - | 3.6% | - |
| Androudi 2004 | 543 | - | 7.55% | 0% |
| Muhtaseb 2004 | 1441 | 2.8% | 2.2% | 0.4% |
| Hyams 2005 | 1501 | - | 2.9% | - |
| Misra 2005 | 1883 | - | 0.69% | 0.11% |
| Ang 2006 | 2727 | - | 1.7% | - |
| Chan 2006 | 8230 | - | 1.9% | - |
| Marques 2006 | 2646 | 0.79% | - | - |
| Unal 2006 | 296 | 5.1% | 10.4% | 2.4% |
| Olali 2007 | 358 | 5.6% | - | - |
| Zaidi 2007 | 1000 | - | 1.5% | 0.1% |
| Mearza 2009 | 1614 | - | 2.66% | - |
| Agrawal 2009 | 2984 | - | 1.46% | - |
| Narendran 2009 | 55567 | - | 1.92% | 0.18% |
| Greenberg 2011 | 45082 | - | 3.5% | - |
| Clark 2011 | 129982 | - | - | 0.12% |
| Lundstrom 2011 | 602553 | - | 2.09% | - |
| Bali 2012 | 200 | 4.0% | 3.5% | 2% |
| Roberts 2012 | 1300 | 0.32% | 0.31% | 0% |
| Rementería 2012 | 600 | 1.0% | 2,3% | 0% |

INTELLIGENCE MULTIFOCAL PROCEDURE



| | INDICATOR | OBJECTIVE |
|---------------------------------|---|----------------|
| Visual acuity with prescription | % of patients VA \geq 0.5 in all the patients | 97% |
| | % of patients VA \geq 0.5 in patients without comorbidity | 84% |
| Refractive predictability | % of eyes with \geq 1D in all the patients | 87% \pm 1D |
| Precision of biometry | Absolute mean mistake | MEA \leq 0.6 |
| Complications | Capsular ruptures | < 2% |
| | Endophthalmitis | \pm 0.036% |
| | Permanent corneal edema that needs corneal keratoplasty | < 0.15% |
| Results reported by the patient | Questionnaires | Registered |

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| 2016 | INDICATOR | OBJECTIVE | RESULTS | |
|---------------------------------|---|----------------|------------|-----------|
| Visual acuity with prescription | % of patients VA \geq 0.5 in all the patients | 97% | 100% | 106/106 |
| | % of patients VA \geq 0.5 in patients without comorbidity | 84% | 100% | 102/102 |
| Refractive predictability | % of eyes with spheric equivalent \pm 1D | 87% | 100% | 106/106 |
| Precision of biometry | Absolute mean mistake | AMM \leq 0.6 | AMM = 0.19 | 20.57/106 |
| Complications | Capsular | < 2% | 0% | 0/106 |
| | Endophthalmitis | \pm 0.036% | 0% | 0/106 |
| | Permanent corneal edema that needs corneal keratoplasty | < 0.15% | 0% | 0/106 |
| Results reported by the patient | Questionnaires | Registered | OK | OK |

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| 2017 | INDICATOR | OBJECTIVE | RESULTS | |
|---------------------------------|---|----------------|------------|-----------|
| Visual acuity with prescription | % of patients VA \geq 0.5 in all the patients | 97% | 100% | 136/136 |
| | % of patients VA \geq 0.5 in patients without comorbidity | 84% | 100% | 130/130 |
| Refractive predictability | % of eyes with spheric equivalent \pm 1D | 87% | 100% | 136/136 |
| Precision of biometry | Absolute mean mistake | AMM \leq 0.6 | AMM = 0.18 | 24.48/136 |
| Complications | Capsular | < 2% | 0% | 0/136 |
| | Endophthalmitis | \pm 0.036% | 0% | 0/136 |
| | Permanent corneal edema that needs corneal keratoplasty | < 0.15% | 0% | 0/136 |
| Results reported by the patient | Questionnaires | Registered | OK | OK |

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INTELLIGENCE MULTIFOCAL PROCEDURE



1. Intelligent multifocal procedure has taught us:
 1. To ask more about patient needs and opinions about the result of the surgery.
 2. To perform better preoperative analysis to improve patient safety.
 3. To register all information properly.
2. The new step to get a real excellence cataract surgery, more strict limits must be established
3. Patient must know that IMP or other protocols exist to demand them.

