

4D SUITE

Eyes are masterpieces.
Give them the surgery they deserve

iVis has been the leader in customized no-touch corneal surgery since 1993, optimizing quality of vision and minimizing surgical invasiveness.



Refractive Line



Refractive Line

The 4D Suite is a web interconnected platform, designed for the treatment of invalidating corneal pathologies and refractive disorders, providing remote control of Screening, Diagnosis, Treatment and Follow-up.

The 4D Suite delivers ray-tracing customized ablation plans at the fastest speed of 2000Hz, with the smallest spot size of 350um providing the highest accuracy, exploiting the CF/A patent, to minimize thermal effects.

Key Features

Cloud interconnectivity

Ray-Tracing customized ablation

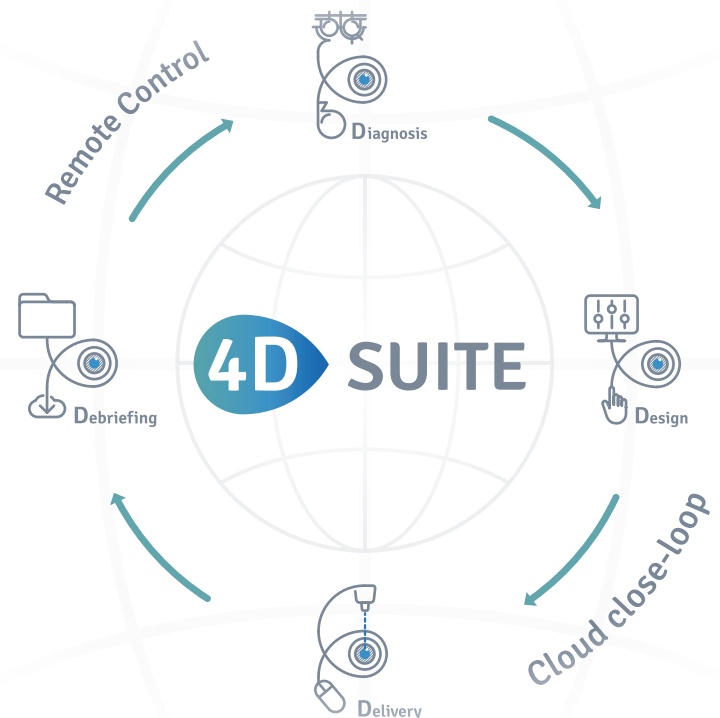
Low-invasive surgery

cTen® transepithelial
no-touch surgery

Customized Crosslinking & Corneal
Laser Remodelling for ectasia

Customized epithelial ablation

Remotely controlled surgical
procedure



The 4D Suite stands for delivering high quality Diagnosis, Design, Delivery, Debriefing.

Diagnosis

Precisio® and pMetrics® are uniquely designed to provide the precision and repeatability needed to support accurate diagnosis and customized surgery.

Desing

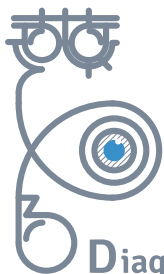
Cipta® automatically plans in the cloud, by means of the proprietary ray-tracing algorithm, the customized treatment, interconnecting in real-time the iVis Diagnostic platform with the iVis Surgical platform.

Delivery

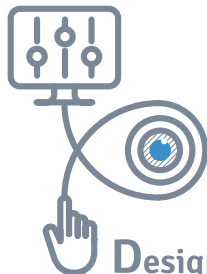
iRes®, at the unique speed of 2000Hz, with the smallest spot size of 350um, grants the execution of highly accurate surgical profiles, with a full automated no-touch procedure, eliminating intraoperative risks and improve surgical outcomes.

Debriefing

iVerify® supports the objective follow-up of corneal pathologies and surgical procedures, implementing a closed loop control of morphological and refractive parameters.



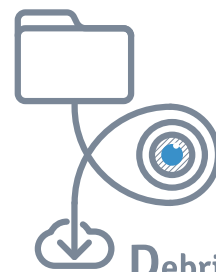
Diagnosis



Design



Delivery



Debriefing

iVis Mission

We, at iVis, see the eye as a complex and wonderful masterpiece to be protected and preserved, as much and as long as possible. Therefore, we deliver a comprehensive approach, providing a customized solution for every eye.

Customizing is caring, to improve quality of vision and minimize surgical invasiveness. This is why we design and manufacture the 4D Suite, the unique platform of fully integrated medical devices, delivering Screening, Diagnosis, Treatment, and Follow-up of corneal pathologies and refractive disorders. Our medical devices are designed to provide the precision which is required to support the most accurate diagnosis and advanced customized surgery.



Being innovative pioneers, we have been promoting cTen®, no-touch customized trans-epithelial surgery, since 1997, to optimize quality of vision, minimize intra-operative risks and preserve the strength of the eye, avoiding intrastromal cuts.

We grant the ability to treat invalidating corneal diseases and to repair previously unsuccessful refractive surgery, by means of our unique web-based ray-tracing ablation plan.



Precisio® is a laser scanning tomographer, conceived to deliver the most accurate measure of corneal morphology and ray-tracing power, supporting advanced diagnosis of corneal pathologies, customized refractive surgery and IOL planning.

Key Features

Over 1.000.000 independent points per exam

Accuracy below 3 microns

Exam auto-acquisition, voice driven supported

Exam validation for customized surgery

6D eye tracking and registration

Lacrimal film independent epithelial maps

Ray-tracing refractive power maps

Patient medical record

Clinical Applications

Customized corneal surgery

Customized IOL planning

Diagnosis and follow up of corneal pathologies

Refractive outcomes of corneal and cataract surgery



Technology

Ultrathin blue laser slit

Stop-passing light filtration

Synchronous, stereo, CMOS tandem cameras

3D motorized chinrest

Touch screen monitor

Realtime exams backup





Technical Specifications

Weight: 117kg

Power supply:

110 ~ 240Vac,

50-60Hz, 0.9A

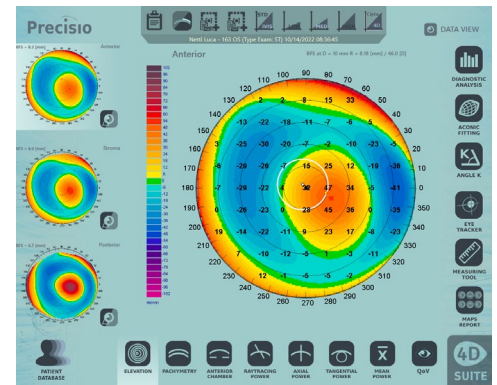
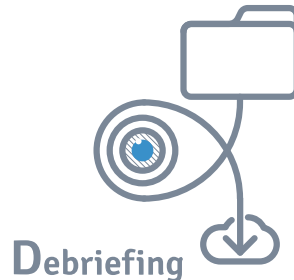
Dimensions:

590mm x 485mm x

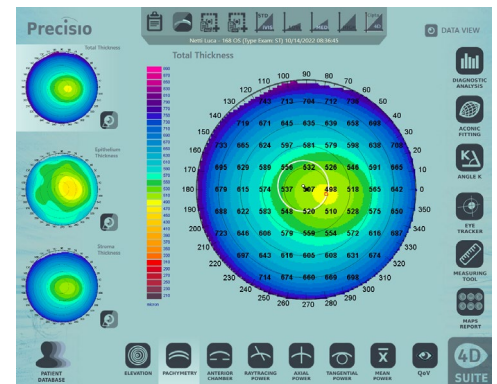
1590mm (LxWxH)

Exam Outputs

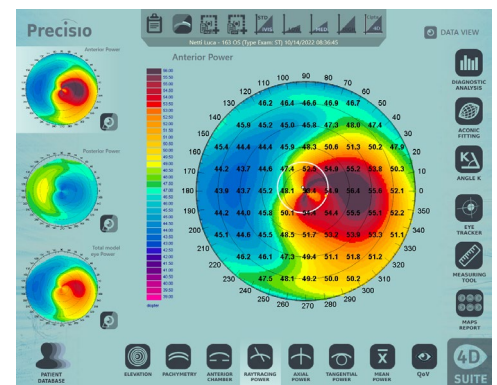
Elevation and related gradient maps
 Pachymetry and related gradient maps
 Anterior chamber and iris maps
 Ray-tracing and related gradient maps
 Axial and related gradient maps
 Tangential and related gradient maps
 Mean and related gradient maps
 Wavefront maps
 Point Spread Function diagram
 Image convolution maps
 Main refractive data determination
 Corneal Morphological Irregularities evaluation
 Horizontal and vertical K angle
 Irido-corneal angle
 Patient compliance analysis
 Diagnostic analysis of corneal pathologies
 Clinical and Surgical follow-up



Elevation



Pachymetry



Ray Tracing



pMetrics® is a dynamic pupillometer, performing pupillary analysis under controlled lighting conditions, with a closed-loop retro-feedback, to statistically determine the Ideal Pupil for customized refractive surgery and IOL planning, to minimize surgical invasiveness and optimize quality of vision.

Key Features

Pupillary dynamics analysis

Accuracy below 30um

Ideal Pupil based on pupil dynamics and patient's lifestyle

Automated control of diffuse and direct light intensity

Six environmental light conditions

Binocular or monocular examination



Clinical Applications

Ideal Pupil determination for refractive surgery

Ideal Pupil determination for IOL planning

Pupillary anisocoria evaluation

Hippus and nystagmus analysis

Technology

Telecentric optical system

Closed loop control of light environments

Synchronous pupil tracking

Motorized interpupillary distance



Exam Outputs

Pupil dynamics graph of pupil size vs. light intensity

Pupil dynamics graph of daily pupillary events per pupil size

Ideal pupil determination for refractive surgery and IOL planning

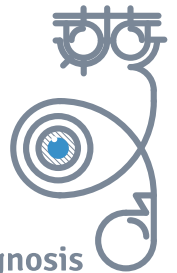
Minimum, maximum, and mean pupil size per light environment

Technical Specifications

Weight: 16kg

Power supply: 100 - 240Vac, 47-63Hz, 1.35A

Dimensions: 235mm x 450mm x 405mm (LxWxH)



Diagnosis



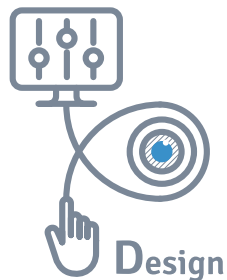
Cipta® is an online web application designed to plan customized corneal surgery to optimize quality of vision and minimize surgical invasiveness, based on Precisio® and pMetrics® exam data.

Cipta® uniquely delivers Raytracing based customized ablation plans to optimize quality of vision and minimize surgical invasiveness.

Cipta® promotes cTen® one step transepithelial no touch surgery, to consider the refractive contribute of the epithelium in irregular corneas and to eliminate intraoperative risks.

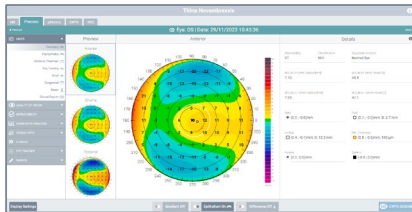
Cipta® supports Screening, Diagnosis, Treatment, and Follow-up of corneal pathologies and refractive disorders, interconnecting online the 4D Suite Diagnostic Platform with the 4D Suite Surgical Platform, to standardize performance.

Cipta® is composed of four modules for process management, customized treatment of refractive disorders, customized treatment of corneal pathologies and IOL planning.



Cipta®CS

Cipta®CS supports process management, remote supervision and performance analysis of the 4D Suite medical devices.



Precisio



pMetrics



iRes

Key Features

Remote supervision of the 4D Suite medical devices

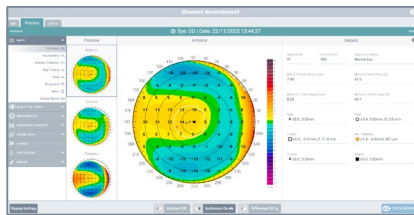
Data base synchronization among the 4D Suite medical devices

Performance analysis of the 4D Suite Diagnostic and Surgical Platforms

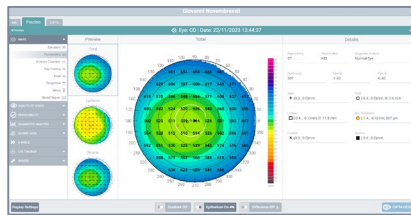
Cipta®R

Cipta®R delivers online customized ablation plans, raytracing based, for the treatment of regular refractive disorders, including the refractive contribute of the posterior shape of the cornea, the biometric measures of the eye and the IOL data for pseudo-phakic patients.

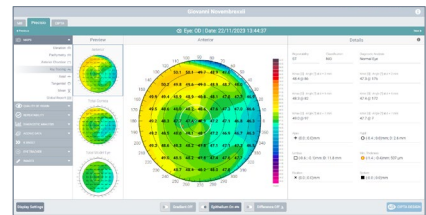
Cipta®R provides online support and real time data sharing.



Elevation Pre-op



Pachymetry Pre-op



Ray Tracing Pre-op

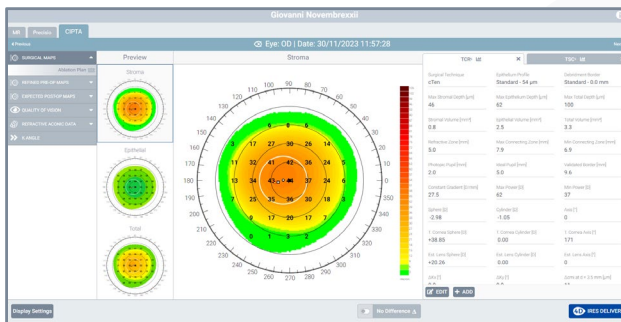
Key Features

- Determination of the Ideal Shape of the cornea
- Automatic plan of the customized ablation profile
- Customization of the refractive zone by raytracing
- Definition of the refractive zone diameter by the Ideal Pupil
- Customization of the connecting zone by constant refractive gradient
- Customization of the epithelium ablation profile
- Evaluation of the surgical ectatic risk

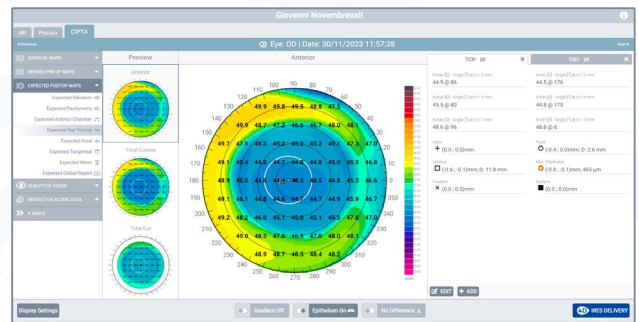
Clinical Applications

Customized monofocal plan of regular refractive disorders

Customized EDOF plan of regular refractive disorders



Ablation Plan



Expected Ray Tracing

Output data

Stromal ablation map

Epithelial ablation map

Total ablation map

Expected Elevation maps

Expected Pachymetry maps

Expected Ray Tracing refractive maps

Expected Axial, Tangential, Mean refractive maps

Expected Wavefront, Point Spread Function, Quality of Vision



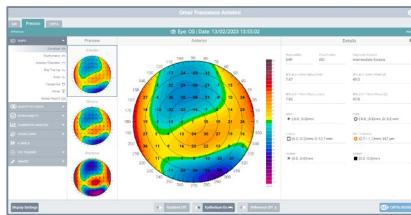
Design

Cipta®T

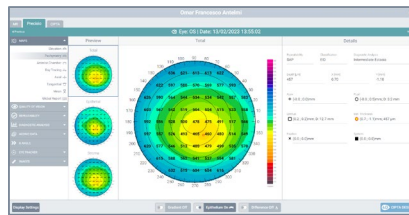
Cipta®T delivers online customized ablation plans, raytracing based, for the treatment of irregular refractive disorders, taking into account the refractive contribute of the epithelium and of the posterior shape of the cornea, considering the biometric measures of the eye and the IOL data for pseudo-phakic patients.

Cipta®T delivers online crosslinking plan, customized according to the stromal thickness gradient, to be combined with the customized corneal remodelling for the treatment of ectatic pathologies.

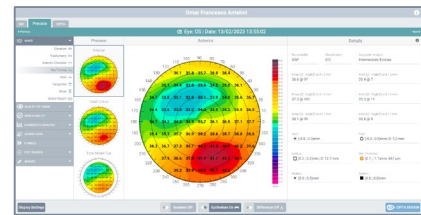
Cipta®T provides online support and real time data sharing.



Elevation Pre-op



Pachymetry Pre-op



Ray Tracing Pre-op

Key Features

- Determination of the Ideal Shape of the cornea

- Automatic plan of the customized ablation profile

- Customization of the refractive zone by raytracing

- Definition of the refractive zone diameter by the Ideal Pupil

- Customization of the connecting zone by constant refractive gradient

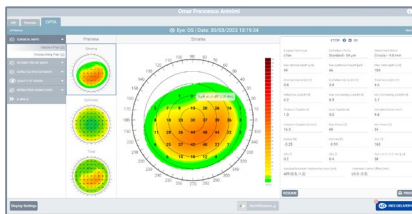
- Customization of the epithelium ablation profile

- Customization of the crosslinking plan

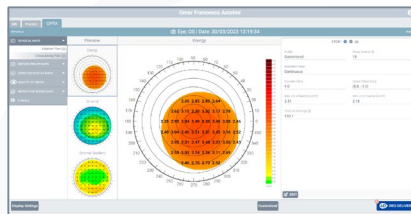
- Evaluation of the surgical ectatic risk

Clinical Applications

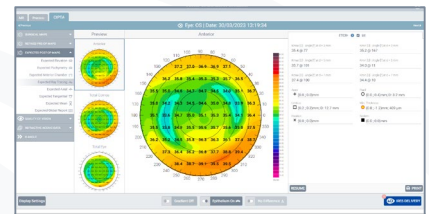
- Customized plan of irregular refractive disorders
- Customized crosslinking plan for ectasia
- Customized plan for K angle correction
- Customized plan for retinal focusing redirection
- Customized plan for lamellar transplantation



Ablation Plan



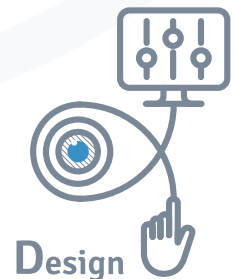
CrossLinking Plan



Expected Ray Tracing

Output data

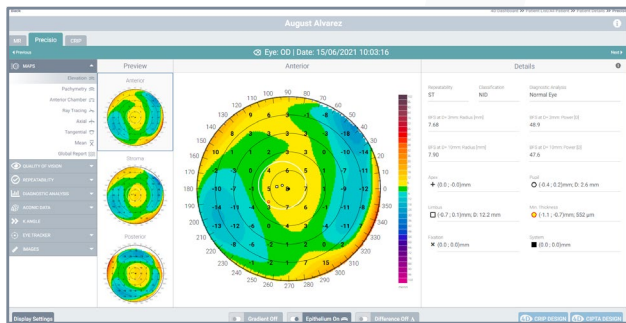
- Stromal ablation map
- Epithelial ablation map
- Total ablation map
- Crosslinking Plan Map
- Expected Elevation maps
- Expected Pachymetry maps
- Expected Ray Tracing refractive maps
- Expected Axial, Tangential, Mean refractive maps
- Expected Wavefront, Point Spread Function, Quality of Vision





T-Crip® is a module of the Cipta® web application designed for online, raytracing based, IOL planning for cataract and refractive surgery, considering the refractive contribute of the cornea and the biometric measures.

T-Crip® provides online support and real time data sharing.



Pre-op Elevation

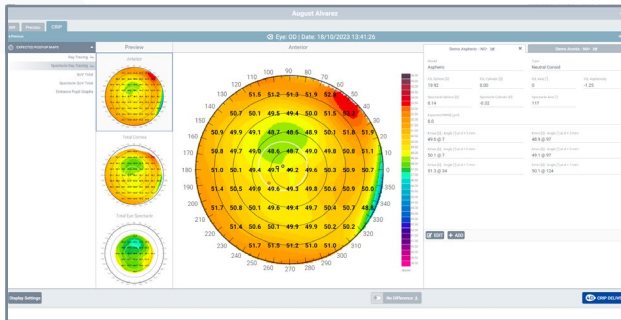
IOL Edit Data

Key Features

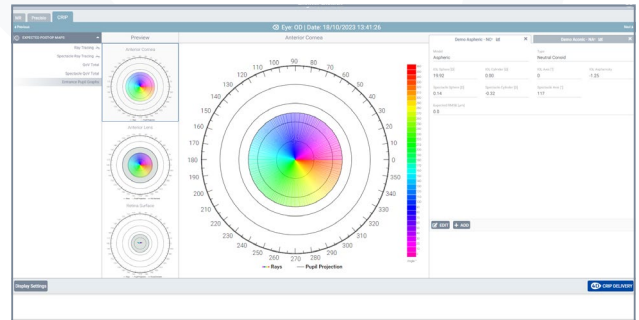
Customized sphere, cylinder, axis and asphericity IOL plan
RMSE evaluation of the Point Spread Function
Glare risk analysis related to the Ideal Pupil

Clinical Applications

IOL planning for cataract and refractive surgery



IOL Output Data



Entrance Pupil Graph

Output data

IOL sphere, cylinder, axis and asphericity data

Entrance pupil Graph

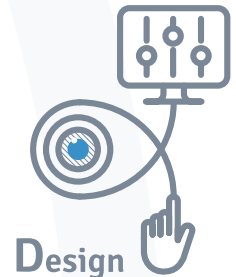
Expected spectacle refraction

Expected Ray Tracing refractive maps

Expected Axial, Tangential, Mean refractive maps

Expected Wavefront, Point Spread Function,

Quality of Vision





iRes®2.0 is an innovative excimer laser specifically designed to allow remote control of the surgical procedures to grant performance standardization regardless of the surgical site.

iRes®2.0 is conceived to customize corneal surgery, to treat complex corneal pathologies and refractive disorders, optimizing quality of vision and minimizing surgical invasiveness.

iRes®2.0 supports cTen®, the unique customized transepithelial no-touch surgical procedure, removing in one-step epithelium and stroma, to take care of the irregular refractive contribute of the epithelium in complex corneas and to eliminate intra-operative risks.

iRes®2.0, by means of the built-in UV-A delivery system, releases customized crosslinking treatments, together with the customized laser remodelling, for treatment of ectasia.

iRes®2.0 uniquely releases a constant fluence per unit of time, delivering extremely precise ablation profiles and drastically reducing thermal effects.





Key Features

Fastest working frequency of 2.0kHz

Smallest laser spot equal to 350um

Remote control
of the surgical procedures

cTen® customized
transepithelial no touch surgery

Customized epithelial ablation

Customized crosslinking treatments

Patient eye registration

6D Synchronous eye-tracking

Pulses delivered with constant
fluence per unit of time



Surgical Treatments

Customized monofocal treatment of regular refractive disorders
Customized EDOF treatment of regular refractive disorders
Customized treatment of irregular refractive disorders
Customized corneal remodelling and crosslinking treatment for ectasia
Customized treatment for K angle correction
Customized treatment for retinal focusing redirection
Customized treatment for lamellar transplantation

Technology

Independent double beam laser spots pulses
Synchronous 6D eye tracking system
Built-in crosslinking device
Sealed optical path
Controlled air flow for plume evacuation

Output Data

Ablation profile	Treatment center offset
Ablation treatment time	Energy factor
Attempted refractive correction	Eye tracker status
Attempted K angle correction	Crosslinking plan
Refractive zone	Crosslinking treatment time
Connecting zone	





Technical Specifications

Weight: 560kg

Bed weight: 250 kg

Power supply: 230V, 50-60Hz, 16A

Bed power supply: 230Vac, max 250VA, 50-60 Hz

Laser Dimensions: 2100mm x 750mm x 1800mm (LxWxH)

Bed dimensions: 2040mm x 690mm x 700mm (LxWxH)





SafeCross® is an innovative ophthalmic solution for the treatment of ectasia, with high riboflavin content, specifically conceived for corneal crosslinking in thin corneas.

Key Features

Production of 1.50 $\mu\text{mol/ml}$ of anion superoxide at $E = 5,4 \text{ J/cm}^2$

Increase in crosslinking efficiency by 35%

Optimized osmolarity solution

Higher patient compliance and lower side effects

Indications

Low-invasive crosslinking for ectasia

Composition

Riboflavin: 0.25%

HPMC: 1,00%

Osmolarity: 260 – 280 mOsm/Kg

Packaging

Luer Lock connection syringe containing 2,0 ml of riboflavin solution.





SafeCross® is an unique ophthalmic solution for the treatment of ectasia, with high riboflavin content and EDDS, specifically conceived for corneal crosslinking in poor oxygen environment.

Key Features

Production of 1.90 $\mu\text{mol/ml}$ of anion superoxide at $E = 5,4 \text{ J/cm}^2$

Increase in crosslinking efficiency by 50%

Optimized osmolarity solution

Higher patient compliance and lower side effects

Indications

Low-invasive crosslinking treatment for ectasia in poor oxygen environment

Composition

Riboflavin: 0.25%

HPMC: 1,00%

EDDS: 0,05%

Osmolarity: 260 – 280 mOsm/Kg

Packaging

Luer Lock connection syringe containing 2,0 ml of riboflavin solution.



iVis Technologies S.r.l.

Via Luigi Corsi, 50 - 74121 Taranto (TA) - Italy
T: +39 (099) 779-1680 - F: +39 (099) 779-7270
sales@ivistechnologies.com
www.ivistechnologies.com