FERRARA RING®

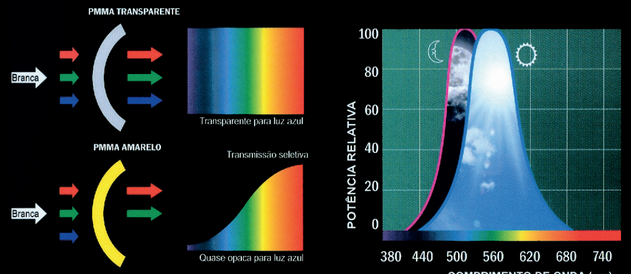
Specially designed to correct corneal deformities, Ferrara Ring® diminishes halos and glare during the post-operative period, meaning a considerable improvement in the visual acuity.

Recent researches on corneal asphericity (Q) have substantially improved the understanding of the corneal biomechanics after the implantation of Ferrara Ring®. Based on these studies, we have created a more sophisticated nomogram, with a higher predictability of results and, consequently, a quantitative and qualitative improvement in the patient's quality of life.

YELLOW PMMA

Yellow PMMA is the raw material of Ferrara Ring®. This colour is complementary to blue, which predominates at night. This material acts as a filter and avoids the passing of blue light and its dispersion in the retina, so there is a reduction of halos and post-operative glare, increasing the patient's comfort and safety.

Researches using a straylight meter (C-Quant by Oculus®) prove that patients with a yellow Ring show a smaller incidence of these symptoms when compared to those patients to whom conventional Rings were implanted.



MECHANISM OF ACTION

Ferrara Ring® corrects corneal deformities, working the following ways:

. Corneal apex displacement

. Topographical regularization preserving the natural prolate shape: it reduces the optical aberrations, improves the visual acuity and tolerance to contact lenses

. The flat Ring's base is responsible for the astigmatism induction

TRAINING AND ADVICE

Ferrara offers a broad support, with direct access to Dr. Paulo Ferrara.
Some of the available services are the following:

• Exclusive online nomogram making the surgical planning easier ;

• Immersion courses with Dr. Paulo Ferrara, attendance during surgeries, assistance before and after surgeries and wet labs..

FERRARA RING
www.ferrararing.com

Phone +34 983 100 700
www.ferrararing.com
ring@ferrararing.com.br

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PIONEERING AND TECHNOLOGY IN THE TREATMENT OF KERATOCONUS

Dr. Paulo Ferrara, creator of Ferrara Ring®, started his research in 1986. Already in 1991 he carried out the first implant in humans, obtaining the approval for the Ring's patent. His broad experience makes him the only doctor with 20-year follow-up, essential fact for the improvement and achievement of better long-term results in patients suffering from keratoconus.

In order to meet the demand of its R&D department, Ferrara started collaborating, in 2006, with AJL Ophthalmic S.A., a Spanish company focused on improving and creating new products in ocular surgery. This choice was due to our affinity with AJL's work philosophy, whose aim is not copying technology, but carrying out research and innovation. All their products hold the CE mark, and the company follows a quality management system according to ISO 13485 and ISO 9001:2000.

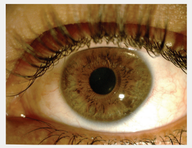
Ferrara also collaborates with the CSIC (Spanish National Research Council), the most relevant public research body in Spain; the prestigious Ophthalmological Foundation Fernández-Vega; the IOBA (University Institute of Applied Ophthalmology of the University of Valladolid) and other relevant scientific institutions.

Both these collaborations and the incentive given by the Spanish Government in matter of scientific initiatives, were the factors that motivated Ferrara to establish in Spain and carry out there the research on new materials and the improvement of Ferrara Ring®.

FEATURES OF FERRARA RING®

- Variable optical diameter from 5 to 6 mm
- Triangular section
- Base: 600 µm
- Variable thickness- from 150 µm to 350 µm
- Arc length: 90°, 120°, 140°, 160°, 210°
- An orifice in each end
- Yellow PMMA - Acrylic Perspex CQ

ADVANTAGES



- Preserves the corneal structure allowing 95% operated patients to return to their daily routine quickly;
- Reversibility: it lets the cornea adapt its pre-operative dimensions in case it is necessary to remove the segments;
- Readjustability: if necessary, it is possible to rectify a hypercorrection by removing one of the two segments or repositioning both;
- No rejection at all the acrilic material is inert and biocompatible;
- High satisfaction rate for patients;
- Restoration of the original shape of the cornea. It is possible to correct the residual refractive error after the surgery with glasses or contact lenses;
- Stabilization or delay of keratoconus' evolution;
- There is no minimum age for the surgery;
- Possibility to combine the procedure with other treatments such as contact lenses, intraocular lenses and cross-linking;
- The Ring's implantation is compatible with lamellar or penetrating keratoplasty, in case they were necessary..

HIGH RATE OF SUCESS AND SATISFACTION

More than 180,000 Ferrara Rings® have been implanted all around the world with a high rate of success.

Some researches prove that the corneal ectasia remains stable years after having implanted Ferrara Ring®.

SURGICAL TECHNIQUE

The procedure is carried out with local anaesthesia and takes approximately 15 minutes, letting patients return to their daily activities next day.

INSTRUMENTAL SET

The design of the instrumental set for the implantation of Ferrara Ring® has been specially created and adapted in order to guarantee the surgeon more safety and a good execution during the procedure, leading to surgical success.

Ferrara Ring® can be also implanted with Femtosecond laser.

INDICATIONS

- Keratoconus with low corrected visual acuity and intolerance to contact lenses;
- Progressive Keratoconus;
- Post-penetrating keratoplasty high irregular astigmatism;
- Post-radial keratotomy (RK) irregular astigmatism;
- Pellucid Marginal Degeneration;
- Corneal ectasia after refractive surgery (PRK, LASIK);
- Post-transplant irregular astigmatism.

CONTRAINDICATIONS

- Very advanced keratoconus where the curvature is higher than 75 D and there is a significant apical opacity;
- Important central leukoma;
- Hydropsia
- Thin cornea, if its thickness is less than 300 µm in the Ring's path;
- Patients suffering from severe atopy (it must be treated before implanting the segment);
- Syndrome of recurring corneal erosion .