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Short communication

Malyugin ring for intraoperative miosis in femtosecond laser phacovitrectomy☆

J.O. Moya Romero[a,*], *G.A. Ochoa Máynez*[b], *M.A. Cantero Vergara*[c], *C.A. Gómez Cortes*[a]

[a] *Alta Especialidad en Retina y Vítreo, Subsección de Retina, Sección de Oftalmología, Hospital Central Militar, Mexico City, Mexico*
[b] *Subsección de Retina, Sección de Oftalmología, Hospital Central Militar, Mexico City, Mexico*
[c] *Subsección de Córnea y Segmento Anterior, Sección de Oftalmología, Hospital Central Militar, Mexico City, Mexico*

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ABSTRACT

Objective: To evaluate the usefulness of the Malyugin ring in poor pupil dilation during phacoemulsification assisted with femtosecond laser with 23 gauge pars plana vitrectomy.
Method: A 57-year-old female with cataract and vitreous haemorrhage, and poor pupil dilation (5.5 mm). The phacoemulsification assisted with femtosecond laser, using Malyugin ring after capsulorrhexis, followed by pars plana vitrectomy, and removing at the end without complications.
Results: A successful intraoperative pupil dilation was achieved without complications, with a final BCVA of 20/40.
Conclusions: The Malyugin ring is an effective alternative in cases with poor pupil dilation in femtophacovitrectomy, preserving the anatomical and functional integrity.

Anillo de Malyugin para miosis intraoperatoria en femtofacovitrectomía

Palabras clave:
Cirugía de catarata asistida con láser de femtosegundo
Vitrectomía pars plana
Miosis intraoperatoria
Anillo de Malyugin

RESUMEN

Objetivo: Evaluar la utilidad del anillo de Malyugin transoperatorio en escasa dilatación pupilar durante facoemulsificación asistida con láser de Fs combinado con vitrectomía pars plana 23 G (femtofacovitrectomía).
Método: Se presenta una mujer de 57 años con catarata y hemorragia vítrea, dilatación pupilar de 5,5 mm. Se realiza facoemulsificación asistida con láser de femtosegundo, colocando anillo de Malyugin posterior a extracción de cápsula anterior, seguido de vitrectomía parsplana y retirándolo al final.

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* *Corresponding author.*
E-mail address: moya5339@yahoo.com.mx (J.O. Moya Romero).

Resultados: Se logró una dilatación pupilar transoperatoria adecuada, sin complicaciones, con una agudeza visual posoperatoria de 20/40.
Conclusiones: El uso del anillo de Malyugin puede ser una alternativa útil en casos con escasa dilatación pupilar en femtofacovitrectomía, conservando la integridad anatómica-funcional pupilar.

Introduction

The presence of miosis after femtosecond (Fs) laser-assisted cataract surgery was observed and attributed to a sudden increase in the temperature of the aqueous humour[1] and the release of inflammatory mediators (prostaglandin E2).[2] The use of preoperative non-steroidal anti-inflammatory agents is recommended: viscoelastic agents, epinephrine and mechanical dilators to maintain an adequate intraoperative mydriasis.[3] Bali et al.[4] conducted the first study that combined a 25-gauge pars plana vitrectomy and an Fs laser-assisted phacoemulsification in 8 patients. In conclusion, this is an alternative that offers potential benefits for the success of the combined procedure, such as a centred and easy-to-replicate capsulotomy, which allows for excellent stability of the intraocular lense, reduced need for ultrasound and, thus, a reduced possibility of corneal oedema to conduct the vitreoretinal surgery. There are no papers describing the use of the Malyugin ring in femtophacovitrectomy for the prevention of transoperative miosis and successful completion of the posterior pole surgery. Thus, the objective of this work is to assess the usefulness of the Malyugin ring for the treatment of transoperative miosis in a patient with poor pupil dilation treated with femtosecond laser-assisted phacoemulsification with 23-gauge pars plana vitrectomy (femtophacovitrectomy).

Surgical technique

A 57-year old female patient with cataract and dense vitreous haemorrhage in the right eye, with best-corrected visual acuity 20/800 (1.6 logMAR), secondary to diabetic retinopathy, with preoperative pupil dilation of 5.5 mm, was selected. This patient underwent a femtophacovitrectomy. The following aspects were assessed: transoperative pupil dilation, surgery easiness and postoperative pupil anatomy. An Fs laser platform LenSx V2.2 was used (wavelength 1030 nm of 50 kHz, 600–800 fs pulsated laser; Alcon Laboratories, Fort Worth, TX, USA) for the programming of corneal incisions (primary incision of 2.8 mm, at 135, spot of 5 μm, layer separation of 4 μm, energy of 6 μJ), capsulotomy (5 mm with spot separation of 5 μm, layer separation of 5 μm, energy of 8 μJ) and crystalline fracture (2 cuts, diameter of 5.4 mm, spot separation of 10 μm, layer separation of 10 μm, energy of 10 μJ). A topical/intracameral anaesthesia with 0.75% ropivacaine (*Naropin* 7.5 mg/ml, AstraZeneca, S.A. de C.V. Naucalpan de Juárez, Mexico) was used, achieving corneal flattening using a SoftFit sterile interphase (docking) and suction when adequate corneal docking was achieved. Optical coherence tomography images of the anterior segment were observed in the monitor (Fig. 1). Following this, the patient was located under a surgical microscope in the same operating theatre and on the same stretcher and underwent a sterile surgical preparation. Blefarostate and 23-gauge transconjuntival trocars were placed at an angle of 30–45 of the inferior temporal for infusion and at the meridians of 10 and 2 (in relation to the clock hands) for vitrectomy equipment and endoilluminator at 4 mm of the limbus with trocar plugs. A blunt dissection of corneal incisions created with laser using a Slade spatula (Asico, Westmont, IL, USA) was performed, injecting trypan blue (Vision Blue, 0.06% D.O.R.C, Zuidland, Holland) and viscoelastic agents (Discovisc, 4% chondroitin sulphate, 1.65% sodium hyaluronate, Alcon; Arlington, TX, USA) in the anterior camera. The anterior capsule was removed with an Utrata pinch using a napkin technique, followed by the placement of the Malyugin ring (MST, Redmond, WA, USA), with a 7 mm expansion, inserted in the pupil border (Fig. 2). The segmentation of the crystalline was completed using a Prechopper Akahoshi Splitter (Terao femtosecond chopper, Asico, Westmont, IL, USA), with aspiration of CO_2 bubbles generated by the laser using a 27-gauge

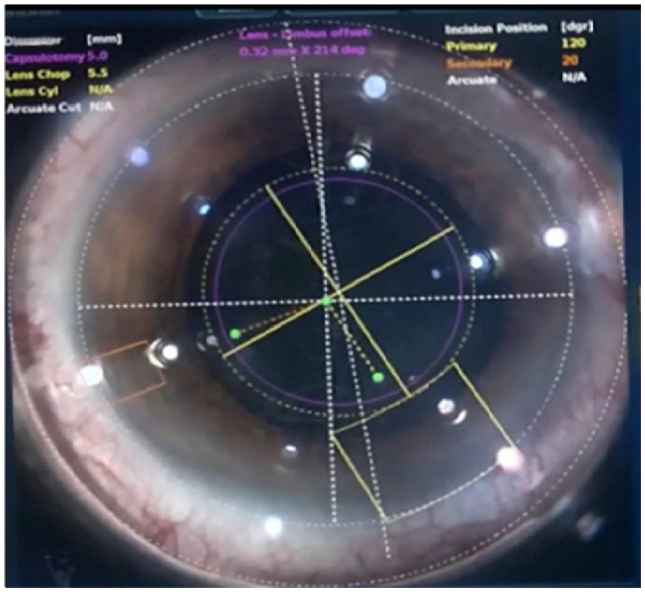

Fig. 1 – Malyugin ring for the prevention of transoperative miosis in femtophacovitrectomy (technique): fs laser programming (incisions, capsulotomy, crystalline fragmentation).