En la tarde del 22 de septiembre, a cargo del Dr. José A. Gegúndez Fernández

La Conferencia Castroviejo 2022 pondrá el foco en 'Queratoplastias con láser de femtosegundo'

El Dr. José A. Gegúndez Fernández impartirá, a partir de las 17:15 h. del jueves, 22 de septiembre, la Conferencia Castroviejo 2022, que llevará por título 'Queratoplastias con láser de femtosegundo'. En ella, como explica en este pequeño resumen que amablemente nos ha hecho llegar, detallará "las más recientes y novedosas técnicas de queratoplastia con el láser de femtosegundo".

LA conferencia Ramón Castroviejo de 2022 abordará las más recientes y novedosas técnicas de queratoplastia con el láser de femtosegundo. Este láser emite pulsos infrarrojos repetidos de 10-13 a 10-15 sec. provocando un efecto fotodisrruptor confinado a una burbuja milimétrica. Ello va a crear planos de disección en los tejidos transparentes con cortes hasta 12,5 mm ancho desde la córnea hasta la cápsula posterior. Los actuales láseres de femtosegundo disponen de OCT en vivo durante todo el procedimiento y proporcionan imágenes de alta resolución de 15 - 25 µm, lo que confiere un mayor control y seguridad durante la cirugía. Existen diferentes interfases de acoplamiento entre el láser y la córnea del paciente, curvas o de aplanación, que disponen de sensores de presión para poder monitorizar ésta en todo momento durante la intervención. Actualmente disponemos de nuevos patrones de fragmentación y perfiles de corte que optimizan los resultados de la cirugía.

Dr. José A. Gegúndez Fernández.

PRECISIÓN DE LOS CORTES

El láser de femtosegundo para los trasplantes de córnea proporciona cortes programables, controlados, precisos y seguros, con la profundidad y centrado deseados, y múltiples patrones: mushroom, top-hat, zig-zag, anvil, cilíndrico, decagonal, etc. La precisión de los cortes, tanto en el donante como en el receptor, van a inducir una disminución de la disparidad y discordancia propia de los cortes manuales, la mejor coaptación y superficie de contacto entre injerto y receptor, la formación de unos bordes definidos sin dañar los tejidos circundantes, y una más rápida cicatrización y menor tiempo de rehabilitación visual. Ello es también debido a la reducción del número de suturas necesarias y su retirada más precoz, así como del astigmatismo inducido.

Con el láser de femtosegundo se pueden efectuar múltiples técnicas de trasplante de córnea como queratoplastias penetrantes, lamelares superficiales y profundas, lamelares rotacionales, endoteliales y en semiluna.

La Conferencia SEO-SOE será impartida por la Dra. Zofia Nawrocka, desde las 18:15 h. del viernes 23 de septiembre

What is new in the inverted ILM flap technique?

Zofia Nawrocka (former name Zofia Michalewska), Jerzy Nawrocki
Ophthalmic Clinic Jasne Blonia, Lodz, Poland

De forma previa al esperado acto de entrega de Premios SEO 2022, el programa científico del 98 Congreso se completará, en la tarde del 23 de septiembre, a partir de las 18:15 h., con la Conferencia SEO-SOE. Bajo el título 'What is new in the inverted ILM flap technique?', será pronunciada por la Dra. Zofia Nawrocka, quien amablemente ha preparado un resumen de la misma, que reproducimos literalmente tal y como nos lo ha hecho llegar.

THE inverted ILM flap technique was introduced more than 10 years ago by our group (Zofia Nawrocka- than Michalewska, Jerzy Nawrocki) in order to improve surgical outcomes and reduce the frequency of flat open postopertive appearance. First indication selected for publication were in large, long- standing idiopathic macular holes. Since that time the technique evolved and over 250 peer- reviewed papers confirmed its efficacy. Moreover, multiple new indications for this technique were suggested.

During standard ILM peeling the primary aim is to reduce horizontal traction. During the inverted ILM flap technique we aim to provoke tissue reapproximation and regrowth in a more natural way.

In our first prospective randomized clinical trial, we treated 51 eyes with standard pars plana vitrectomy ILM peeling and air, and 50 eyes with the inverted ILM flap technique (ILM peeling around the macular hole, hole closure with flaps and air tamponade). Mean minimal hole diameters were about 700µm. The results showed that in eyes, in which the inverted ILM flap was left on the macular surface covering the hole, 100% of macular holes were closed and no flat open appearance was observed. In the ILM peeling group 88% success rate, including 19% flat open macular holes, was achieved. Furthermore, functional results were statistically significantly better after one year in the inverted ILM flap group. (0.28 vs 0.17). This first paper also demonstrated that fovea contour recovers, and photoreceptor defects decrease over time (1). Other authors confirmed our results in large comparative studies. Rizzo et al. reported an overall closure rate of 91.93% in an inverted flap group of 320 patients as opposed to 78.75 % in the ILM peeling group of 300. BCVA improvements were statistically significant in the inverted flap cases with a MH diameter greater than 400 µm (2). Yamashita et al. found that in extra-large MH cases (>550 µm), the closure rate was 88.4% (38/43) with ILM peeling and 100% (41/41) with the ILM flap technique. Probably the largest MH successfully treated with the flap technique to date was 2,845µm (3).

Through the years multiple modifications of the above-mentioned technique were described. The authors technique of choice nowadays is the temporal inverted ILM flap technique (ILM peeled only at the temporal side of the fovea, hole covered gently with a single temporal flap, air tamponade). This method was confirmed with a comparative study to be non- inferior to the original one (inverted ILM flap).

In the temporal inverted ILM flap technique retina nerve fiber layers stay untouched on the nasal side of the fovea, thus retina nerve fiber layer defects do not occur in that area.

A very important issue is not to insert the flap into the hole, but to position it gently on the surface of the macular hole. Inserting the flap into the hole or multiple flaps was proven to be associated with worse final functional outcome.

PROVEN EFFICACY

The temporal inverted ILM flap technique is nowadays used in many more indications than large idiopathic macular holes. Its efficacy was proven in high myopic macular holes, myopic retinal detachment, macular holes coexisting with age related macular degeneration, diabetic retinopathy, uveitis (4), Coats disease or retinitis pigmentosa. Summarizing all types of full thickness macular holes, especially those estimated as associated with worse outcomes with standard techniques became indications for the temporal inverted ILM flap technique. In all those complex indications both, the closure rate, and function improve with that method.

Most macular holes have a minimum to maximum diameter ratio of 1:2. Those in high myopia, especially associated with retinal detachment in the fovea area, and macular holes in proliferative diabetic retinopathy might have the minimum to maximum diameter ratio even 1:10. The large maximum diameter makes them much more complicated to treat. Removal of fluid through aspiration through the hole might cause iatrogenic damage. Closure of the hole with the inverted flap initiates healing processes and hole closure (5).

In age related macular degeneration (AMD) full thickness macular holes might have a slightly different etiopathology. Malnutrition of the retinal tissue due to underlying choroidal changes might be a factor additional or even independent from tangential traction. The inverted ILM flap technique was reported to be successful in both, dry and neovascular AMD (6-7).

Recently we presented that the inverted ILM flap technique may be successfully used in cases of persistent MH after RD surgery with scleral buckle and vitrectomy (8).

In refractory macular holes after ILM peeling the technique evolved to autologous ILM transplantation (9), amniotic membrane transplantation (10) or even free retinal grafts (11).

ILM flaps might also close the optic disc pit or retinal holes in retinal detachment.

The pathomechanism suggested in our first study was that Muller cells gliosis might lead to reapproximation or even regrowth of photoreceptor cells. That was recently confirmed in an experimental MH model in monkeys. They confirmed that the ILM functioned as a scaffold for the migration and proliferation of Müller cells and that it may promote their activation (12)


Dra. Zofia Anna Nawrocka (SEO-SOE).

REFERENCES

1. Michalewska Z, Michalewski J, Dulczewska-Cichecka K, Nawrocki J. Inverted internal limiting membrane flap technique for surgical repair of myopic macular holes. Retina 2014; 34:664-9.
2. Rizzo S, Tartaro R, Barca F, Caporossi T, Bacherini D, Giansanti F. Internal Limiting Membrane Peeling Versus Inverted Flap Technique for Treatment of Full-thickness Macular Holes. A comparative study in a large series of patients. Retina 2018; 38 Suppl 1:S73-S78.
3. Deshpande R, Narayanan R. Surgical repair of a giant idiopathic macular hole by inverted internal limiting membrane flap. BMJ case Rep 2015; 29;2015:bcr2015210797.
4. Hirano M, Morizane Y, Kawata T, Kimura S, Hosokawa M, Shiode Y, Doi S, Hosogi M, Fujiwara A, Shiraga F. Case report: successful closure of a large macular hole secondary to uveitis using the inverted internal limiting membrane flap technique. MC Ophthalmol 2015; 25;15:83.
5. Michalewska Z, Nawrocki J. Fovea morphology after vitrectomy in eyes with full-thickness macular hole coexisting with diabetic retinopathy. Journal of Vitreo-Retinal Diseases 2021; 5:53-59.
6. Michalewska Z, Nawrocki J. Vitrectomy with the inverted internal limiting membrane flap technique in eyes with full-thickness macular hole and dry age-related macular degeneration. Eur J Ophthalmol 2020; 28:1120672120921376.
7. Nawrocka ZA, Nawrocka Z, Nawrocki J. Vitrectomy for full thickness macular hole developed during the course of anti-VEGF treatment of type 1 neovascular AMD. Eur J Ophthalmol 2021; 3;19:11206721211002123.
8. Nawrocki J, Michalewska Z. SS-OCT for macular hole treated with the inverted internal limiting membrane flap technique. In: An atlas of SS-OCT. Springer 2017: p. 97-113.
9. Morizane Y, Shiraga F, Kimura S, Hosokawa M, Shiode Y, Kawata T, Hosogi M, Shirakata Y, Okanouchi T. Autologous transplantation of the internal limiting membrane for refractory macular holes. Am J Ophthalmol 2014; 157:861-9.
10. Caporossi T, Tartaro R, Finocchio L, Pacini B, De Angelis L, Bacherini D, Rizzo S. Human Amniotic Membrane to Treat Macular Holes that Failed to Close, Sulfur Hexafluoride Endotamponade versus Air Endotamponade: A Prospective Comparative Study. Retina 2021; 1;41:735-743.
11. Grewal DS. Mahmoud TH. Autologous neurosensory retina free flap for closure of refractory myopic macular holes. JAMA Ophthalmol 2016; 134:229-30.
12. Shiode Y, Morizane Y, Matoba R, Hirano M, Doi S, Toshima S, Takahashi K, Araki R, Kanzaki Y, Hosogi M, Yonezawa T, Yoshida A, Shiraga F. The role of inverted internal limiting membrane flap in macular hole closure. Invest Ophthalmol Vis Sci 2017; 58:4847-55.