PCO and CME after implantation of 4 different MICS IOL.

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Introduction

Despite improvements in surgical techniques and intraocular materials, the first postoperative complication remains posterior capsule opacification (PCO) also called secondary cataract has been shown to occur in 18-44% of cases 10 years after surgery, irrespective of the material.[1] Treatment with Nd: YAG laser of this complication is an over cost of cataract surgery for the healthcare system.[2]

This complication appears slowed by the use of a hydrophobic material. Indeed, the ability of the remaining epithelial cells to bind to the capsule and allow the crystalline material to close the free space that allows the proliferation of the cells behind the implant generating a "secondary cataract".[3]

However, these polymers have a disadvantage: they very often have glistening,[4] this phenomenon is related to the condensation of water microdroplets in the holes/defects of the mesh polymer during temperature changes. These defects observed at the slit lamp give a "champagne bubbles" aspect to the implant. This defect is more pronounced over time for molded implants and sometimes becomes irreversible and requires explantation. Werner[7] showed intraocular temperature could vary from 8°C.

This is why hydrophilic materials, despite their reputation for generating more PCO remain competitive in the field of intraocular implants. Their hydrophilic nature allows stabilizing the water content before implantation. Furthermore, flexibility allows the implant insertion by microincision thereby reducing corneal deformation[5] [6] with minimal endothelial cell loss.[7] [8] [9] [10]

The primary goal of this study is to compare the behavior of four hydrophilic microincision implants regarding PCO.

The ISO-11979-7: 2006 standard shows the 4 long-term complications to watch after implantation of an intraocular lens outside the occurrence of PCO: stromal corneal edema, iritis, persistent elevation of intraocular pressure and cystoid macular edema. The first three complications are multifactorial (highly dependent on the particular situation and the preoperatively existence of concomitant autoimmune disease) and will not be considered here.

The fourth long-term complication is the occurrence of cystoid macular edema: it can occur immediately after surgery (acute) or later after surgery (chronic). This study will also have as a secondary goal of monitoring the rates depending on the implant to determine if the implant geometry (size and shape of the haptics) affects the occurrence of this complication.

The risk factors associated to the occurrence of CME are traumatic[11] and can be easily retrospectively identified: it is the vitreous prolapse, iris trauma, rupture of the posterior capsule, implant displacement, YAG laser treatment of early PCO, as clearly referenced to the procedure and the postoperative follow-up items folder.

The incidence of CME is not clearly established: between 0.1 and 2.35% after cataract surgery performed by phacoemulsification of crystalline lens.[11] This is why we considered interesting in this study to determine if the type of design had an influence on this complication.

Material and methods

Study design

On surgeon (GL) implanted 4544 patients between 2006 and 2013, with 4 types of microincision intraocular lenses: MicroSlim and the Micro AY (PhysIOL, Belgium), the Akreos MI-60 (Bausch & Lomb, USA) and CT-Asphina (Zeiss Germany). The IOL choice was determined regarding the asphericity of each patient's cornea. The present report is based on data of available for the analysis. For some of the patients, the follow-up had been done elsewhere and some people died. Those patients were removed from the raw data, and it remained 4523 patients on which the analysis was done.

IOLs

The Akreos MICS (Bausch & Lomb; Rochester, New York) have four symmetric haptics. The CT Asphina (Zeiss Meditec, Germany) is a monobloc IOL. The Micro AY and MicroSlim IOLs (PhysIOL, Belgium) have four loop haptics. The IOLs are presented in the photos of figure 1 and the table 1 is describing their characteristics.

Figure 1: Photos of IOLs under study

	Water content of the hydrophilic material (%)	Total diameter (mm)	Optic diameter (mm)	Angulation (°)	Power (D)	Asphericity (µm)
Akreos MI60	26%	10.7	6	10°	0 to 30 D	0 µm
CT Asphina	25%	11	6	0°	0 to 32 D	-0.18 µm
Micro AY	25%	10.75	6.15	5°	10D to 30 D	-0.11 µm
MicroSlim	25%	10.75	6.15	5°	10D to 30 D	0 µm

Table 1: characteristics of IOLs under study

The criteria of the surgeon to choose the IOL were purely optical, the 4 implants do not possess the same properties in terms of transmittance and asphericity.

This retrospective study includes all patients implanted with one of the 4 IOLs since 2006 and analyses the occurrence of PCO and CME.

The occurrence of PCO is determined by the achievement of a YAG capsulotomy due to a decrease of the visual acuity.

The occurrence of CME was investigated after unexpected decrease of the visual acuity and was confirmed by a macula thickening measured with Optical Coherence tomography (Cirrus HD OCT Zeiss Meditec) UBM with a 50MHz linear scanning probe (Aviso Quantel Medical) was used to analyze the contact between the haptics and the ciliary body. We also identified in the files the presence of any risk factor.

Surgical protocol

Biaxial surgery was used for all the patients by the same surgeon (GL) before a Scheimpflug analyze to obtain the total cornea spherical aberration.

Aberration free IOl was selected for SA under 0.150μm (Akreos MICS), -0.11μm (Micro AY) for SA between 0,150μm and 0.250μm and -0,18μm (CT Asphina) for SA over 0.250μm. This allow a better far and intermediate vision improved by a slightly myopia (-0.50d) on the non-dominant eye.

The surgery was performed with a main incision of 1.1 mm for the unsleeve phaco probe and a side incision of 1 mm for the hydrochopper. The capsulorhexis was completed with a squeeze handle forceps with engraving (1 to 6mm) for performing a perfect capsulorhexis shape exactly for the different optic size.

After an hydrodissection and mobilization of the nucleus, phacoemulsification (Stellaris with digiflow) was made by chopping the nucleus with high vacuum and few energy. The digiflow enables controlled pressurization of the infusion bottle and allows to better control infusion flow to minimize IOP fluctuations during biaxial surgery.

Irrigation and aspiration in bimanual complete the procedure with a perfect 360° access of the cortex in the bag.

A great care to avoid any uncleaned bag is made with a completion of the procedure by the use of a capsule polisher.

All the IOL were loaded by the wound-assisted technic through 1.6 mm under OVD or water with counter pressure with irrigator.

The closure of corneal incision was made by hydration and injection of intracameral antibiotic (cefuroxime) finished the surgery.

Statistics

The statistical calculations were performed using the R software version 3.0.1 and its package 'Survival' and 'Matching' (Sekhon, 2011).

The age and IOL power of the 4 cohorts are first compared. The significance level was fixed at 0.05. The Bartlett's chi-squared test first tests the variance. The Kolmogorov-Smirnov test will indicate if the residuals of the ANOVA are normally distributed. Therefore we used a non-parametric test: the Kruskal-Wallis rank sum test.

Due to the fact that the corneal asphericity determined the IOL type, we expected a difference in the cohorts as corneal asphericity is dependent on the ametropia[12]. With the R package 'Matching' (Sekhon, 2011) we could equalize the four groups (AKREOS MICS, CT ASPHINA, MICRO AY and MICRO SLIM) two by two on two covariates: age and IOL Power. Specifically, we used a genetic matching, a generalization of propensity score and Mahalanobis distance that maximizes the balance of observed covariates between treated and control groups.

The delay between YAG capsulotomy after cataract surgery or CME occurrence is tested in a similar way as age and IOL powers. We then performed post-hoc two by two comparisons between the treatment groups by means of Wilcoxon sum rank test.

As postoperative follow-ups are very disparate, after Kolmogorov Smirnov test, survival analysis was performed to compare the occurrence of PCO and over time. Six post-hoc two by two comparisons between the 4 treatment groups are performed by means of stratified Log-Rank. Because we perform 6 comparisons, we have to apply a correction to the significance level of the p-value. For a single comparison, we take the significant level of 0.05. For more than one comparison, we have to divide the significance level (0.05) by the number of comparisons tested (6 in our case) in order to obtain the p-value under which we consider that statistical significance has been reached. With 6 comparisons, it equals 0.05/6= 0.00833.

Results

Population analysis

Age

The age of patients in the Akreos MICS group (median=74, q_{25}=67, q_{75}=80) was lower than the age level of the three other groups: CT Asphina (median=79, q_{25}=74, q_{75}=83; p-value<0.001), Micro AY (median=78, q_{25}=71, q_{75}=84; p-value<0.001) and MicroSlim (median=80, q_{25}=75, q_{75}=86; p-value<0.001). The age level of patients in the treatment group MicroSlim is higher than the age level of the patients within the treatment groups CT Asphina (p-value<0.001) and Micro AY (p-value<0.001). Last, the age of CT Asphina group does not differ significantly from the age of patients in the Micro AY group (p-value=0.1904).

IOL power

The IOL power of patients implanted with Akreos MICS (median=22, q_{25}=20.5, q_{75}=23.5) is higher than the IOL power of the three other treatment groups: CT Asphina (median=21, q_{25}=19.5, q_{75}=22.5; p-value<0.001), Micro AY (median=21.5, q_{25}=20, q_{75}=23; p-value<0.001) and MicroSlim (median=22, q_{25}=20.5, q_{75}=23; p-value=0.001452). The IOL power level of patients in the treatment group CT Asphina is lower than the IOL power level of the patients within the treatment groups MicroSlim (p-value<0.001) and Micro AY (p-value<0.001). Last, the IOL power level of MicroSlim patients does not differ significantly from the IOL power level of patients in the Micro AY group (p-value=0.03162).

As expected the cohorts had to be equalized.

	Akreos MICS (n=486)	CT Asphina (n=925)	Micro Ay (n=2441)	MicroSlim (n=671)
Age	73.36 ± 9.17	77.93 ± 7.49	77.13 ± 9.44	79.61 ± 8.42
IOL Power	21.93 ± 2.85	20.77 ± 2.63	20.62 ± 4.50	21.39 ± 2.82
Delay before YAG (days)	746.81 ± 285.54	894.69 ± 321.31	782.72 ± 337.32	919.95 ± 491.29
OMC duration (days)	74.92 ± 97.80	39.75 ± 33.36	76.00 ± 101.98	275.00 ± 396.28

Table 1 : ***Descriptive statistics by treatment groups***

Propensity score matching

The algorithm for the propensity score matching uses a genetic algorithm[13 14 15] to optimize balance as much as possible given the data. The method is nonparametric and does not depend on knowing or estimating the propensity score. The Genetic Matching attempts to minimize a measure of the maximum observed discrepancy between the matched treated and control covariates at every iteration of optimization. The algorithm attempts to minimize the largest observed covariate discrepancy at every step and this is accomplished by maximizing the smallest p-value at each step. The algorithm stopped when the difference between the last four solutions was small. We performed a one to one Genetic Matching with replacement. Last, an absolute standardized difference less than 10% was considered to support the assumption of balance between the groups because it is not affected by the sample size, unlike p-values, and it may be used to compare the relative balance of variables measured in different units.[16 17] The final number of retained observations, the starting number of observation, the mean, the standard derivation, and bootstrap p-values of Kolmogorov-Smirnov test before and after matching were assessed.

	p-value after matching	Number of patient in each group before matching	Number of patient in each group after Matching
MicroSlim-Micro AY	1.000	671-2441	671-1459
CT Asphina -MicroSlim	0.734	925-671	925-579
CT Asphina – Micro AY	0.992	925-2441	925-1699
Akreos MICS – MicroSlim	0.867	485-671	485-445
Akreos MICS – Micro AY	1.000	485-2441	485-1225
Akreos MICS – CT Asphina	1.000	485-925	485-513

Table 2 : The matching score is calculated for two variables: age and IOL Power.

YAG capsulotomy analysis

A Kaplan-Meier analysis of the occurrence of PCO was achieved and is represented in Figure 1.

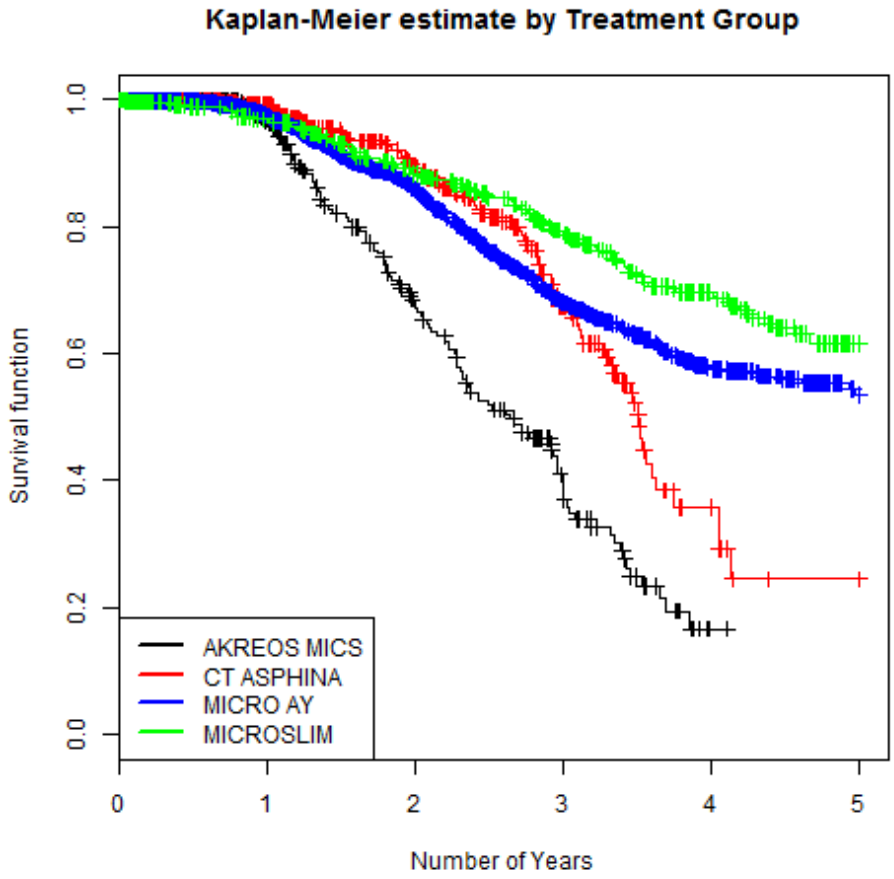


Figure 1: Kaplan Meier estimate of survival before YAG capsulotomy before propensity score matching

The survival rates for the four groups after 3 and 5 years are presented in Table 3. The rates are compared one by one before (Table 4) and after (Table 5) propensity score matching.

Treatment Group	Survival rate [95% Confidence Interval] 3 years	Survival rate [95% Confidence Interval] 5 years
Akreos Mics	39.00% [31.60%; 48.10%]	16.70% [9.77%; 28.40%]
CT Asphina	67.50% [60.60%; 75.30%]	24.50% [14.00%; 42.70%]
Micro AY	67.60% [64.40%; 70.90%]	53.50% [48.80%; 58.60%]
Microslim	79.10% [74.90%; 83.40%]	61.50% [55.40%; 68.30%]

Table 3 : Survival rates after 3 and 5 years for the 4 different MICS intraocular lenses.

		Akreos MICS – CT Asphina	Akreos MICS – Micro AY	Akreos MICS – MicroSlim	CT Asphina – Micro AY	CT Asphina -MicroSlim	MicroSlim-Micro AY
YAG 3 years	χ^2	39.9	53.3	74.5	1.1	2.4	11.
	<0.001	<0.001	<0.001	<0.001	0.284	0.119	<0.001
YAG 5 years	χ^2	36.9	79.6	106	1.5	16.6	8.8
	p-value	<0.001	<0.001	<0.001	0.228	<0.001	0.00295

Table 4 : post-hoc two by two comparisons between IOL types before propensity matching

		Akreos MICS – CT Asphina	Akreos MICS – Micro AY	Akreos MICS – MicroSlim	CT Asphina – Micro AY	CT Asphina -MicroSlim	MicroSlim-Micro AY
YAG 3 years	SR	62.30%	70.90%	74.50%	70.20%	79.80%	81.40%
	p-value	<0.001	<0.001	<0.001	=0.515	=0.00433	<0.001
YAG 5 years	SR	15.20%,	58.70%,	60.20%,	52.70%,	64.00%,	62.90%,
	p-value	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

Table 5 : post-hoc two by two comparisons between IOL types after propensity score matching

The survival rate at 3 years for YAG of patients in the treatment group Akreos MICS (SR=39.00%) is significantly lower than the survival rate of the three other treatment groups: CT Asphina (SR=67.50%, p-value<0.001), Micro AY (SR=67.60%, p-value<0.001) and MicroSlim (SR=79.10%, p-value<0.001). The survival rate at 3 years for YAG of CT Asphina patients is not significantly different for the survival rate of the Micro AY (p-value=0.284) and MicroSlim (p-value=0.119) treatment groups. Last, the survival rates at 3 years for YAG of Micro AY patients is significantly lower than the survival rate of the MicroSlim (p-value<0.001).

The survival rate at 5 years for YAG of patients in the treatment group Akreos MICS (SR=16.70%) is significantly lower than the survival rate of the three other treatment groups: CT Asphina (SR=24.50%, p-value<0.001), Micro AY (SR=53.50%, p-value<0.001) and MicroSlim (SR=61.50%, p-value<0.001). The survival rates at 5 years for YAG of MicroSlim is significantly higher than the survival rate of CT Asphina

(p-value<0.001) and Micro AY (p-value=0.00295). Last, the survival rate at 5 years for CT Asphina is not significantly different than the survival rate at 5 years for Micro AY (p-value=0.228).

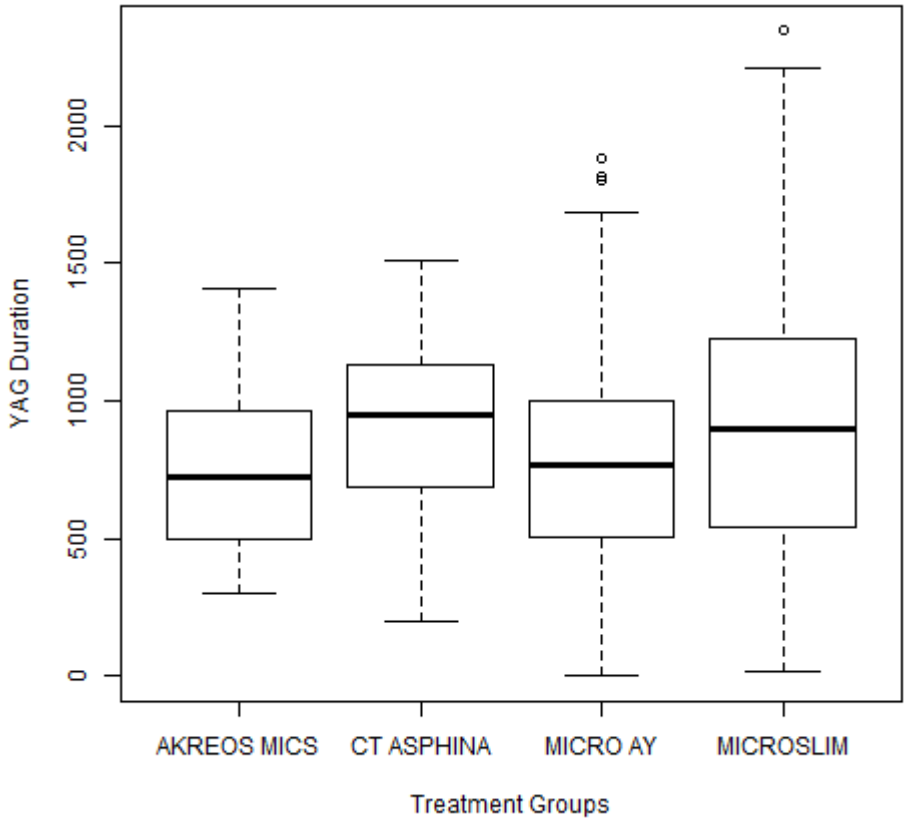


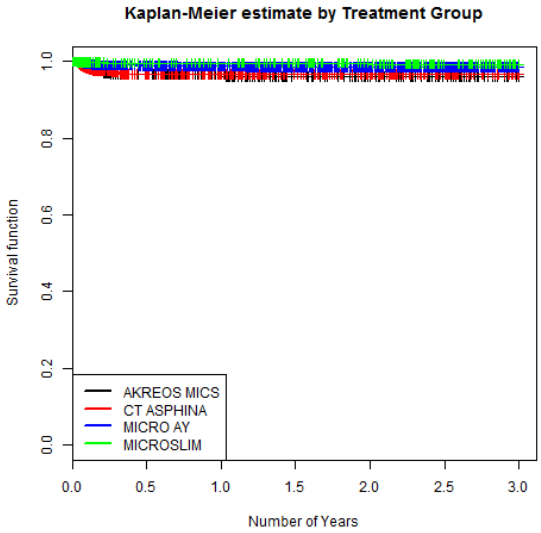
Figure 2 : Boxplot of delay before YAG capsulotomy by IOL group

Figure 2 represents the boxplot of the delay before YAG capsulotomy for each of the four groups.

The delay before YAG of patients in the treatment group Akreos MICS (median=720, q_{25}=496, q_{75}=965) is lower than the delay before YAG of CT Asphina (median=947 q_{25}=683.5, q_{75}=1132.5; p-value<0.001), but not significantly different from Micro AY (median=763, q_{25}=506, q_{75}=1001; p-value=0.4965) and MicroSlim (median=894, q_{25}=542.75, q_{75}=1233.25; p-value=0.008601) patients. The delay before YAG of patients in the treatment group CT Asphina is higher than the delay before YAG of the patients within the Micro AY group (p-value=0.00186), but not significantly different than the delay before YAG of MicroSlim patients (p-value=0.8977). Last, the delay before YAG of MicroSlim patients is significantly higher than the delay before YAG of patients in the Micro AY group (p-value=0.008329).

Cystoid Macular Edema analysis

The Kaplan-Meier estimate for the CME is less demonstrative than for the YAG capsulotomy.



Nevertheless

Treatment Group	Survival rate [95% Confidence Interval]
Akreos MICS	96.10% [94.00%; 98.40%]
CT Asphina	96.70% [95.20%; 98.20%]
Micro AY	98.60% [98.10%; 99.20%]
MicroSlim	99.30% [98.60%; 100.00%]

CME after three years

		Akreos MICS – CT Asphina	Akreos MICS – Micro AY	Akreos MICS – MicroSlim	CT Asphina – Micro AY	CT Asphina -MicroSlim	MicroSlim-Micro AY
CME 3 year Before propensity matching	χ^2	0	8.7	11.2	11.2	11.0	2.0
	p-value	0.982	0.0032	<0.001	<0.001	<0.001	0.158
CME 3 years After propensity matching	SR	97.30%	98.30%	99.40%	98.80%	99.00%	99.40%
	p-value	=0.166	=0.015	<0.001	<0.001	<0.001	=0.0212

Table 6 : Two-by-two comparison of the CME occurrence Before and after propensity score matching

The survival rate at 3 years for CME of patients in the treatment group Akreos MICS (SR=96.10%) is not significantly lower than the survival rate of CT Asphina patients (SR=96.70%, p-value=0.982), but is significantly lower than the survival rate of Micro AY (SR=98.60%, p-value=0.0032) and MicroSlim (SR=99.30%, p-value<0.001). The survival rates at 3 years for OMC of CT Asphina patients is significantly lower than the survival rate of the Micro AY (p-value<0.001) and MicroSlim (p-value<0.001) patients. Last, the survival rates at 3 years for OMC of Micro AY patients is not significantly lower than the survival rate of the MicroSlim (p-value=0.158).

Odd ratio analysis drove to the following conclusion the percentage of patients with an CME in the Akreos MICS group (2.47%) is not significantly higher than the percentage of CT Asphina patients (2.16%, p-value=0.8572) and for Micro AY (0.94%, p-value=0.009334), but is significantly higher than the percentage obtained for MicroSlim (0.45%, p-value=0.006188). The percentage of patients having a CME for CT Asphina is significantly higher than the percentage for the Micro AY (p-value=0.008252) but not significantly lower than the percentage for the MicroSlim (p-value=0.00866) treatment groups. Last, the percentage of patients with CME in the Micro AY treatment group is not significantly higher than the percentage of patients with a CME in the MicroSlim (p-value=0.3132) treatment group.

No difference was found between groups for the delay of occurrence of CME.

All CME resolved with medical treatment, surgically for two cases: ERM removing or dexamethasone 0.7mg intravitreal implant.

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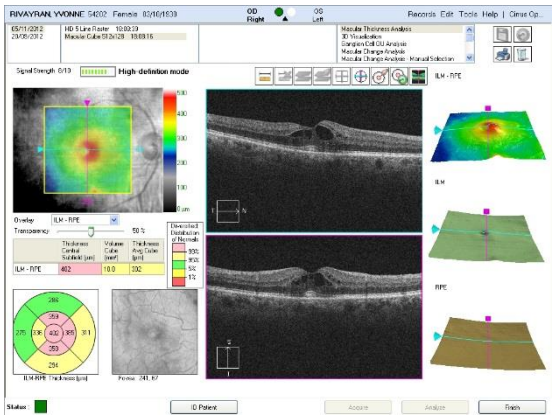
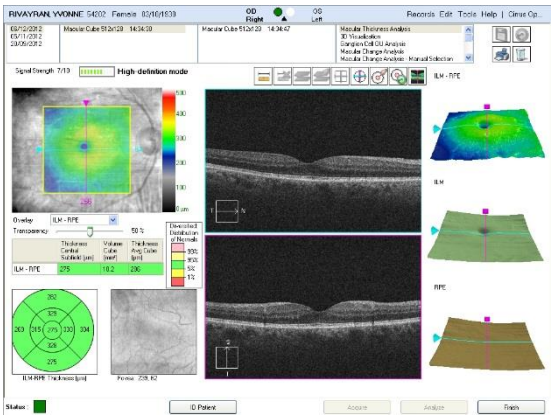
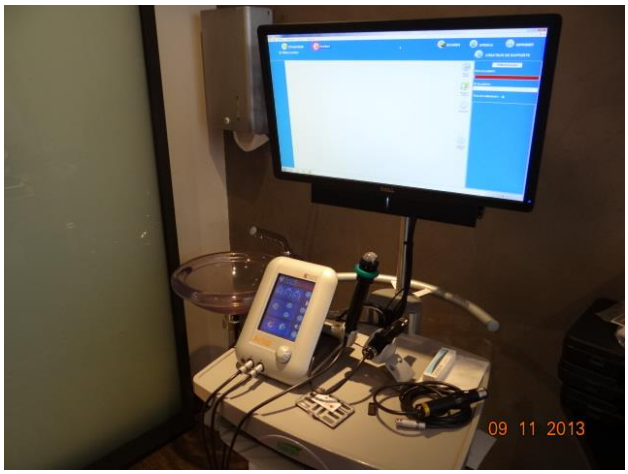


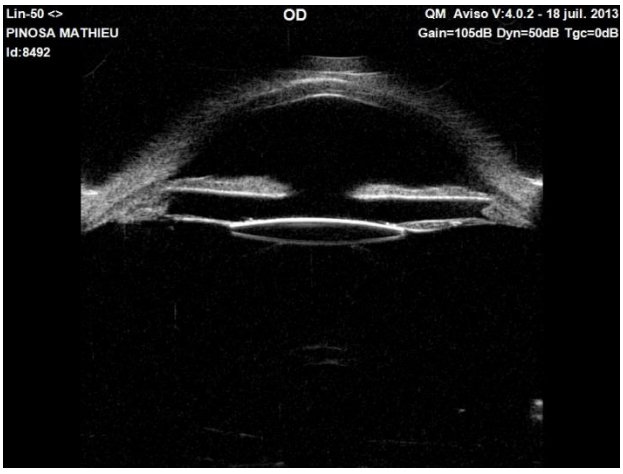


Posterior segment OCT. Resolution of the CME (A during the episode B one month after

The difference being significant, we have been investigating on the reason why this increase rate of CME and have performed UBM. For 11/22 patients with CME without any etiology we analyze the IOL position with 50 MHz linear scanning UBM probe.

No sufficient contact between ciliary muscle and IOls haptics in theses cases. No abnormalities in the angle or the sulcus and no sufficient haptic contact with ciliary muscle existed.





Existing comorbidity may explain difference between IOLs with a prevalence for ERM DM or Vascular patient, however a lot of cases had an unknown etiology.

4544 IOL	Akreos MICS	CT Asphina	MicroSlim	Micro AY

Epiretinal Membrane	**3**	**10**	**0**	**4**
Diabetes	**1+1***	**2+3***	**0**	**2**
Vascular disease	**3**	**3+1***	**0**	**5+1***
Uveitis	**0**	**1**	**0**	**0**
No etiology	**5 (42%)**	**3 (16%)**	**2 (100%)**	**12 (2%)**

***Possibility of associated pathology**

We have also identified the presence of any risk factor.

Discussion

YAG Capsulotomy

This study demonstrates a difference in the YAG rate between four micro-incision cataract surgery intraocular lenses. Interestingly, at the same time, there is no clear difference in the delay of occurrence of the YAG capsulotomy between groups.

Material influence

The Akreos MICS displays a lower survival rate to YAG capsulotomy from the other IOLs. The Akreos MICS IOL is having a different raw material from the other MICS IOLs of the study. Nevertheless, the 26% hydrophilic material of the Akreos MICS is similar to the one of the 92S (Morcher, Germany). Leysen[18] found a cumulative YAG capsulotomy rate of 28.23% at 71 months with the 92S. The 26% hydrophilic material cannot then be challenged. In the same way, the 3 others IOLs are manufactured with the same raw material and displays different rates of YAG capsulotomy. These outcomes are demonstrating that the hydrophobic coating of the AT Asphina is not preventing from any PCO. Nevertheless the PCO rate seems to be lower since the IOL design has been changed.[19] Any toxicity factor could not explain the influence on the PCO rates of the Micro AY and the MicroSlim, the yellow IOL having the higher score of the two for PCO.

Angulation influence

Angulation is different between IOLs. Nevertheless this should not explain the difference between PCO scores as the minimum YAG capsulotomy rates were observed for 5° angulation. Furthermore, it has been proven had no impact on secondary opacification.[20]

Design

CT Asphina and Akreos MICS show different design respectively and with respect to the Micro AY and MicroSlim. Some designs may provide better IOL stability in the bag, avoiding free space that favor lens epithelial cell proliferation.
Two other differences can be seen: the width of the haptic-optic junction and the sharpness of the IOL edge.[21] [22]
All IOLs have square edges. Nevertheless, the polishing process may differ depending on the manufacturer and may alter the sharpness of the IOL edge.
The IOL design has been correlated to capsulotomy rate by the dimensions of the haptic-optic junction.[23] Indeed Nixon[24] showed that the interface between optic and haptics was the preferential site for proliferation of the lens epithelial cells. The explanation of the difference in the capsulotomy rates of the different IOLs, especially manufactured in the same material may be explained by the conjunction of the optic edge sharpness and the size of the haptic optic junction.

PCO Rates

We can hardly explain the difference between the Micro AY and the MicroSlim. The geometry of the posterior surface cannot be considered as only square edge is important. Maybe the decrease of blue light is preventing from the inhibition of the cell growth over the posterior surface should explain the difference we found in a lower extent between the PCO rate of the Micro AY and MicroSlim.
In this study, we demonstrate that the MICS IOLs are not prone to induce more PCO than hydrophobic IOL, after three years. They presented reasonable PCO rates after 5 years: our outcomes and 3 years outcomes are questioning the excellent outcomes obtained after 5 years
We must also add that hydrophilic can deform very easily without IOL damage.[25] [26]

IOL	Duration	PCO rate
Tecnis ZCB00 [27]	3 years	26.1%
Acrysof SA60AT		21.7%
iMics1 NY-60 [28]	3 years	35.6%
AcrySof SN60WF		16.7%
AR40e (AMO)[29]	5 years	17%
BL27 (B&L)		30%
AR40 (AMO)		24%
Acrysof SA60AT[30]	5 years	10%
Sensar AR40e		22%
809C[31]	5 years	29%
SI-40NB		54%
AcrySof MA60BM		8%

CME

As we found a statistical difference betwwen the occurrence of CME between IOLs but we found more associated factors in the higher risk population we could not conclude. Nevertheless the occurrence of CME with hydrophilic IOLs is low to very low.
Macular thickness increases after Nd:YAG capsulotomy
Karahan E, Tuncer I, Zengin MO. The Effect of ND:YAG Laser Posterior Capsulotomy Size on Refraction, Intraocular Pressure, and Macular Thickness. J Ophthalmol. 2014;2014:846385

Conclusion

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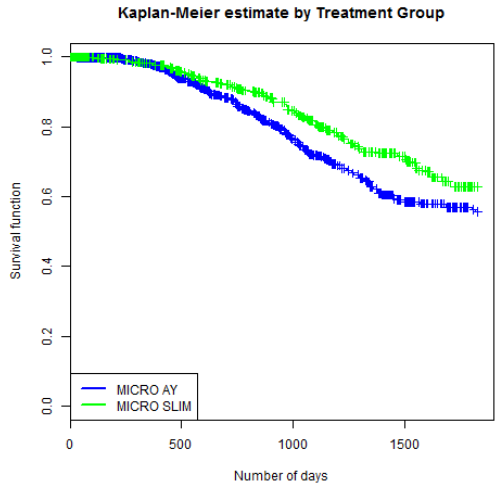
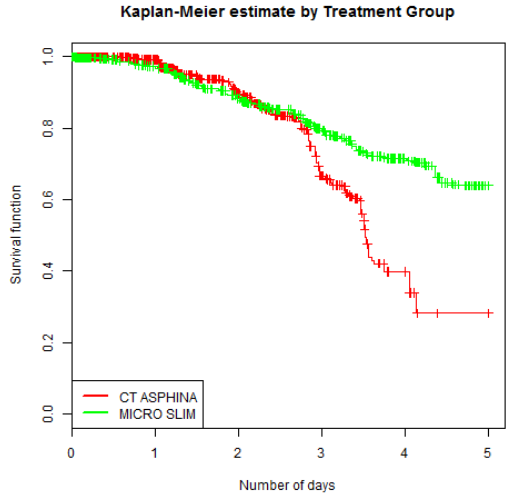
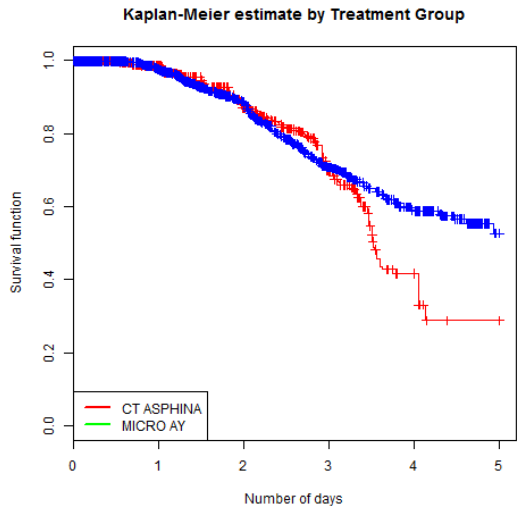
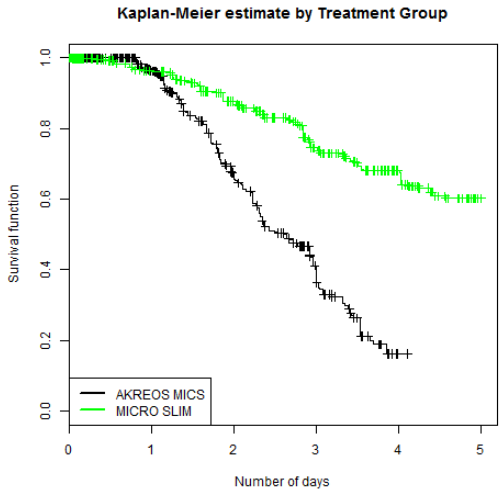
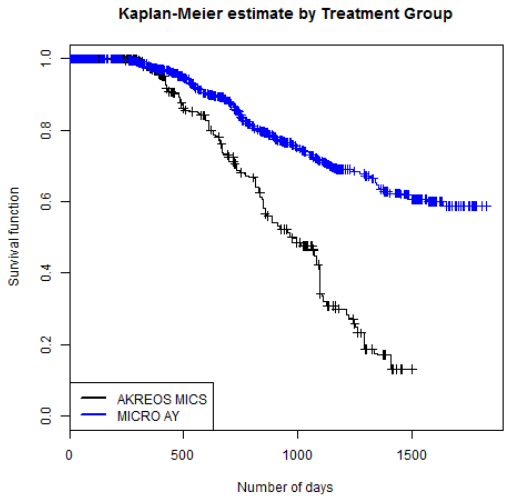
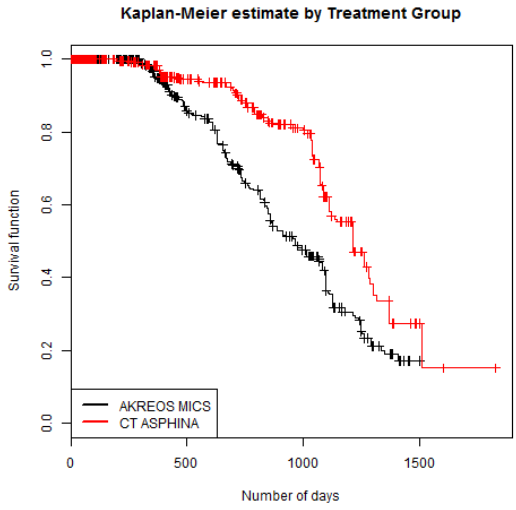
	Before Matching		After Matching	
Variable	AKREOS MICS (n=485)	CT ASPHINA (n=925)	AKREOS MICS (n=485)	CT ASPHINA (n=513)
Age	73.37±9.18	77.93±7.49	73.37±9.18	73.37± 9.13
IOL Power	21.93±2.85	20.77±2.63	21.93±2.85	21.81±2.37
Variable	AKREOS MICS (n=485)	MICRO AY (n=2441)	AKREOS MICS (n=485)	MICRO AY (n=1225)
Age	73.369 (9.18)	77.134 (9.44)	73.369 (9.18)	73.365 (9.19)
IOL Power	21.926 (2.85)	20.622 (4.50)	21.926 (2.85)	21.872 (2.67)
	AKREOS MICS (n=485)	MICRO SLIM (n=671)	AKREOS MICS (n=485)	MICRO SLIM (n=445)
Age	73.369 (9.18)	79.613 (8.42)	73.369 (9.18)	73.417 (9.13)
IOL Power	21.926 (2.85)	21.385 (2.82)	21.926 (2.85)	21.883 (2.70)
	CT ASPHINA (n=925)	MICRO AY (n=2441)	CT ASPHINA (n=925)	MICRO AY (n=1699)
Age	77.93 (7.49)	77.134 (9.44)	77.93 (7.49)	77.931 (7.45)
IOL Power	20.773 (2.63)	20.622 (4.50)	20.773 (2.63)	20.773 (2.63)
	CT ASPHINA (n=925)	MICRO SLIM (n=671)	CT ASPHINA (n=925)	MICRO SLIM (n=579)
Age	77.93 (7.49)	79.613 (8.42)	77.93 (7.49)	77.995 (7.35)
IOL Power	20.773 (2.63)	21.385 (2.82)	20.773 (2.63)	20.78 (2.60)
	MICRO SLIM (n=671)	MICRO AY (2441)	MICR SLIM (n=671)	MICRO AY (n=1456)
Age	79.613 (8.42)	77.134 (9.44)	79.613 (8.42)	79.613 (8.42)
IOL Power	21.385 (2.82)	20.622 (4.50)	21.385 (2.82)	21.381 (2.95)

	Kaplan Meier estimate after propency score matching

MicroSlim-MicroAY	
CT Asphina -MicroSlim	
CT Asphina - MicroAY	

Akreos MICS – MicroSlim	
Akreos MICS – MicroAY	
Akreos MICS – CT Asphina	

YAG at 5 years

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