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Glistenings With Long-term Follow-up of the Surgidev B20/20 Polymethylmethacrylate Intraocular Lens

Brief Report - MS. #077H

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Abstract

Purpose: To evaluate the incidence and progression of small refractile vacuoles (glistenings) in a consecutive series of patients implanted with the Surgidev B20/20 polymethylmethacrylate (PMMA) intraocular lens (IOL).

Design: Observational case series. A 4-year prospective study of the progression of glistenings in patients implanted with the Surgidev B20/20 PMMA IOLs.

Methods: In a clinical practice, a prospective study of glistenings was performed in a consecutive series of 51 patients (73 eyes) that received the Surgidev B20/20 IOL. Onset, size and location of IOL glistenings, best-corrected visual acuity, and associated ocular pathology were also noted.

Results: With mean follow-up of 98 ± 27 months (range 48-176 months), 65 of 73 (89%) eyes had IOL glistenings. Glistenings increased in frequency and size with increasing follow-up (P=0.001).

Conclusions: Glistenings may occur in PMMA IOLs with long-term follow-up and they are progressive. Although we did not note a clinical impact, a steady state has not been reached.

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We report observations of refractive opacities (glistenings) in a prospective consecutive case series of eyes that received the Surgidev B20/20 (Surgidev Corporations, Goleta, CA) polymethylmethacrylate (PMMA) intraocular lens (IOL).

MATERIALS AND METHODS

This is an observational case series of a 4-year prospective study of the progression of glistenings in patients implanted with the Surgidev B20/20 PMMA IOL. After glistenings were first noted in patients with Surgidev B20/20 IOLs in 1996, all patients with Surgidev B20/20 lenses in one practice were followed prospectively for at least four years. Eyes with the Surgidev B20/20 IOL were graded a zero (0) if no glistenings were noted, 1+ when the glistenings were rare (less than 10), 2+ when they were moderate (10 to 50), and 3+ when they were profuse (>50) (Figure 1). The time from surgery at which the grading change was first noted, as well as the best-corrected visual acuity and any associated pathology, were also recorded.

RESULTS

A total of 51 patients with 73 Surgidev B20/20 IOLs were evaluated (Table). The follow-up varied between 48 and 176 months with an average of 98 months. As of June 2000, 65 of 73 (89%) eyes with the Surgidev B20/20 IOL had glistenings. No glistenings were seen sooner than three years postoperatively and all IOLs with over seven years of follow-up showed changes. In eyes without macular or other associated pathology, there was no correlation

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between best-corrected visual acuity and severity of glistenings (20/22.7 ± 4.2 for 2 and 3+ glistenings versus 20/21.5 ± 3.3 for 0 and 1+ glistenings; $P = 0.25$).

Clearly, there was evidence of progression with time with a mean glistening score of 1.70 ± .54 for those followed longer than the mean follow-up time (98 months) versus 1.20 ± .72 for those followed less ($P = 0.001$). Twelve IOLs showed progression during follow-up while four regressed and the rest remained unchanged. No correlation was found with diabetes mellitus.

DISCUSSION

This present series shows that changes that appear similar to AcrySof (Alcon, Fort Worth, TX) IOL glistenings can occur in PMMA IOLs with both progression over time and an incidence of 89% with an average of over eight years' follow-up. They first appear in the superficial layer of the IOL (equally posterior and anterior), then become diffuse through the optic.

Exactly what is happening here is not known; however, it probably represents water vacuoles which are the probable cause of AcrySof IOL glistenings.[1] Molecular pore size large enough to allow water into the optic would result in visible refractive spherules if sufficiently large. This can be in small sizes that appear as a slight mist or as large as over 30 microns in diameter, which is very visible as distinct white opacities.[2] They were not associated with diabetes mellitus.

While we have shown that these are progressive over time in this particular PMMA IOL, we did not document any clinical impact. There have been studies suggesting a small but significant loss of contrast sensitivity[3] or minor visual acuity change[4] due to glistenings in AcrySof IOLs.

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Alcon MC-50 BM and MC-60 BM PMMA IOLs have been clear to date with similar follow-up. We have rarely seen this in other PMMA IOLs. Wilson and Brubaker[5] showed Perspex-CQ (lathe cut) PMMA IOLs to be 5+ times denser than mold injected lenses (our study lens). They also noted some glistenings in mold injected IOLs. Careful scrutiny by others will undoubtedly show PMMA glistenings are not uncommon.

We do not feel our findings will result in significant visual symptoms; however, progression over time is a concern.

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Figure Legend: A Surgidev B20/20 IOL with moderate (2+) glistenings present. Photo at 16 times original magnification with a Topcon SL5D Photo slit lamp. 160 watt sec. illumination.

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Table: IOL glistenings in 51 patients (73 eyes) followed for more than 48 months after implantation of the Surgidev B20/20 intraocular lens.

Grade	Number of glistenings Noted	IOLs as last seen	Followed for at least 98 months*	Followed less than 98 months*	Eyes of patients with diabetes mellitus	Eyes of patients who do not have diabetes mellitus
0	0	8	0	8	3	5
1+	<10	30	9	21	7	23
2+	10-50	34	17	17	12	22
3+	> 50	1	1	0	1	0

* $t = 3.42$, $P = 0.001$

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