

# Bilateral Artisan lens for aphakia and megalocornea: Long-term follow-up

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We received approval from the U.S. implant Food and Drug Administration and the University's Institutional Review Board to the Artisan lens (Ophtec BV) in both eyes of a patient who was aphakic and had megalocornea. No other intraocular lens would easily solve this patient's need because of the large anterior segment. The patient was having increasing difficulty with aphakic contact lenses because of his work environment. We present almost 5 years of follow-up data of this patient.

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Megalocornea presents difficult challenges for the anterior segment surgeon. In most cases, the anterior segment is too large for typical anterior chamber intraocular lenses (IOLs). To our knowledge, this is the first report of Artisan IOL implantation in an aphakic patient with megalocornea, including long-term follow-up.

The Artisan IOL (Ophtec BV) is an evolution of the lobster claw lens that was pioneered by Worst.<sup>1</sup> This poly (methyl methacrylate) IOL attaches to the iris with clips on both sides of the optic. This makes the Artisan IOL independent of anterior segment size, as it is ideal for patients with megalocornea. The IOL has been used successfully for years in Europe for aphakia in eyes with no capsule support<sup>2</sup> and has recently been approved by the U.S. Food and Drug Administration (FDA) for phakic patients with myopia (Verisyse).

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Neither author has a financial or proprietary interest in any material or method mentioned.

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## CASE REPORT

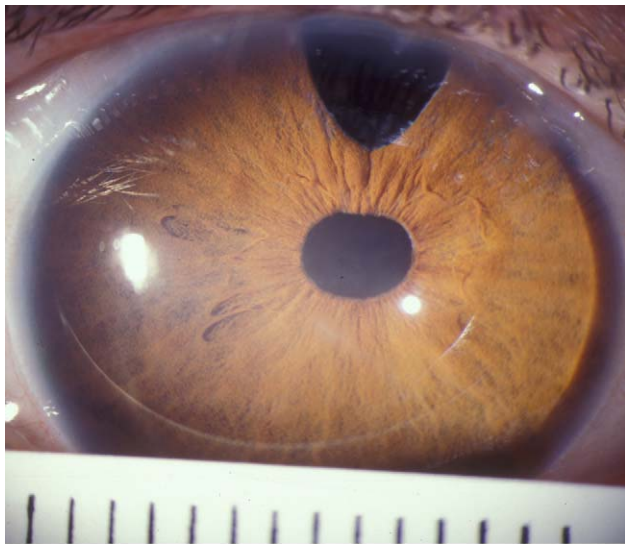
A 63-year-old man presented approximately 20 years after intracapsular cataract extraction at the VA Hospital in Iowa City. He had been having increasing difficulty tolerating contact lenses, which were particularly difficult to wear because of his job as a lawn maintenance engineer. He also had difficulty with aphakic spectacles. For many years, he had requested placement of an IOL.

On examination, the best corrected visual acuity was 20/20 in both eyes with the aphakic spectacles (right eye, +10.00 +0.50 ×75; left eye, +8.25 +1.50 ×80). Anterior segment examination was remarkable for the large anterior segment with a white to white of 15 mm (Figure 1). Slitlamp examination of the cornea showed central mosaic dystrophy which is noted in some patients with megalocornea (Figure 2). He had significant iridodonesis, peripheral iridectomies from the past intracapsular cataract extractions, and an undilated pupil of approximately 3 mm in both eyes. Echography (Figure 3) showed a deep anterior chamber (right eye, 4.8 mm; left eye, 5.3 mm), a moderately long axial eye length (right eye, 25.5 mm; left eye, 25.8 mm), and a remarkably flat iris. Keratometric measurements showed a flat cornea, as expected in megalocornea (right eye, 40.0/42.0 × 90; left eye, 40.75/41.37 × 77). The posterior segment was normal.

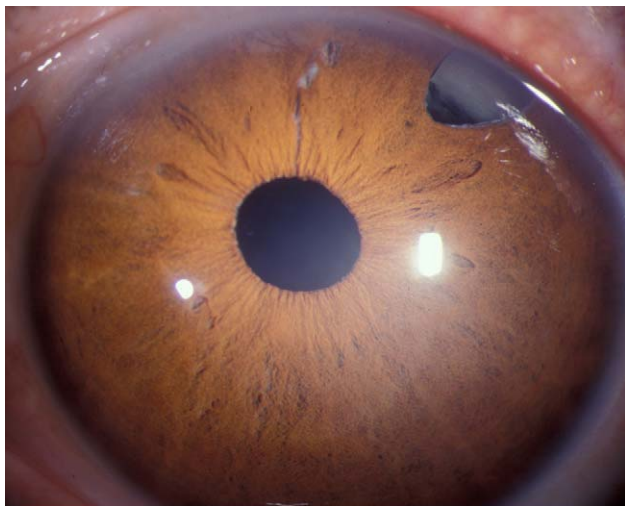
Two options for IOL implantation were discussed with the patient: McCannel suture fixation of a posterior chamber IOL<sup>3</sup> and the Artisan IOL. Despite the delay required to get institutional review board and FDA approval, the patient opted for the Artisan IOL. The IOL was placed in the left eye on October 6, 2000, and in the right eye on January 5, 2001, using standard techniques.

The initial course after placement of the 2 lenses was unremarkable. The uncorrected visual acuity was 20/20 in the right eye and 20/30 in the left eye with residual hyperopia. The visual acuity with correction was 20/15 in both eyes. The Artisan IOLs were in excellent position (Figure 4). Despite obvious iridodonesis and pseudophakodonesis, the patient did not note any image shift. The course was uneventful over the next several months.

One and one half years after implantation in the right eye, the patient presented with an abrupt change in vision in that eye.



A



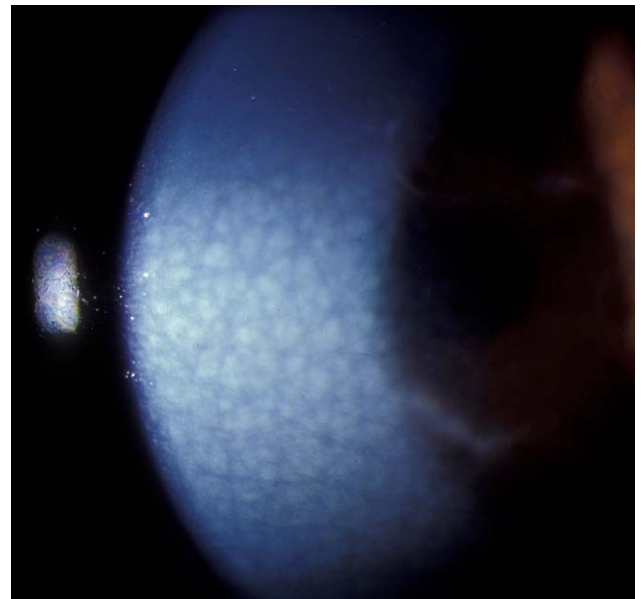
B

**Figure 1.** Slitlamp picture shows the patient's large anterior segment.

Examination showed that fixation of the superior haptic had been lost. The patient was taken back to the operating room where the IOL was repositioned easily, and the iris was once again clipped to the superior haptic. Since then, the IOLs have remained in good position. The patient was most seen on April 14, 2005, about 4½ years after the original surgery. The IOLs were in excellent position. The endothelial cell counts have remained stable over the past 5 years, as shown in Table 1.

**DISCUSSION**

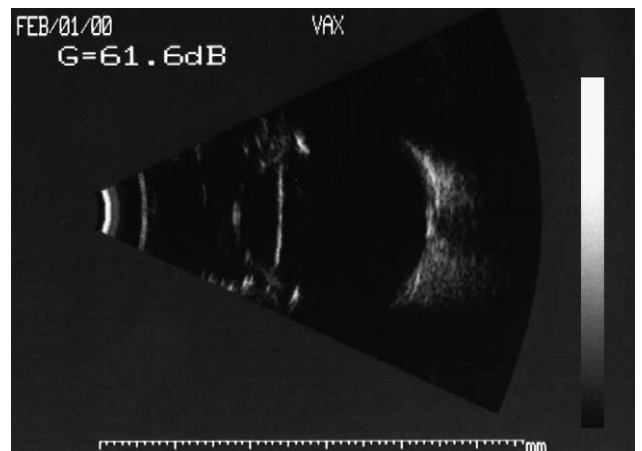
Megalocornea patients often present with cataracts early in life, and zonular problems have been reported.<sup>4,5</sup> The large anterior segment makes IOL selection difficult.



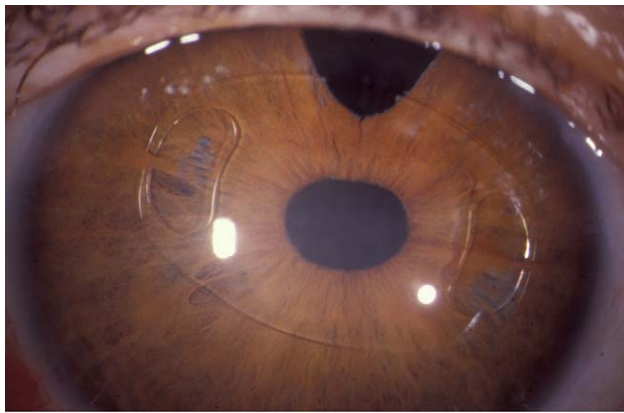
**Figure 2.** Central mosaic dystrophy.

With primary cataract surgery, when the capsular bag is intact, a standard posterior chamber IOL can be fixated with a well-centered anterior capsule opening. However, in patients such as ours who had no capsule support, IOL selection is especially difficult.

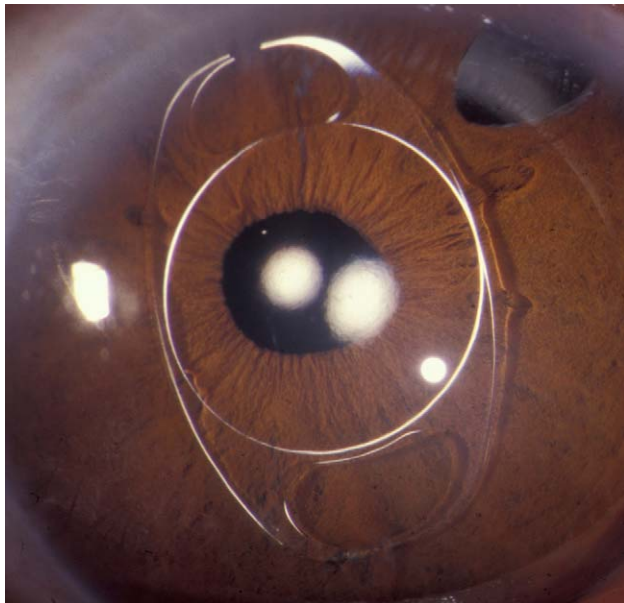
We present an excellent solution with the compassionate use of the Artisan lens, which is not approved by the FDA for this indication. Now, 4½ years after the procedure, the patient continues to do well. The residual hyperopia is probably because of the increased anterior chamber (AC) depth of the eye, leaving the IOL more posterior than usual,



**Figure 3.** B-scan of right eye shows a deep anterior chamber and flat iris.



A



B

**Figure 4.** Slitlamp shows Artisan IOL in place.

**Table 1.** Endothelial cell count (cell/mm<sup>2</sup>).

	Preoperative	5/16/01	4/3/02	10/15/03	4/14/05
Right eye	850	701	1053	1233	928
Left eye	1371	1319	1489	1468	1308

which was not taken into account by the SRK/T formula. A formula such as the Holladay 2, which takes into account the AC depth, may have fared better. Eighteen months after surgery, 1 haptic came loose, but the IOL was easily recentered and clipped into position. With the patient's large floppy iris, we probably should have enclavated more iris into each haptic. The endothelial cell counts have not shown evidence of decline (Table 1). The patient reports excellent quality of vision despite the obvious pseudophakodonesis from his large floppy irides. The examination of the posterior segment is not hindered by this lens.

We look forward to eventual FDA approval of this lens for aphakia. We believe we will find many applications for this lens in patients who have unusual aphakic situations, such as megalocornea.

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