

A TEAM-BASED APPROACH TO TREATING ADVANCED MACULAR DEGENERATION

The combination of candidate selection, occupational therapy, and Implantable Miniature Telescope surgery is not a one-person job.

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In the past, we had little to offer patients with advanced central vision loss caused by age-related macular degeneration (AMD). Options were limited to simple magnifiers and high-powered eyeglasses.

But as technology has improved, we have been able to offer these patients portable, closed-circuit televisions and related devices to enlarge text on demand. Cellular phones and iPads made these technologies more accessible and ubiquitous, but patients still required the use of an external device. In 2014, the US Food and Drug Administration approved the Implantable Miniature Telescope (IMT; VisionCare) for use in patients with end-stage AMD, giving us something more to offer our patients when nutritional supplementation and intravitreal injections fail to produce satisfactory outcomes. This article provides a brief look at the use of the IMT for the treatment of patients with end-stage AMD.

ABOUT THE IMT

The IMT is an intraocular lens implant that is placed in the eye during cataract surgery. It works by enlarging a small point of fixation to an image that is distributed over a larger portion of the macula. This creates a magnified image of the object of interest that is perceived by the macular area around the fovea with relatively preserved visual function (Figure 1). In the properly selected patient, this technology can significantly improve quality of life, but to achieve this goal requires a team approach. The team of eye care providers necessary for the successful implantation of the IMT and management of the patient

before and after surgery includes a retina specialist, a low vision specialist, and a cataract surgeon.

PUTTING THE 'EYE' IN TEAM

The IMT is integral to VisionCare's CentraSight treatment program, which helps caregivers accompany patients through the necessary steps for proper diagnosis, surgical evaluation, and postoperative care.

First at Bat: the Retina Specialist

For the right patient, the IMT can be a home run. The retina specialist is the first on the team to determine the potential suitability of the device for the patient by ensuring that all initial retinal and ocular criteria are met. Patients with significantly decreased visual acuity but a relatively



AT A GLANCE

- The IMT is a useful treatment modality in patients with end-stage dry or wet AMD.
- Given the complexity of the factors that determine a patient's success with the IMT, a standardized team approach is a cornerstone of this treatment modality.
- The team of eye care providers necessary for the successful implantation of the IMT and management of the patient includes a retina specialist, a low vision specialist, and a cataract surgeon.

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small central scotoma due to geographic atrophy or inactive choroidal neovascularization (CNV), and with an otherwise preserved macula in the better seeing eye, are best suited for the technology. It is important to note that the patient must be phakic, as the IMT is implanted at the time of cataract extraction. Eyes with active CNV requiring anti-VEGF therapy are not good candidates. Furthermore, ideal patients have not had other intraocular or corneal surgery and do not have glaucoma, steroid-induced ocular hypertension, or uveitis.

On Deck: the Low Vision Specialist

Once the retina specialist identifies a patient as a possible candidate, either a low vision specialist or an occupational therapist will familiarize the patient with the use of an external telescope and verify that such use allows the patient to read at least 5 ETDRS letters better than baseline in the selected eye. If there is not at least this degree of visual improvement with the external equivalent of the IMT, then implantation is not indicated.

If implantation *is* indicated, then the low vision provider will prescribe the corrective eyeglasses that the patient must wear after successful IMT implantation and will help him or her learn to use the device for daily living activities.

In the Hole: the Surgeon

Once the patient is selected and trained on external telescope use, surgery is planned with a participating cataract or cornea surgeon. Candidates must again be screened for specific surgical criteria including corneal endothelial cell density, anterior chamber depth, axial length, and preoperative refraction. If all necessary parameters are met, then surgery is performed using standard phacoemulsification techniques—except that, after cataract extraction, the corneal wound is enlarged to allow implantation of the IMT into the capsular

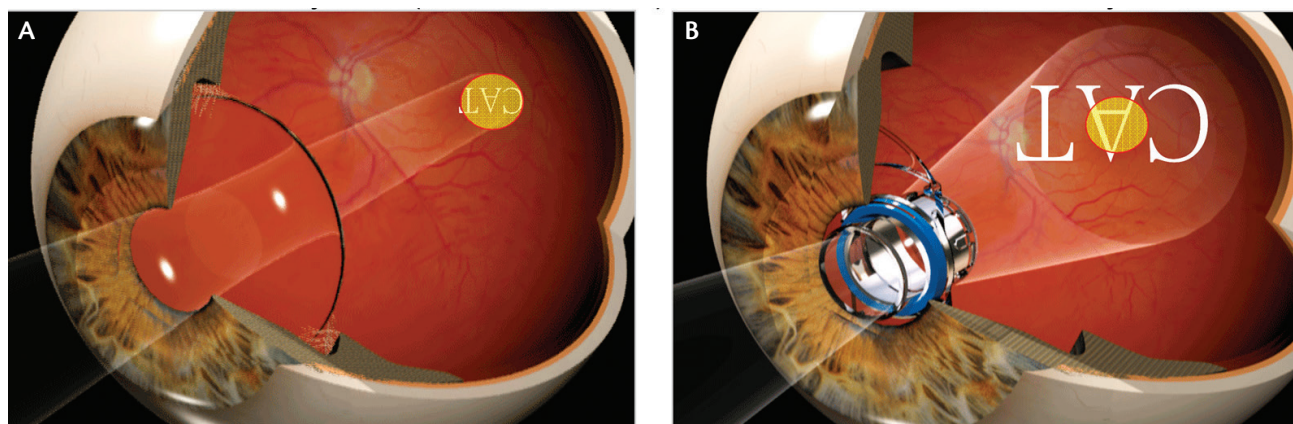


Figure 1. Central visual field projection through a natural lens or intraocular lens (A). Central visual field projection with magnification provided by the IMT (B). The prosthesis reduces the impact of the central blind spot by utilizing the healthy, nondegenerated area of the light-sensing retina.

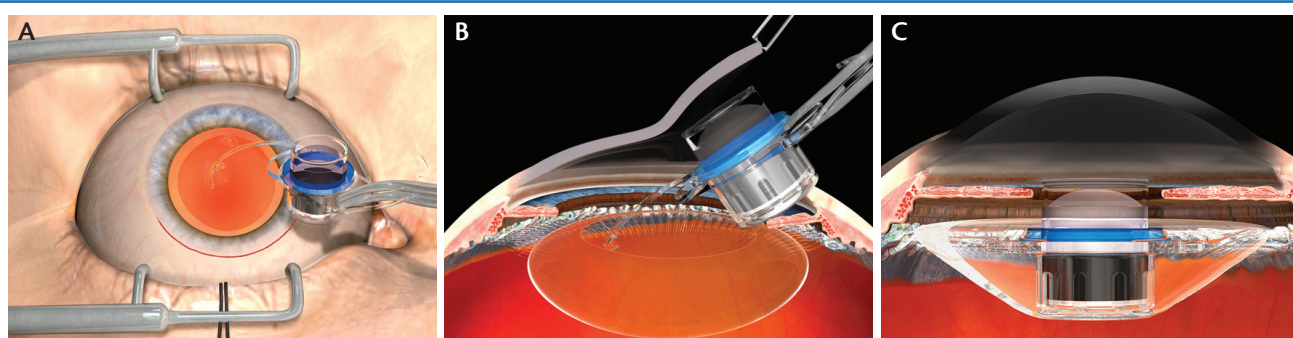


Figure 2. The IMT requires a large incision and capsulorhexis more reminiscent of planned extracapsular cataract extraction (A). The IMT is inserted by lifting the cornea and placing the haptics entirely within the capsular bag (B). Fully seated, the IMT is secured in the capsular bag for centration (C).

bag (Figure 2). An intact posterior capsule and good zonular support are essential for proper IMT positioning. Likewise, good wound construction and closure are key to minimizing postoperative astigmatism. If the integrity of the capsular bag is compromised during cataract extraction, the device should not be placed.

CONCLUSION

After successful implantation of the IMT, additional occupational therapy can help the patient to develop the skills necessary to optimize the potential benefits of the device. With the right expectations and perseverance, patients may find that they can resume many activities and better recognize their loved ones without external assistance.

The IMT has proven to be a useful treatment modality in patients with end-stage dry or wet AMD. With the emergence of this device, ophthalmologists should be aware of the possibility of improved visual function and consider offering it to appropriate patients. Given the complexity

of the factors that determine a patient's success with the IMT, a standardized team approach is a cornerstone of this treatment modality. ■

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