

*Eye surgeons at Baystate Medical Center are using instrumentation that is small enough to perform vitrectomy procedures with entry sites that are self-sealing and require no sutures.*



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*Six months ago, Bradley Foster, MD, (left) and his colleague, David Agahigian, MD, (right) began using smaller, 25-gauge instruments to perform sutureless vitrectomy procedures at Baystate Medical Center.*

# SUTURELESS VITRECTOMY PROCEDURE

*Helps Patients See the Light*

*By Scott P. Edwards*

**F**or many people with diabetes, the thought of vision loss, among the many potentially devastating complications of the disease, is terrifying. But unfortunately, diabetic retinopathy is still one of the leading causes of severe vision loss in the United States.

With strict control of serum glucose levels, and appropriate screening for the early signs of diabetic retinopathy with periodic eye examinations, many patients with diabetes can lower their risk of serious visual loss. In some cases, however, longstanding diabetes can still result in vision-threatening retinopathy. Laser photocoagulation and vitrectomy surgery are two surgical treatments that can slow visual deterioration or even improve visual function.

Now, eye surgeons at Baystate Medical Center are performing a new, sutureless form of the vitrectomy procedure using instruments as small as the tip of a pencil, and offering patients a less-invasive means of aiding their vision and quickening their recovery time.

## **Threatening the Retina**

Although patients with diabetes can also suffer from other eye conditions such as cataracts or glaucoma, it is the damage to the retina that poses the largest threat. After years of diabetes, damage to the retinal blood vessels can result in edema, ischemia, and hemorrhage. Edema of the central retina — the macula — can lead to moderate, gradual vision loss.

Laser photocoagulation can help to decrease the leakage from damaged blood vessels and improve the edema. In other cases, retinal ischemia triggers abnormal blood vessels to form on the retinal surface. These new vessels, called neovascularization, can rupture and lead to sudden and severe vision loss.

While laser photocoagulation again can be effective in the treatment of these neovascular vessels, called proliferative retinopathy, once a significant hemorrhage occurs, laser treatments alone may not be possible.



Patricia McKenna, RN, service lead for Plastics and Ophthalmology at Baystate, says that the advantages of the 25-gauge procedure include "less pain, fewer complications, and decreased surgery time." (Surgical team left to right: John Frates, CST; Deb Fredenburgh, RN; Louise Leventis, RN; Patty McKenna, RN, CNOR; Israel Guzman, ST.)



According to Bradley Foster, MD, an eye surgeon with New England Retina Consultants in West Springfield who is on staff at Baystate Medical Center, "Laser treatments are performed in an office setting whereby the laser light is directed through a dilated pupil at the retinal surface. However, when a vitreous hemorrhage, or severe bleed within the eye, is present, laser light is blocked from reaching the desired tissue."

He continues, "It's a catch-22. They need laser treatment to stop the bleeding, but the laser will not penetrate all the blood. The vitreous hemorrhage therefore needs to be evacuated before adequate laser treatment can be applied."

In the early 1980s, vitrectomy surgery was pioneered. During this procedure, the jelly-like vitreous fluid that fills the eye can be safely removed. It has proved to be invaluable in the treatment of many retinal disorders, including diabetic retinopathy and retinal detachments, as well as less common problems, such as macular holes, epiretinal membranes, or certain complications after cataract surgery.

Conventional vitrectomy surgery, an outpatient procedure, is performed through three 20-gauge openings. A fiber optic light is used for illumination and an infusion cannula helps maintain the intraocular pressure and replaces the fluid that is removed. The vitrector itself is a device that allows for simultaneous aspiration and cutting of the vitreous gel. In a case of a vitreous hemorrhage, the blood, which collects within the vitreous cavity, is also evacuated.



Baystate Medical Center is the only site in Western Massachusetts offering 25-gauge vitrectomy.

For many years, says Dr. Foster, performing vitrectomy with 20-gauge instruments was the standard of care. "It works well," he says, "but the three surgical openings must each be sutured closed. Surgical time is longer, post-operative discomfort is greater, and healing is slower than with some newer techniques."

### 25-Gauge Vitrectomy

Six months ago, Dr. Foster and his colleague, David Agahigian, MD, began using smaller, 25-gauge instruments to perform vitrectomy procedures. "Twenty-five gauge vitrectomy is a recent advancement," says Dr. Foster. "The instrumentation is small enough that the entry sites are self-sealing and no sutures are required. We can perform these procedures faster, and patients experience less post-operative discomfort with quicker visual rehabilitation."

"The advantages of the 25-gauge procedure," says Patricia McKenna, RN, service lead for Plastics and Ophthalmology at Baystate, "is that it is minimally invasive surgery and no sutures are required to close the

sclera or conjunctiva at the end of the case. This results in less pain, fewer complications, and decreased surgery time."

Dr. Foster says that while vitrectomy with 25-gauge instruments is becoming more common, not all patients are candidates. The instruments are fairly flexible, and for patients that will require more extensive manipulation, 20-gauge instruments may still be superior.

Currently, Baystate Medical Center is the only site in Western Massachusetts offering 25-gauge vitrectomy, where Drs. Foster and Agahigian have performed more than 100 cases in the last six months. "We are pleased to offer this procedure to appropriate candidates with severe retinal conditions in our area," says Dr. Foster.

**For more information or to refer a patient, call New England Retina Consultants, PC, at 413-732-2333. For a complete list of surgical procedures performed at Baystate using minimally invasive or robotic-assisted techniques, visit [www.baystatehealth.com/mis](http://www.baystatehealth.com/mis).**



## Becket Man Appreciates Ease of Procedure

For 55-year-old John Vachula, nearly three decades of diabetes has taken a toll on his eyes. He has suffered from diabetic retinopathy and has required numerous laser treatments. But for Mr. Vachula, who lives in Becket, his retinopathy was quite aggressive, and unfortunately he developed a large vitreous hemorrhage.

"Mr. Vachula has had multiple laser treatments," says his retinal surgeon, Bradley S. Foster, MD, "which were effective for controlling his proliferative diabetic retinopathy for several years. Ultimately, however, he suffered a vitreous hemorrhage with severe visual loss."

About a year ago, Mr. Vachula became one of the first of Dr. Foster's patients to undergo the new sutureless vitrectomy procedure. "I went in early in the morning for the procedure," says Mr. Vachula. "I was on my way home by 10:30 that same morning. I had no pain at all, and about two weeks after the surgery, I had my vision back."

While he also suffers from other eye problems, such as cataracts and glaucoma, Mr. Vachula says he has had no further bleeding in the eye on which Dr. Foster operated, and his vision has been maintained. Dr. Foster has been monitoring his other eye, which has had several smaller bleeds, but if it were to progress, Mr. Vachula says he "would love to have the same procedure for my other eye."